

An Investigation of Black and Hispanic Participation and Performance in Advanced Placement
Courses in a School Division that has Targeted Increased Participation as a Goal

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ABSTRACT

Participation in Advanced Placement (AP) courses and success on associated exams has become the standard bearer for post-secondary admission. While AP began as a mechanism to support the academic needs of the most advanced students, today it is offered to a diverse range of students. Increasing AP participation and improving AP performance for traditionally underrepresented populations to include Blacks, Hispanics, students with disabilities, and those from lower socioeconomic families has been an ambition of American school districts for the past several decades. This study used AP participation and performance data to investigate the progress one school district has made regarding Black and Hispanic students for the eight school years between 2011-19. Progress was measured by increases in percentages of Black and Hispanic students enrolled in AP courses who sat for an associated AP exam and the percentage of each cohort who earned scores of three or higher on those exams. Significance was determined using Pearson's chi-square and one-way ANOVA tests. Study results show that, among other findings, there was no significant relationship in AP participation for either Black or Hispanic students and that both Black and Hispanic students demonstrated significant improvement in AP performance between school years.

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GENERAL AUDIENCE ABSTRACT

The purpose of this study was to identify what change, if any, has occurred in Black and Hispanic AP participation and performance on AP, ACT, SAT, and state mandated reading and writing exams. A quantitative review of Black and Hispanic AP student participation and performance data was conducted to identify areas of significant growth. Participants were identified as Black and Hispanic AP students who sat for an associated exam. Performance data collected and reviewed included Black and Hispanic AP, ACT, SAT, and state mandated reading and writing exam results. Data were collected over an eight-year period and the sample includes all high schools in the school district.

The data collected and analyzed for this study identified six findings and six implications. The study was limited by the small sample size of students who fit the profile of having taken and AP course and sitting for an associated exam. Of the nearly thirty-one thousand students considered, less than ten percent were eligible for the study. Considerations for further study includes expanding eligibility to all Black and Hispanic participants regardless of their participation in associated AP exams.

DEDICATION

Dedicated to the most amazing person I know, my mother, mentor, and protector Dr. Linda E. Byrd-Johnson. Thank you for your unconditional love and willingness to be exactly what I needed, exactly when I needed it. You have always put others before yourself and serve as my North Star. With you by my side, nothing is impossible.

This study is also offered in loving memory of Dr. William “Bill” Glenn who died on January 30, 2021. Bill was a true friend and mentor who never stopped believing in me and to whom I will be forever thankful.

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Chapter I

Introduction

The purpose of this study was to identify what change, if any, has occurred in Black and Hispanic AP participation and performance on AP, ACT, SAT, and state mandated reading and writing exams. Compiled research will show the impact of AP participation on college admission (Geiser & Santelices, 2004; National Research Council, 2002; Sathre & Blanco, 2006; Schneider, 2009), the effectiveness of AP participation and success as a tool to both assist students in their efforts to gain acceptance to college as well as to prepare them for success in postsecondary study (Dougherty & Mellor, 2010; Dougherty, Mellor, & Jian, 2006; Mattern, Shaw, & Xiong, 2009; Murphy & Dodd, 2009; Warne, Larsen, Anderson, & Odasson, 2015) the underrepresentation of Black and Hispanic students in AP courses (College Board, 2020). Research also illustrates the persistent AP participation and performance gaps that exist “between Black and Hispanic students and their Asian and White peers” (College Board, 2012; College Board, 2014). The results of this study will provide strategies for schools and school districts to consider as they pursue increased AP participation and success for Black and Hispanic students.

Earning a college degree leads to many positive life outcomes (Chan, 2016; Case & Deaton, 2020; Trostle, 2015;). From higher median incomes (U.S. Department of Labor, 2020) to improved quality of life (Trostel, 2012) and life expectancy (Case, et al., 2020), college graduates are better positioned to thrive than are those without postsecondary education. (Carevale, Smith & Strohl, 2013) “estimated that by 2020 two-thirds of jobs will require college experience, with 30% of those jobs requiring at least a bachelor’s degree and 36% of jobs requiring at least some college coursework or an associate degree.” The United States Bureau of

Labor Statistics (2017) identified 174 occupations as typically requiring a bachelor's degree for entry level positions. They projected that these occupations will grow by 10 percent from 2016 to 2026, which is faster than the average of seven percent for all occupations. The United States Bureau of Labor Statistics (2017) further projected that of the 30 fastest growing occupations, 18 require some level of postsecondary education for entry. In a report titled *Recovery: Job Growth and Education Requirements Through 2020* (2013), the Georgetown Public Policy Institute used a macro-micro modeling framework to forecast educational requirements for various occupations. Their projections show that 65% of all jobs will require some postsecondary education or training, which represents a 6% increase from 2010 and will be 9% higher than in the 1990s. (Carnevale, Smith, & Strohl, 2013) In furtherance of the projections articulated above, The United States Bureau of Labor Statistics (2020) reported that 68% of American workers age 25 and older had at least some college education and that 48.3% held an associate's degree or higher. Additionally, those with a bachelor's degree served as the largest portion (23.7%) of the workforce in 2019.

Considerable research shows the financial benefits of earning degrees beyond the high school diploma. The Bureau of Labor Statistics (2022) show that workers 25 and older with a bachelor's degree had median weekly earnings of \$1,334 compared to \$809 earned by those with a high school diploma alone. According to the same report, the unemployment rate for those with only a high school diploma was 6.2%, while that for those with a bachelor's degree was 3.5%. The Bureau of Labor Statistics (2022) also shows increased financial gains for those who earn degrees beyond a Bachelor's Degree. (see Appendix A)

The National Center for Education Statistics (NCES) (2021) reported that in 2019 both the employment rate and median earnings positively correlate with higher educational attainment. Their research illustrated that 25- to 34-year-olds with a bachelor's degree or higher

had an employment rate of 86%, while those with some college and those who had only completed high school had employment rates of 78% and 69% respectively. NCES also found that within this same age group, median earnings for those with a bachelor's degree were 59% higher than those who had only earned a high school diploma. Table 1 below shows the relationship between educational attainment and earnings.

Table 1

Employment rates and median annual earnings of full-time, year-round workers ages 25-34, by educational attainment: 2019

Educational Attainment	Employment Rate	Median Annual Earnings
Master's or higher degree	80%	\$70,000
Bachelor's degree	79%	\$55,700
Associate's degree	74%	\$40,000
Some college, no degree	78%	\$39,700
High school completion	69%	\$35,000
Less than high school completion	57%	\$29,300

Researchers Carnevale, Jayasundera, and Gulish (2016) found that following the Great Recession, which they define as the time period between December 2007 to January 2010, those with at least some college education enjoyed greater access to job opportunities than those with a high school diploma or less. Their findings show that 99% of the 11.6 million jobs created during the recovery period that followed the Great Recession, defined by Carnevale, et al. as the time period between January 2010 and January 2016, went to workers with at least some college education. Conversely, those with a high school diploma or less, who lost 5.6 million (or 78%)

of the 7.2 million total jobs lost during the recession, recovered 1 percent of those jobs during the recovery. These findings lend credence to the projections and findings of earlier researchers listed previously.

In addition to the financial advantages of a college education, several other important individual and collective societal advantages accrue by earning a postsecondary degree. The Lumina Foundation (Trostel, 2015) determined that when compared to the average American without at least a bachelor's degree, bachelor's degree holders enjoy many benefits. Their research shows that bachelor's degree earners were:

- 47% more likely to have health insurance through employment.
- 44% more likely to report their health to be very good or excellent.
- 3.9 times less likely to be a regular smoker.
- Significantly less likely to be obese or drink heavily.
- Significantly more likely to have a healthy diet, wear a seat belt when driving, and seek preventative medical care.
- Likely to have a life expectancy of seven years longer.
- 4.9% less likely to be in prison or jail.
- 21% more likely to be married, and 61% less likely to be divorced.
- Significantly more likely to report being happy.

Lumina researchers also determined that, in addition to the many individual benefits of having a college degree, society as a whole benefits substantially from having a high number of college graduates in the general population. Their findings show that the entirety of American society receives the following benefits from citizens with a bachelor's degree in comparison to those with only a high school diploma:

- 2.3 times more likely to volunteer.

- Donate to charities at a higher rate.
- Significantly more likely to vote and be involved politically.
- 1.9% more likely to participate in school, community service, civic, and religious organizations, and 3.2 times more likely to serve as a leader in these organizations.
- Significantly more likely to be involved in the community.
- Significantly more likely to interact with and trust their neighbors.

Additionally, 25-year-old Americans with a four-year degree, regardless of gender or ethnicity, will live more years before their 75th birthday than those without a degree (Case, A. & Deaton, A., 2020). Their research showed that out of a possible 50 years, those with a bachelor's degree live 48.2 years while those without a degree live 45.1 years.

Statement of the Problem

Today's society highly values education as a necessary prerequisite to becoming successful and experiencing at least a moderately high quality of life as an adult (Howard, & Solberg, 2006). Blacks and Hispanics are less likely to attend and graduate from college (Lumina, 2019; Pew, 2015; The National Student Clearinghouse, 2020; The National Center for Educational Statistics, 2020). Compiled research shows that AP participation is an accurate predictor of postsecondary enrollment (CEEP, 2002; Chawkeski et al., 2011; Davis et al., 2009; Hargrove, Godin, & Dodd, 2008; Matthews, 2002), success in postsecondary coursework (Adleman, 1999; Davis et al., 2017; Flowers, 2008; Geiser & Santelices, 2004; Mattern et al., 2009; Micceri et al., 2009; Mustafa & Compton, 2017), and persistence to completion/degree attainment (Adleman, 2006; Davis et al., 2017; Dougherty et al., 2005; Flowers, 2008; Hargrove et al., 2008; Morgan & Maneckshana, 2000; Smith et al., 2017;). Data provided by the College Board (2020) shows that between 2009 and 2018 both Black and Hispanic students were

consistently less likely to be enrolled in an AP course, less likely to sit for an AP exam, and less likely to earn a score of three or higher on an AP exam than were their Asian and White peers. According to data provided by the College Board (2010) for the 2009 graduating class, Black students were underrepresented in AP exams by 6.3%, Hispanics by 0.4%, and Whites by 2.2%. Asian students were the only group to be overrepresented (+4.8%).

Table 2

Advanced Placement Exam Participation and Overall Population Graduating Class of 2009

Ethnicity	Percentage of AP Exam Population	Overall Population	Total Exams
Asian	10.2	5.4	327,068
Black	8.2	14.5	152,726
Hispanic	15.5	15.9	317,910
White	59.4	61.6	1,366,109

The College Board (2010) also reported gaps in performance between ethnicities, with Black and Hispanic students being less likely to earn scores of three or higher on associated exams. During this time the average mean score for Black and Hispanic students was 1.90 and 2.39 respectively. Each result falls below the national average of 2.81. Conversely, Asian students had a collective mean score of 3.09 and White students had a mean of 2.95. As Table 3 below illustrates, The College Board (2010) reports gaps in performance between ethnicities, with Black and Hispanic students being less likely to earn scores of three or higher on associated exams.

Table 3*AP Score distribution by Ethnicity, Graduating Class of 2009*

Ethnicity	Exam Score	Number of Students Earning Score	Total Exams	Mean of all Exams
Asian	5	66,600	327,068	3.09
	4	69,530		
	3	74,265		
	2	61,182		
	1	55,491		
Black	5	4,448	152,726	1.90
	4	11,373		
	3	23,088		
	2	38,861		
	1	74,956		
Hispanic	5	29,840	317,910	2.39
	4	42,782		
	3	59,709		
	2	75,801		
	1	110,778		

(continued)

Table 3 (cont.)

Ethnicity	Exam Score	Number of Students Earning Score	Total Exams	Mean of all Exams
White	5	196,238	1,366,109	2.95
	4	290,579		
	3	359,179		
	2	295,680		
	1	224,433		
National Total	5	315,394	2,312,002	2.81
	4	441,428		
	3	550,465		
	2	505,099		
	1	499,616		

The College Board (2019) showed that while there are AP participation and performance increases for both Black and Hispanic students following the 2018-19 school year, each cohort continues to lag behind their Asian and White peers in each metric. Table 4 below shows that between 2009 and 2018 Black and Hispanic AP exams increased by 102% and 244% respectively. During this same time period, the percentage of Black AP exam scores of three or higher increased by 5.7% and by 1.3% for Hispanic exams. The percentage of exams taken for all ethnicities nationally increased by 113% and the percentage of exam scores of three or higher earned nationally increased by 2% between the 2009 and the 2018 administration.

Table 4*AP Exam Scores of 3 or Higher by Ethnicity, 2009 and 2018*

Ethnicity	Number of Exams Scores of Three or Higher 2009	Percentage of Exams Scores of Three or Higher 2009	Number of Exams Scores of Three or Higher 2018	Percentage of Exams Scores of Three or Higher 2018
Asian	210,395	64.3	526,827	71.1
Black	38,909	25.5	96,389	31.2
Hispanic	132,331	42.6	479,184	43.9
White	845,996	61.9	1,580,782	64.7
National Total	1,306,921	56.5	2,877,811	58.5

The SAT serves as a method of identifying college ready students as higher SAT scores correlate with higher college grades (Westrick, Marini, Young, Ng, Shmueli, & Shaw, 2019). The persistent inequities in SAT performance among ethnic groups furthers disparities in postsecondary participation (Ford & Triplett, 2019). The College Board has established college and career readiness benchmark scores for students in grades eight through 12. College and career readiness benchmarks are used to “...assess student progress toward college readiness from year to year.” (College Board, 2021) Students meeting benchmark scores on both the Math and the Evidence-Based Reading and Writing tests are deemed to be college and career ready. (College Board, 2021)

Tables 5 and 6 below compare SAT for years 2009 and 2019 by ethnicity and illustrate persistent performance gaps between Black and Hispanic students and their Asian and White peers. Table 5 below shows, following the 2008-09 school year, The College reported gaps in

performance between ethnicities with Black and Hispanic students scoring below both Asian and White students on each of the three sections of the SAT.

Table 5

Average SAT Scores by Ethnicity, 2009

Ethnicity	Asian	Black	Hispanic	White	Total
Critical Reading	516	429	455	528	420
Writing	421	421	448	517	493
Math	587	426	461	536	515

The College Board's 2019 SAT Annual Report shows that Black and Hispanic students continue to score below Asian and White students on the SAT. Table 6 below shows that both Black and Hispanic students maintain average mean scores in reading and writing, and math when compared with their Asian and White peers.

Table 6

SAT Mean Score by Ethnicity, 2019

Ethnicity	Evidenced-Based Reading and Writing	Math	Total
Asian	586	637	1223
Black	476	457	933
Hispanic	495	483	978
White	562	553	1114

The College Board (2010) also reported that 20% of Black students and 28% of Hispanic students met both benchmarks (evidence-based reading and writing, and math) while 74% of Asian students and 56% of White students met both in 2010. Using College Board data of 1.7 million (21% White, 21% Hispanic, 14% Black, and 14% Asian) college-bound seniors in 2015, the Brookings Institute showed gaps in mathematics performance between Asian, Black, Hispanic, and White students. Their findings identified that “The scores of Black and Latino students are clustered towards the bottom of the distribution, while White scores are relatively normally distributed, and Asians are clustered at the top” (Reeves & Halikias, 2017). Among students earning scores between 750 and 800, 60% are Asian, 33% are White, 5% are Hispanic, and 2% are Black. While Black and Hispanic students are underrepresented among top scorers, both ethnic groups are overrepresented among students earning scores between 300 and 350. Of this cohort 37% are Hispanic, and 35% are Black while 21% are White, and 6% are Asian. Bookings also identified that while 48,000 White students and 52,800 Asian students scored above 700 in mathematics, 4,900 Hispanics, and 2,200 Black students did so. This is again true when comparing results for the highest scorers. 29,570 Asian, and 16,000 White students scored above 750, while 2,400 Hispanic and 244 Black students achieved at that level.

Similar to the SAT, the ACT is often used as a part of the college admissions process. The Princeton Review (2022) defines the ACT as an exam consisting of four sections. These sections include English, reading, math, and science. Students earn a composite score which represents the average score earned on each of the four sections with 36 as a maximum score possible (Princeton Review, 2022). Also similar to the SAT, as Table 7 below shows, Black and Hispanic students earn lower scores on the ACT than do Asian and White students.

Table 7*ACT Composite Scores by Ethnicity, 2009, 2018 & 2021*

Ethnicity	2009	2018	2021
Asian	23.2	24.5	24.9
Black	16.9	16.9	16.3
Hispanic	18.7	18.8	18.3
White	22.2	22.2	21.7
Total Composite	21.1	20.8	20.3

The Princeton Review (2022) data shows that composite scores have flattened and remained relatively consistent between 2009 and 2021. This consistency has resulted in a continuation of persistent gaps in assessment performance between ethnicities.

These gaps in performance are also observed when reviewing National Assessment of Educational Progress (NAEP) data provided by the U.S. Department of Education and the Institute of Educational Sciences (2022). The NAEP, also known as the Nation’s Report Card, has been administered since 1969 and serves as a common measure “...of student achievement in civics, economics, geography, mathematics, music and visual arts, reading, science, technology and engineering literacy, U.S. history, and writing.” (National Center for Education Statistics, 2022) NAEP results are reported as average scores to show how students performed as well as one of three achievement levels. The achievement levels include NAEP Advanced, NAEP Proficient, and NAEP Basic. Performance at the advanced and proficient levels connote “solid academic performance and competency over challenging subject matter.” (National Center for

Education Statistics, 2022) As Table 8 shows, Black and Hispanic 12th grade students lag behind both Asian and White students in mathematics and reading for the years between 2009 and 2019.

Table 8

National Assessment of Educational Progress (NAEP) Average Student Scores by Ethnicity, 2009 and 2019

Ethnicity	Mathematics		Reading	
	2009	2019	2009	2019
Asian	175	175	298	299
Black	131	128	269	263
Hispanic	138	138	274	274
White	161	159	296	295
Total	153	150	288	285

Similar to the gaps in AP participation and performance, and performance on ACT, SAT and NAEP assessments, there are continued ethnic college enrollment gaps immediately following high school. The national average for immediate college enrollment for those ages 16 to 24 was 66.2% (National Center for Education Statistics, 2020). Both Black and Hispanic college enrollment for this age group fell below the national average in 2019 with 49.8% of Black students and 63.4% of Hispanic students immediately enrolled in 2- or 4-year institutions following high school. NCES (2019) data also shows that Black high school graduates who enrolled in college has fallen below the national total for every year between 2010 and 2019 while that of Hispanics has been below eight of the ten years reported.

Table 9

Percentage of recent high school completers enrolled in college, by race/ethnicity: 2010 through 2019

Year	Asian	Black	Hispanic	White	Total
2010	84.7	62.0	59.7	70.5	68.1
2011	86.1	67.1	66.6	68.3	68.2
2012	81.5	56.4	70.3	65.7	66.2
2013	80.1	56.7	59.8	68.8	65.9
2014	90.0	70.2	65.2	67.7	68.4
2015	83.2	55.6	68.9	71.3	69.2
2016	91.9	57.3	72.0	69.7	69.8
2017	82.7	59.4	61.0	69.1	66.7
2018	73.6	64.5	65.4	70.9	69.1
2019	89.8	49.8	63.4	68.0	66.2

National Center for Educational Statistics, 2021

A review of data provided by the NCES shows a national flattening of the college enrollment rate. According to the NCES, the percentage of Americans 18 to 24 years old enrolled in college was 40.7% in 2019. This represents a 0.5% decrease from 2010. Just as with the overall immediate college enrollment rates, the college enrollment rates for both Blacks and Hispanics aged 18 to 24 in 2019, 37% and 36.3% respectively, each fell below the 2019 national average. Table 10 shows that during the same time period both Asian and White students surpassed the national average with 62% of Asians 18 to 24 being enrolled in college and 41.1% of Whites.

Table 10

Percentage of 18- to 24- year-olds enrolled in college by race/ethnicity of student: 2010 through 2019

Year	Asian	Black	Hispanic	White	Total
2010	63.6	38.4	31.9	43.3	41.2
2011	60.1	37.1	34.8	44.7	42.0
2012	59.8	36.4	37.5	42.1	41.0
2013	62.3	34.2	33.8	41.6	39.9
2014	65.2	32.6	34.7	42.2	40.0
2015	62.6	34.9	36.6	41.8	40.5
2016	57.6	36.2	39.2	42.1	41.2
2017	64.7	36.5	36.2	41.0	40.4
2018	59.0	37.2	35.9	42.3	40.9
2019	62.0	37.0	36.3	41.1	40.7

The Lumina Foundation (2019) reported that the national average for U.S. residents ages 25-64 having earned an associate degree or higher was 43.15 %. This represents an increase of 2.72 % from 2014. While the percentage of Black and Hispanic U.S. residents ages 25-64 holding an associate degree or higher has increased by 2.91 and 4.68 percentage points respectively during this same time period, each was lower than the national average. These percentages were also lower than those of Asian and White residents. The National Student Clearinghouse (2020) reported that the overall six-year college completion rate for American students was 75.7% in 2014. Their data shows that in 2014, as with immediate enrollment and

continued enrollment in later years, Black and Hispanic six-year graduation rates of 51.5% and 60.3% respectively, fell below the national average and lagged behind the rates for both Asians (79.8%) and Whites (73.4%).

Recent research shows that when comparing the “6-year graduation rates for first-time, full-time undergraduate students who began their pursuit of a bachelor’s degree at a 4-year degree-granting institution in fall 2010” (National Center for Education Statistics, 2019), Black (40%) and Hispanic (54%) students trailed Asian (74%) and White (64%) students (National Center for Education Statistics, 2019). Table 11 shows that while there was an increase in the rate of college enrollment Hispanics between 2011 and 2018, Asians, Blacks and White experienced reductions.

Table 11

College Enrollment by Ethnicity, 2011 and 2018

Ethnicity	2011	2018	Percentage Change
Asian	1,281,562	1,327,759	-3.6
Black	3,038,968	2,549,502	-16.1
Hispanic	2,748,803	3,545,961	29.0
White	12,720,803	10,517,394	-17.3
Total	19,790,136	17,940,616	-9.3

Purpose of the Study

The purpose of this study was to identify what change, if any, has occurred in Black and Hispanic AP participation and performance on AP, ACT, SAT, and state mandated reading and

writing exams. Calls for equitable access to and improved performance in AP courses have come from parents, postsecondary institutions of learning, and educational activists have resulted in increased access to AP across American school districts. The College Board (2020) reports a 30% increase in the number of schools offering AP exams, a 13% increase in the number of AP courses offered per school, and a 33% increase in the number of exams administered per school between 2011-12 and 2018-19. Additionally, the Education Commission of the States (2016) found that 8 states and the District of Columbia require that all high schools or districts offer AP courses, 14 states mandate advanced courses, which may include AP courses, and 32 states include “AP participation/success in high school accountability reporting” (Education Commission of the States 50-state Comparison, 2021). As of 2021 at least one state has established the requirement that high school students earn credits in either AP, International Baccalaureate, or Honors courses to earn a diploma. Federal and state mandates are clear in directing schools and school districts toward preparing college- and career-ready students who will fill 21st century jobs (McBride Davis, C., Slate, J., Moore, G., & Barnes, W, 2015). Research has indicated that success in AP courses, as measured by earning exam scores of 3, 4, or 5, during high school, and not simply enrolling in AP courses increases academic outcomes (Dougherty & Mellor, 2010; Geiser & Santelices, 2004; Sadler & Sonnert, 2010) and serves as evidence that schools and districts must work to improve the foundational academic skills of students prior to enrolling them in AP courses (Dougherty, Mellor, & Jian, 2006).

This study utilized data from an affluent, high-performing, mid-sized school district to examine the impact of its initiative to increase Black and Hispanic AP participation and performance. Findings identify changes in Black and Hispanic AP participation, AP exam scores, and state mandated reading and writing exam results. While this study analyzed AP participation and performance data beginning in 2011-12 and ending following the 2018-19

school year, it is important to note that The College Board reports that in 2020 Hispanic students were both more likely to take an AP course and exam, and earn at least one exam score of three or higher than were White students. The College Board (2020) also shows that Hispanic students were overrepresented among AP exam takers. While Hispanics represented 24.7% of the overall high school population, Hispanics were 26.6% of the overall AP exam taking population, and 24.8% of those who earned an exam score of three or higher.

Research Questions

The questions of this research study are as follows:

1. What change, if any, has occurred in Black and Hispanic AP participation between the 2011-12 and 2018-19 school years?
2. What change, if any, has occurred in Black and Hispanic AP performance between the 2011-12 and 2018-19 school years?
3. What change, if any, has occurred in Black and Hispanic AP participants' performance on the ACT exam between the 2011-12 and 2018-19 school years?
4. What change, if any, has occurred in Black and Hispanic AP participants' performance on the SAT exam between the 2011-12 and 2018-19 school years?
5. What change, if any, has occurred in Black and Hispanic AP participants' performance on state mandated reading and writing exams between 2011-12 and 2018-19 school years?

Overview of the Study

The study site has sought to increase AP accessibility and success for underrepresented populations, especially Black and Hispanic students for several years. The study site identified

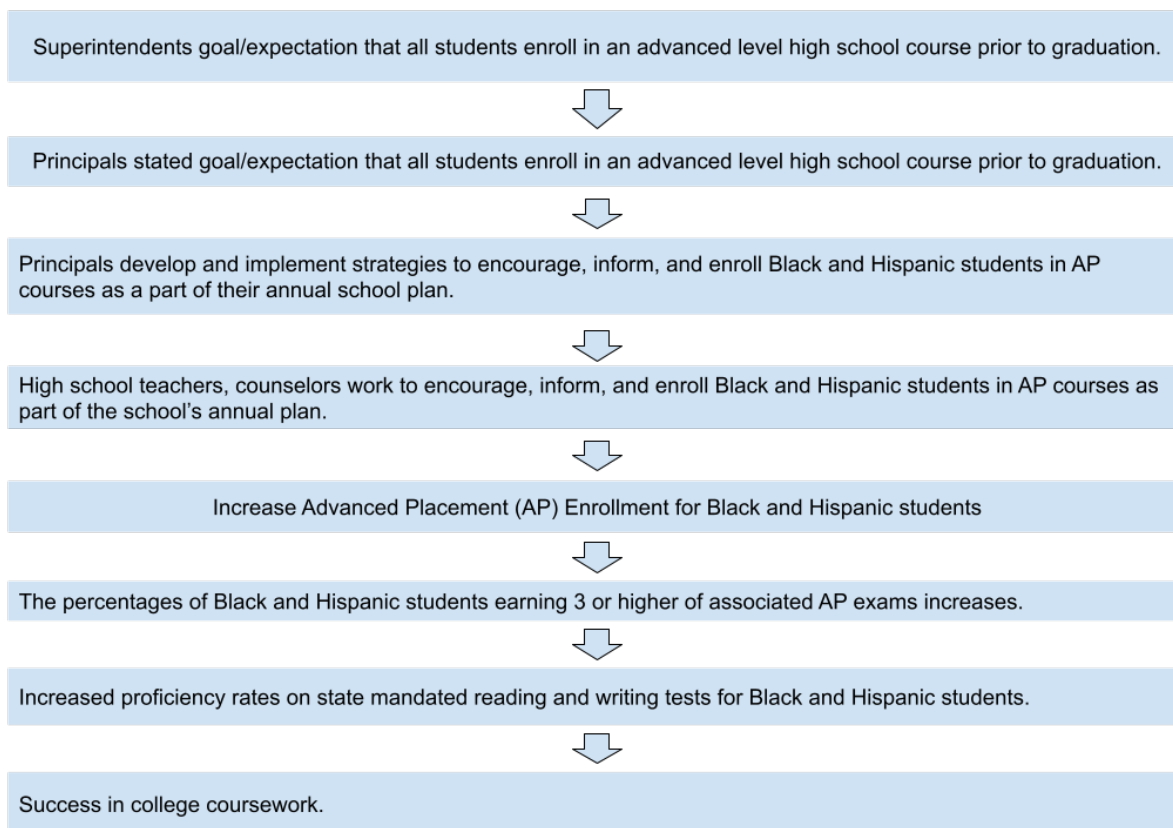
ensuring that all students have opportunities to challenging and engaging educational courses as a strategic plan challenge beginning in the 2011 - 2017 iteration. To address this challenge, schools were expected to ensure that students demonstrate advanced reading, writing, speaking and active listening skills. Performance in Advanced Placement (AP), dual enrollment (DE), and International Baccalaureate (IB) would be used to monitor progress and measure overall success for all students. More pointedly, the study site identified successful completion of a “higher level” course such as AP, DE, or IB prior to graduation as a desired outcome. Lastly, schools are directed to use performance on AP and IB exams to measure students’ ability to apply critical thinking, solve problems, and demonstrate creativity in all subject areas.

Embedded in stated goals is a commitment to eliminating the gaps in academic achievement that exist between various student cohorts. These include, but are not limited to, Black and Hispanic students who have been traditionally underrepresented in advanced level coursework. Data shared in support of these ambitions showed disproportionate Black and Hispanic AP participation over a three-year period (2009 - 2011). High school principals were required to develop an annual action plan which provided specific mission steps designed to meet stated division and school-level goals, to include improved AP participation for all students. These action plans must be available to the community and are reviewed by the superintendent and assistant superintendent of schools three times each year.

This study analyzed data from the 2011-12 school year through the 2018-2019 school year to identify the results of the school district’s initiative to increase the number of Black and Hispanic students enrolled in AP classes and have earned AP exam scores of three or higher. Data collected include AP participation rates, AP exam results, and state-wide mandated reading and writing exam results. It was hypothesized that increasing AP participation rates among

Black and Hispanic students will positively impact academic outcomes for each cohort both during and after high school. Expected benefits of the initiative included increased performance on state mandated reading and writing exams and increased college participation and completion rates for participating Black and Hispanic students.

A quantitative case study methodology was used to provide an analysis of the initiative to improve academic outcomes for Black and Hispanic students through increased AP participation. The data collected and corresponding analysis will help this district and other districts aspiring toward similar goals in identifying practices that are proven to be effective and those considered to be detrimental. Findings will prove especially helpful for teachers, counselors, assistant principals, principals, central office administrators, as well as school board members as they allocate funding and develop, implement, and maintain professional learning opportunities for faculty and staff. The accompanying analysis of the data will also serve as an accountability measure for school systems as they work to evaluate progress toward meeting strategic plan goals and objectives.

Figure 1*Conceptual Framework*

The conceptual framework of this study which was organized around the superintendent's vision to increase participation and performance of Black and Hispanic students in Advanced Placement courses. The researcher used the academic literature and the study site's strategic plan to guide the completion of this study. Student participation and performance in AP was collected and disaggregated by ethnicity for the school years 2011-12 through 2018-19. In addition to this data, results of state mandated English assessments were also collected and analyzed to determine if there is evidence of significant improvement for Black and Hispanic students during this time period. The conceptual framework articulated in Figure 1 below shows

how the superintendent's vision is operationalized through school leadership to accomplish stated strategic plan goals.

Definition of Terms

The following terms will be utilized throughout this study:

Achievement Gap – “Achievement gaps occur when one group of students (such as, students grouped by race/ethnicity, gender) outperforms another group and the difference in average scores for the two groups is statistically significant (that is, larger than the margin of error). NCES explored the achievement gaps between Black and White, and Hispanic and White, students using NAEP data to illuminate patterns and changes in these gaps over time, and identify factors that might underlie such gaps. These results are expected to be helpful to those interested in the improvement of education of our children.” (National Center for Education Statistics, 2015).

Advanced Placement (AP) – “The Advanced Placement (AP) Program offers 38 college-level courses and exams, in disciplines such as arts, English, history and social science, math and computer science, the sciences, and world language and culture, that can be taken in high school and potentially earn college credit. AP exams cost \$96 per exam for students testing in the United States and U.A. territories, Canada, and Department of Defense Schools. Exams are scored on a five-point scale.” (College Board, 2022) Table 12 below shows how The College Board (2022) views each score:

Table 12*AP Score Table*

AP Exam Score	Recommendation	College Course Grade Equivalent
5	Extremely well qualified	A+ or A
4	Very well qualified	A-, B+, or B
3	Qualified	B-, C+, or C
2	Possibly qualified	-
1	No recommendation	-

American College Testing (ACT) – “The American College Testing (ACT) is an entrance exam used by most colleges and universities to make admissions decisions. It is a multiple-choice, pencil-and-paper test administered by ACT, Inc. The purpose of the ACT test is to measure a high school student’s readiness for college, and provide colleges with one common data point that can be used to compare all applicants.” (The Princeton Review, 2021)

Grade Point Average (GPA) - The Grade Point Average (GPA) is a number, typically between 1.0 and 4.0, that illustrates academic performance across courses. The GPA can indicate academic performance over the course of a quarter/term, semester, year, and/or multiple years. GPAs are used by secondary and postsecondary institutions to predict a student’s capacity to meet expected academic rigor. Some secondary schools use GPA to permit enrollment into advanced courses. Postsecondary institutions use GPA as a part of the admissions formula.

National Assessment of Educational Progress (NAEP) – “The National Assessment of Educational Progress (NAEP) is a nationally mandated assessment of America’s students’ knowledge and ability in mathematics, science, and writing. The NAEP serves as a common measure of student achievement and is administered to a sampling of 4th, 8th, and 12th grade

students in each state and nationally by the National Center for Education Statistics (NCES), within the U.S. Department of Education and the Institute of Educational Sciences (IES).”

(National Center for Education Statistics, 2022)

Scholastic Aptitude Test (SAT) – “a test use in selecting candidates for college admission, formerly called the Scholastic Aptitude Test. It measures critical reading abilities, mathematical reasoning abilities, and writing abilities developed over time through work done in school and alone. The critical reading section (formerly called the verbal section) tests the ability to understand and analyze what is read and to recognize relationships between parts of a sentence. The mathematics section tests the ability to solve problems involving arithmetic, algebra, and geometry. The writing section tests the ability to organize thoughts, develop and express ideas, use language, and adhere to grammatical rules.” (“American Psychological Association,” n.d.)

Limitations/Delimitations

Limitations, or conditions that were out of the researcher’s ability to control, to this study include the timing of the student survey, the profile of the students studied, and the sample size of students surveyed. These methodological limitations have the potential to impact the conclusions drawn from the data collected. Future research on this topic would benefit from addressing each limitation to provide a more accurate understanding of how AP prepares all participating students, especially Black and Hispanic, for success both during high school as well as during postsecondary education.

The primary limitation of the study was that the data utilized did not control for the profile of the students. There is no differentiation made for students who were identified as gifted and received gifted services at any point in their educational career nor the level of educational attainment of parents or guardians, the socioeconomic status of the students, the

number or type of AP courses taken, nor the tenure of the teachers. Each of these factors may have helped students prepare for the academic rigors of AP prior to enrollment and therefore perform better on associated exams. Secondly, the relatively small sample size of student data analyzed may not provide a true representation of the Black and Hispanic population and therefore limited the researcher's ability to validate the statistical results or prove that the relationships were significant. Future research on this topic would benefit from addressing each limitation to provide a more accurate understanding of how AP prepares students for success in postsecondary education. Utilizing a larger sample size would remove the need to generalize the results on a larger population.

Organization of the Study

Chapter one of this study provides an overview including the purpose statement, research questions, and conceptual framework. Chapter two includes a literature review of prior empirical research regarding Advanced Placement and its impact on student achievement and college readiness. Chapter three provides the methodology to include the research procedures, setting, as well as data collection and analysis procedures. In chapter four, the researcher provides the data collected and the analyses. Chapter four also provides a discussion of each. Chapter five includes all major findings, implications of the findings, a discussion of how the results fit in the content of the relevant body of literature, suggestions for future research in the context of the relevant body of literature, and suggestions for future research and associated discussions.

Chapter II

Literature Review

The purpose of this study was to identify what change, if any, has occurred in Black and Hispanic AP participation and performance on AP, ACT, SAT, and state mandated reading and writing exams. This literature review provides a survey of research regarding the impact of AP enrollment and performance on both secondary and postsecondary students, specifically Black and Hispanic students. Literature reviewed includes (1) the AP program; (2) impact of participation in AP on postsecondary acceptance and success; (3) benefits and limitations of AP for Black and Hispanic students; (4) efforts made by schools, as well as local and state government entities to increase AP participation rates and success for Black and Hispanic students; and (5) a summary of findings.

Advanced Placement

The College Board, founded in 1900, partners with educational institutions world-wide to provide high school students with opportunities to prepare for postsecondary coursework through programs such as AP courses and assessments and the Scholastic Aptitude Test (SAT). “John Kemper created the first AP courses in 1954 after realizing high school students were capable of college-level learning and that high schools desired to provide such courses.” (Santoli, 2002) The College Board Website (2020) states that “Advanced Placement gives chances for motivated students to experience college-level courses in high school.” The College Board (2022) mandates that any course offered as “AP” be authorized by The College Boards AP Course Audit Process. This process compels schools to ensure that AP teachers are knowledgeable of the scope of the courses they teach and that they keep abreast of any exam amendments. School administrators are required to verify that only AP teachers have access to confidential exam

practice documents and teaching resources (College Board, 2020). While the College Board (2022) recommends that AP teachers receive specialized training, none is required to teach any AP courses.

The College Board offers 38 AP courses across “the arts, English, history and social science, math and computer science, the sciences, and world languages and culture.” (College Board, 2022) Students, including those who have not taken AP courses, sit for associated exams during the first two-weeks of May and exams results are provided to students and school shortly thereafter. AP exams receive scores of one through five, with five being the highest score. According to Campus Explorer (2021) approximately 58% of public colleges and 33% of private colleges award credit for AP exam scores of three or higher.

The College Board (2020) shows a 273% increase in the number of AP exams taken by students in the United States in the two-decades between 2000 and 2020. They also show that following the 2018-19 school year, the last school year not impacted by school closures due to Covid-19, a 43% increase in the number AP exams taken by high school graduates between 2010 and 2020. There was also an 11.2% increase in the percentage of the graduating class who sat for at least one AP exam during this same time period. The College Board further reported that during the 2018-19 school year, more than 22,000 schools administered in excess of 5 million AP exams to nearly 3 million students and reported scores to more than 4,000 colleges. In addition to increased AP participation over the decade between 2010 and 2020, student performance on associated exams has increased as well. The College Board (2020) showed a 52% increase in the number of U.S. public high school graduates who earned a score of three or higher on an AP exam which represents an 8.2% increase between 2010 and 2020.

Table 13*AP Exams by Score, 2000 and 2020*

Exam Score	2000	2020
5	189,262	754,754
4	268,223	1,040,965
3	355,845	1,216,429
2	295,662	983,724
1	163,325	711,085
Mean Score	3.02	3.03

The Impact of Participation in Advanced Placement on Postsecondary Acceptance and Success

Participation in AP enhances academic outcomes for students both during and after secondary school (Flowers, 2008; Kramer, 2016; Mo et al., 2011). AP courses offer a level of academic rigor that simulates that of the postsecondary environment, thereby preparing students for that challenge (CEEB, 2002). Research has proven that participation in the AP program is an accurate predictor of postsecondary enrollment (Chawkewski et al., 2011; Davis et al., 2017;), success in postsecondary coursework (Adelman, 1999; Davis et al., 2017; Flowers, 2008; Geiser & Santelices, 2004; Mattern et al., 2009; Micceri et al., 2009; Mustafa & Compton, 2017), and persistence to completion/degree attainment (Adelman, 2006; Davis et al., 2017; Dougherty et al., 2005; Flowers, 2008; Hargrove et al., 2008; Morgan & Maneckshana, 2000; Smith et al., 2017). This is especially true for students who sit for AP Exams and those who earn scores of three or higher (Dougherty & Mellor, 2010; Dougherty et al., 2006; Geiser & Santelices, 2004;

Mattern et al., 2009; Murphy & Dodd, 2009; Warne et al., 2015). Additionally, AP participation increases the likelihood that students will be viewed as attractive candidates for postsecondary enrollment by admissions officials (Evans, 2015).

College admissions officials use an intricate formula to determine which students should be invited to attend their postsecondary institutions. The National Association for College Admission Counseling (2015) shows that postsecondary colleges and universities utilize grade point average (GPA), Scholastic Aptitude Test (SAT) scores, participation in extracurricular activities, and level of academic rigor in which the student engaged, among others factors, to determine which students should be admitted. National Association for College Admission Counseling research also shows that 79% of colleges see performance in college level coursework as the most salient consideration when considering students for enrollment. In support of this research, NACAC found that the top factors identified by admissions offices for first-time freshmen “were overall high school GPA, grades in college preparatory courses, strength of curriculum, and admission test scores.” (National Association for College Admission Counseling, 2019)

AP course enrollment promotes participating students as attractive candidates for enrollment in selective four-year colleges and universities (Geiser & Santelices, 2004; National Research Council, 2002; Sathre & Blanco, 2006; Schneider, 2009). Total GPA and grades in college preparatory courses were each rated as considerably important by 77% of colleges. The National Association for College Admission (2016) found that admission test scores and strength of curriculum were rated considerably important by more than half of colleges (54% and 52% respectively). Because it is commonplace for high schools to award students weighted credit for grades earned in college preparatory courses, such as AP, these students traditionally have higher

GPA than do their non-participating peers, which makes them more attractive candidates for post-secondary admission.

The positive impact of Advanced Placement participation extends well beyond the high school experience. Once enrolled in a college or university, participation in AP during high school has proven to be associated with positive college outcomes (Ackerman et al., 2013; Morgan & Maneckshana, 2000; Morgan & Ramist, 1998). Students who engage in AP courses and take AP exams are more likely to earn a post-secondary degree, align college courses with their AP experiences, have a higher GPA, and graduate within four to five years (Mattern et al., 2013). Lastly, the majority of American colleges and universities award credits for AP exam scores of three or higher on most content AP exams thereby increasing the likelihood that students will persist toward college completion (Dougherty et al., 2006; Smith et al, 2017).

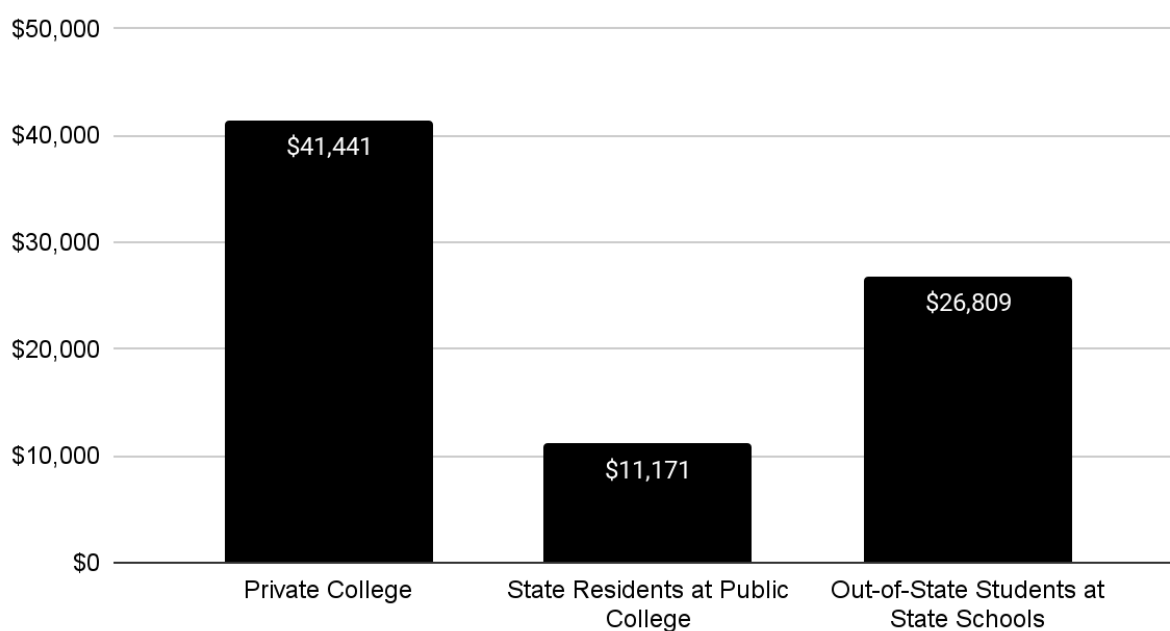
Research has shown that sitting for AP exams benefits students, regardless of the score earned and that having earned an AP exam score increases the likelihood of college enrollment, increases persistence rates, and decreases the need for remediation in college (Indiana Commission for Higher Education, 2015; Mattern et al., 2009). While AP participation and the practice of sitting for exams is associated with improved academic outcomes both in high school and in postsecondary settings, higher exam scores are more closely associated with positive postsecondary outcomes (Bleske-Rechek, Lubinski, & Benbow, 2004). Addleman (1999) found that the quality of coursework, to include AP, served as a more accurate predictor of bachelor's degree attainment than were SAT test scores, high school rank, or GPA.

Taking one or more AP exams during high school increases the likelihood that students will graduate from college in four years when compared with students who did not participate in AP, regardless of scores earned on exams (Mattern et al., 2013). Additionally, Flowers (2008), in a longitudinal study of 15,000 students, found that AP participants were more likely to have

higher undergraduate GPAs than non-participants. Findings by Geiser and Santelices (2004) identified AP exam scores as an accurate predictor of college GPA. Morgan and Maneckshana (2000) also found that students who earned an AP exam score of three or higher were more likely to graduate within five-years than students who earned a score lower than three and those who took AP courses, but did not take an AP exam. This faster pace to graduation may be a result of the fact that students who took AP exams are more likely to have declared a major than are non-AP students (Mattern, Shaw, Ewing, & College Board, 2011), which is important due to the high price of earning a college degree. According to the U.S. News & World Report annual survey, tuition and fees for the 2020-21 school year average \$41,411 for private colleges, \$11,171 for state residents at public colleges, and \$26,809 for out-of-state students at state schools.

Table 14

Average Cost of Tuition and Fees, 2020-2021



U.S. News & World Report, 2021

Recent findings show “that students who earn a 3 or higher on an AP exam perform well in subsequent college courses in the discipline; are more likely to major in their AP subject or a related discipline.” (College Board, 2016). Students who take AP exams, especially in STEM related subjects, are more likely than non-AP exam takers to major in the discipline related to the exam taken in high school (Mattern et al., 2011). In addition to an increased likelihood of earning more college credit hours in courses related to AP exams taken than did non-exam takers, AP exam takers also experienced higher college subject-area GPAs than students who did not take a related AP exam (Murphy & Dodd, 2009).

Prior studies on the impact of AP illustrate that earning a score of three or higher on associated AP exams leads to better academic outcomes when compared to students who have either scored below three on AP exams or did not take AP exams (Dodd et al., 2002; Morgan & Maneckshana, 2000), this is especially true in postsecondary courses related to exams (Keng & Dong, 2008; Morgan & Klaric, 2007). Additionally, success on AP exams has shown to improve GPA for corresponding introductory college courses (Patterson, Packman, & Korbin, 2011). Further research has shown that students who earned college credit through AP exam scores and were exempted from introductory college courses outperform students who completed introductory college courses in subsequent courses (Morgan & Klaric, 2007).

Benefits and Limitations of Advanced Placement for Black and Hispanic Students

AP has become synonymous with college preparation throughout American high schools, and participation rates for all ethnic groups have consistently increased over the past decade. This is especially true for Black and Hispanic students as school districts nationwide have sought to increase accessibility to this rigorous academic environment as a way to ameliorate persistent opportunity and achievement gaps that exist between underrepresented minorities and White

students (Clark et al., 2012). These efforts are supported by a growing collection of research that illustrates the benefits of AP participation as a method to prepare students for postsecondary study. According to The College Board (2021), the percentage of both Black and Hispanic students who participate in AP and who have earned exam scores of three or higher has increased between 2000 and 2010, Blacks continue to lag behind their peers in both metrics. However, as stated earlier, Hispanics were overrepresented among exam takers and among those who earned a score of three or higher on an associated AP exam. The College Board combined their 2007 cohort database of more than 2.5 million Advanced Placement (AP) students with data from over three thousand, two- and four- year colleges and universities from the National Student Clearinghouse (NSC) to show that Black and Hispanic students from low socioeconomic status (SES) backgrounds who participated in AP were more likely to attend either a two- or four-year college upon graduation, graduate with a higher GPA, and persist to a second-year of postsecondary schooling than Black and Hispanic students who did not participate. NCEA (2005) research shows that Black and Hispanic students who took an AP course, but not an exam, were 20% and 15% more likely to attend college after graduation respectively than those that did not take an AP class. Findings also show that Black and Hispanic students who passed AP exams were 16% and 25% more likely to graduate from college respectively than students who took exams, but did not pass (Dougherty et al., 2005).

Unfortunately, research has demonstrated that while AP participation benefits Black and Hispanic students, compiled data indicates that Black and Hispanic students historically have enjoyed less access to AP courses (Siegel-Hawley, Taylor, Frankenberg, & Bridges, 2021) and that neither group performs as well on associated exams as other ethnic cohorts (College Board, 2020). Black and Hispanic students earn AP exam scores of 3 or higher at a lower rate than do White and Asian students (Judson & Hobson, 2015; Mattern et al., 2009). The College Board

(2019) reports that Black and Hispanic students consistently have the lowest mean scores on AP exams when compared with other ethnic groups.

Table 15

AP Exam Mean Score by Ethnicity, 2017, 2018, and 2019

Byrd	Mean Score		
	2017	2018	2019
Asian	3.25	3.31	3.34
Black	2.03	2.07	2.09
Hispanic	2.39	2.44	2.46
White	3.02	3.04	3.04

While the results present a bleak view of Black and Hispanic performance on various AP exams when compared to other ethnicities, research is more positive when comparing participating Black and Hispanic students to non-participants from the same groups. Between 2003 and 2013, Black and Hispanic students represent higher percentages of both AP participants as well as exam takers.

Table 16

Percentage of Graduating Class and AP Exam Takers, Black and Hispanic, 2003 and 2013

	% of Graduating Class 2003	% of AP Exam Takers 2003	% of Graduating Class 2013	% of AP Exam Takers 2013
Black	13.2	5.8	14.5	9.2
Hispanic	12.4	12.4	18.8	18.8

The College Board’s 10th Annual AP report, published in 2014, shows that 20.1% of the U.S. public high school graduating class of 2013 scored a three or higher on an AP exam during high school and this represents a 7.9-point increase between 2003 and 2013 (College Board, 2014). The report also illustrates persistent Black and Hispanic AP exam participation and performance gaps for this same 10-year period. According to College Board’s data, during the decade between 2003 and 2013, Black and Hispanic AP students have become a larger percentage of the graduating class, AP exam takers, and those earning exam scores of 3 or higher. The data also show that while the percentage of Black and Hispanic students earning a score of 3 or higher on associated AP exams increased during this time by 1.7 and 3.9 percentage points respectively, increases for each cohort lagged behind the national average which increased by 7.9 percent.

Table 17

Demographics of the Graduating Class and AP Exam Takers, 2013

Ethnicity	Percentage of Overall Graduating Class	AP Exam Taker Population	Population Scoring 3+ on an AP Exam
Asian	5.9	10.7	12.7
Black	14.5	9.2	4.6
Hispanic	18.8	18.8	16.9
White	58.3	55.9	61.3

According to The College Board (2019), Black and Hispanic students continue to earn AP exam scores of three or higher at lower rates than either Asian or White students. While 73% of Asian and 64% of White students earned scores of three or higher on AP exams; 32% of Black

and 45% of Hispanic students did. Both Black and Hispanic AP exam takers scored below the 2019 national average scores of three which was 59%. As stated earlier, The College Board reports that following the 2019-20 school year Asian and Hispanic students were overrepresented among both AP exam takers and those earning scores of three or higher on exams, while both Black and White students were underrepresented in each metric.

Table 18

Demographics of the Class of 2019 and AP Exam Takers in the Class of 2019

Ethnicity	Percentage of Overall Graduating Class	AP Exam Taker Population	Population Scoring 3+ on an AP Exam
Asian	6.3	10.1	12.4
Black	14.4	8.6	4.3
Hispanic	24.0	26.7	24.7
White	54.8	48.3	52.6

Table 19

AP Participation and Performance by Ethnicity, 2021

Ethnicity	% of Class	% of Exam Takers	% of Exam Takers Population Scoring 3 or Higher
Asian	6.4	10.3	12.7
Black	14.2	8.3	4.6
Hispanic	24.7	26.6	24.8
White	54.3	47.6	51.0

Table 20*AP Score Distribution by Ethnic Group & Total, 2019*

Ethnicity	Test Score				
	1	2	3	4	5
Asian	10%	18%	25%	24%	24%
Black	40%	28%	19%	9%	4%
Hispanic	29%	26%	22%	15%	8%
White	12%	23%	28%	22%	14%
Total	18%	23%	25%	20%	14%

“Over the past decade, the number of students who graduate from high school having taken rigorous AP courses has nearly doubled, and the number of low-income students taking AP has more than quadrupled. Impressively, educators’ work to bring more students into AP courses has resulted in a larger increase in the number of qualifying AP Exam scores (the scores typically required for college credit) than in the number of low AP scores” (College Board 10th Annual AP Report to the Nation, 2014). The College Board reports that of the nearly 5 million AP exams administered during the 2019-20 school year, 16% were taken by Asian students, 6% by Black students, 21% by Hispanic students, and 49% by White students.

Participation Gaps

In his research study, *Racial Differences in Advanced Placement Programs*, Flowers found that among approximately 15,000 survey respondents, 13% of whom were African American and 10% were Hispanic, “African-American and Hispanic students who participated in AP programs scored more than 100 points higher on college entrance examinations than did

African American and Hispanic students who did not participate in AP programs.” (Flowers, 2008)

According to The College Board during the decade between 2003 and 2013, AP course enrollment and exams taken increased for traditionally underrepresented cohorts. During this time, low-income participation increased from 11.4% in 2003 to 27.5% in 2013. The number of low-income students who took at least one AP exam during this time more than quadrupled. In addition to increasing the number of traditionally underrepresented cohorts, The College Board also reported an overall 7.9-point increase in the percentage of students scoring a three or higher on an AP exam during this decade. College Board data from 2014 show that while 72% of Asian and 66% of White AP exam takers earned at least one score of three on an associated AP exam, 32% of Black students and 50% of Hispanic students did so (College Board, 2014; Jaschik, 2015;). By comparison, the College Board (2020) reports that while each ethnic cohort has improved, Black and Hispanic students continue to earn AP exam scores of three or above at lower rates than do Asian and White students.

Table 21

AP Exam Scores of three or Higher Between 2014 and 2020 by Ethnicity

Ethnicity	% 3 or Higher 2014	% 3 or Higher 2020	Change
Asian	72	76	+ 4
Black	32	41	+9
Hispanic	50	52	+2
White	66	67	+1
National Total	59	64	+5

The College Board (2019) reports that between 2017 and 2019 Black and Hispanic students consistently have the lowest mean scores on AP exams when compared with other ethnic groups.

Table 22

AP Exam Mean Score by Ethnicity, 2017 - 2019

Ethnicity	2017	2018	2019
Asian	3.25	3.31	3.34
Black	2.03	2.07	2.09
Hispanic	2.39	2.44	2.46
White	3.02	3.04	3.04

The Impact of Advanced Placement on Black and Hispanic Academic Performance

Research conducted by Dougherty et al. (2006) shows a 28% increase in the probability of college graduation within five years or less for both Black and Hispanic AP participants when compared to Black and Hispanic non-participation peers.

Black and Hispanic students who participated in AP programs were more likely to earn a bachelor's degree and an advanced degree than were African American and Hispanic students who did not participate in AP programs. Additionally, those who earned a score of three or higher on associated exams were more likely to graduate from college than non-participating peers (Flowers, 2008; Mustafa & Compton, 2017). As the graph below shows, while comparisons within ethnic cohorts illustrate positive outcomes for AP participants, when compared to Asian and White students, underrepresented minorities, Black and Hispanic students, lag behind their counterparts regarding four-year graduation rates (Matten, et al. 2013).

Table 23*Expected Four-Year Graduation Rate by AP Performance*

AP Exam Score	Underrepresented Minorities (Black and Hispanic)	Asian and White
1	39	47
2	45	53
3	50	59
4	56	64
5	62	69

As mentioned earlier, research demonstrates that AP participation benefits students both during high school as well as during postsecondary study and that these benefits increase for students across the AP participation spectrum. There are benefits for participating students who take associated AP exams but do not earn a score of three or higher, those who participated in AP courses but did not sit for associated exams, and those who earned scores of three or higher on associated exams (Dougherty et al., 2006). As Table 18 below shows, Black and Hispanic AP participants have higher college graduation rates when compared with non-participants (Dougherty et al., 2006).

Table 24*Differences in College Graduation Rates: AP Participants Vs. Non-Participants, 2006*

Ethnicity	Took AP Course, No AP Exam	Took, Did Not Pass AP Exam	Passes AP Exam
Black	20	26	43
Hispanic	15	21	45

*Efforts to Increase Advanced Placement Participation and Success Rates for**Underrepresented Student Groups*

The College Board, local school districts, state departments of education, and the federal government have all sought strategies to increase AP participation rates for Black and Hispanic students. Each entity has offered varying degrees of financial support and political guidance to bolster local school districts' ability to offer AP to all students. The Education Commission of the States (2016) identified twenty states that offer financial incentives to support the development or expansion of AP and that twenty-eight states support student access to AP by offering pre-AP instruction and/or online course offerings. These supports include start-up costs, teacher bonuses affixed to students' AP success, and/or student financial rewards for AP success. The Education Commission of the States also found that in 2016, eight states and the District of Columbia require that all schools or districts offer AP courses and that fourteen states require all high schools or districts to offer advanced coursework, which includes AP courses.

The United States Department of Education (2019) maintains an incentive program designed to provide financial support to school districts that increase participation of students from low-income homes in both pre-AP and AP courses and exams. "The Department of

Education offers 3-year competitive awards to State educational agencies, local educational agencies, or national nonprofit educational entities with expertise in providing advanced placement services. Grants must be used to expand access for low-income individuals to Advanced Placement programs.” (United States Department of Education, 2019) “Funds from the program permit States and local educational agencies to give more low-income students the opportunity to take Advanced Placement classes and participate in other challenging programs. Eligible activities include teacher training, development of pre-Advanced Placement courses, coordination and articulation between grade levels to prepare students for academic achievement in Advanced Placement classes, books and supplies, and participation in online Advanced Placement courses.” (United States Department of Education, 2019)

Additionally, the United States Department of Education’s “Advanced Placement Test Fee (APTF) program awards grants to eligible State Educational Agencies (SEAs) to enable them to pay all or a portion of advanced placement test fees on behalf of eligible low-income students who (1) are enrolled in an advanced placement course and (2) plan to take an advanced placement test. The program is designed to increase the number of low-income students who take advanced placement tests and receive scores for which college academic credit is awarded.” (United States Department of Education, 2014) In 2014 the United States Department of Education awarded \$28,483,000 across 42 states and the District of Washington, D.C. through the APTF program.

School districts also utilize funding through the Student Support and Academic Enrichment Program (SSAE), or Title IV of the Every Student Succeeds Act (ESSA), signed into law in December of 2015. “The purpose of this subpart is to improve students’ academic achievement by increasing the capacity of States, Local Educational Agencies (LEA), schools, and local communities to— (1) provide all students with access to a well-rounded education; (2)

improve school conditions for student learning; and (3) improve the use of technology in order to improve the academic achievement and digital literacy of all students.” (National Center on Safe Supportive Learning Environments, 2020)

In addition to funding incentives from the federal government, states also earmark funds to support the growth of AP for underrepresented students. The Education Commission of the States (2016) identified 38 states with state funded programs designed to encourage access to AP. State funding programs establish mandates and provide funding to offer a variety of support for students and educators. Programs include, but are not limited to, the development of pre-AP courses, offer professional development, inform students and families of the AP offerings available at their high school, vertically articulate instructional practices to prepare students for the challenge of AP coursework, teacher incentives, compensate tutors, and other strategies designed to expand access to AP courses and improve outcomes on AP exams. An example of state sponsored support for AP includes the Texas Education Agency which has instituted a state subsidy provided through the Advanced Placement (AP)/International Baccalaureate (IB) Incentive Program for the May 2019 administration will be \$32 per AP and IB exam taken by an eligible student (Texas Education Agency, 2020).

Students become eligible for this subsidy by participating in the free or reduced-price meal program. Another example is the Colorado legislature which has developed an advanced placement incentive program that prioritizes rural and small rural public high schools with a percentage of students eligible for free or reduced-price meals that exceed the state average. “The Advanced Placement Incentives Program C.R.S. 22-95-105, AP Incentives, began during the 2014-15 academic year. The program is designed to incentivize the implementation and/or expansion of Advanced Placement programs to build capacity for increased Advanced Placement participation in rural and small rural school districts across Colorado.” (Colorado Department of

Education, 2020) Arkansas mandates that school districts must offer pre-AP courses and that vertical teams be developed to vertically align work across grade levels to support the development of academic skills in students from diverse backgrounds (Arkansas Department of Education, 2022). The Arkansas statute also allows for subsidies of up to \$650 per pre-AP teacher for training. California superintendents are annually required to update AP access information and inform high schools offering fewer than five AP subjects of options to increase AP offerings.

Beyond contributions from federal and state agencies, the private sector also provides funding to support AP. This includes the College Board, which maintains a Fee Reduction program to support students with a financial need. Students are identified “...based on eligibility for free or reduced-price lunch in an attempt to introduce the benefits of AP Exam participation to students most at risk in the education system.” (Wyatt, J., & Mattern, K., 2011) “If you have significant financial need, you may be eligible for a \$32 College Board fee reduction per AP Exam, depending on the state in which you attend school. Most states provide federal or state funds, or both, to supplement the College Board fee reduction and reduce your cost even further. Check with your AP coordinator to find out what support may be available to you.” (College Board, 2020)

The Regional Educational Laboratory Program (2021, pg. 1) identified the following strategies to schools hopeful of expanding access to AP courses:

- “Open enrollment: Allow any student to enroll, regardless of prior test scores and grades.
- Personal recruiting: Teachers, counselors, and administrators talk to students and parents about the benefits of AP and encourage them to enroll.

- Incentives for teachers: Expand the number of teachers who want to teach AP by providing subsidies or bonuses.
- Incentives for students: Subsidize exam fees through initiatives such as the national Advanced Placement Test Fee program. Provide cash bonuses for students who achieve certain scores. Waive the course's final exam for students who take the AP exam.
- Requirements for students: Require students to take certain AP courses or a course of their choice.
- "College readiness" program that encourages AP participation.

Summary

Research has demonstrated the effectiveness of AP as a mechanism for preparing high school students for success in postsecondary settings (Adleman, 1999; Adleman, 2006; CEEP, 2002; Chawkeski et al., 2011; Daugherty et al., 2005; Davis et al., 2009; Davis et al., 2017; Flowers, 2008; Geiser & Santelices, 2004; Hargrove, et. al, 2008; Mattern et al., 2009; Matthews, 2002; Micceri et al., 2009; Morgan & Maneckshana, 2000; Mustafa & Compton, 2017; Smith et al., 2017). Success in AP courses, and especially on associated AP exams portends success in future academic endeavors (Geiser & Santelices, 2004; Morgan & Maneckshana, 2000;). School systems across the United States have sought to ensure that all high school graduates are both prepared to meet the rigors of college level coursework, and that they are attractive candidates for admission. College admissions officials have made it clear that AP participants, and especially those who do well on associated exams are most likely to be admitted.

In addition to helping high school students prepare for postsecondary admittance, AP participation also has proven to serve as an accurate predictor of success in this environment. Researchers have proven that AP participation and success enhance the likelihood of positive outcomes while in college to include higher grade point average, persistence, and graduation when compared with non-AP enrollees. The existence of empirical evidence showing the effectiveness of AP as a mechanism to prepare students for college lends credence to school systems who endeavor to increase student participation across subgroups. While the benefits of AP participation are evident in each ethnic subgroup, increased participation for both Black and Hispanic public-school students over the past two decades have not closed the performance gap as both Asian and White students continue to outperform Black and Hispanic students on associated exams (College Board, 2022). Kolluri (2018) used data from the National Center of Educational Statistics to show that while the percentage of Black and Hispanic public-school graduates with AP credit has increased by 300% and 247% respectively between 1994 and 2013, each continues to fall below that of Asian and White students which grew by 237% and 272% respectively over the same time period.

Chapter III

Project Design and Methodology

This research study explored the results of a school system's initiative to increase the percentage of Black and Hispanic students who participate and do well in Advanced Placement courses. The study included a quantitative review of AP participation, as measured by those AP students who sat for an associated AP exam, AP exam performance as well results on ACT, SAT, and state mandated English assessments in reading and writing for Black and Hispanic, taken by all 11th grade students, between the school years 2011-12 to 2018-19. Although results for the school years between 2019-20 and 2020-21 were available, these years were impacted by school closures due to the school system's response to the Covid-19 pandemic.

The purpose of this chapter is to review the research questions, describe the research methodology, provide the rationale for the data collected, and explain how the data will be analyzed.

Research Questions

1. What change, if any, has occurred in Black and Hispanic AP participation between the 2011-12 and 2018-19 school years?
2. What change, if any, has occurred in Black and Hispanic AP performance between the 2011-12 and 2018-19 school years?
3. What change, if any, has occurred in Black and Hispanic AP participants' performance on the ACT exam between the 2011-12 and 2018-19 school years?
4. What change, if any, has occurred in Black and Hispanic AP participants' performance on the SAT exam between the 2011-12 and 2018-19 school years?

5. What change, if any, has occurred in Black and Hispanic AP participants' performance on state mandated reading and writing exams between 2011-12 and 2018-19 school years?

Quantitative Research

The purpose of this study was to identify what change, if any, has occurred in Black and Hispanic AP participation and performance on AP, ACT, SAT, and state mandated reading and writing exams. In addition to increasing the number of Black and Hispanic students who participate and do well, an additional goal is to improve overall academic achievement, as measured by success on state mandated reading and writing exams administered at the end of the 11th grade year, for the Black and Hispanic students who participate in the AP program. Success on these assessments is measured by the number of Black and Hispanic 11th grade AP participants who earn scores of 400 or higher on both the 11th grade reading and writing assessment. A quantitative study was used to identify results of the initiative because the researcher collected and analyzed data sought to provide a numerical explanation/review of a phenomenon over time in order to test the hypothesis (Babbie, 2010; Cresswell, 2018; Hoy & Adams, 2015; Matthews & Ross, 2010; Muijs, 2004; Sukamolson, 2007).

Research Procedures

In order to answer specific questions regarding the AP participation rates and performance levels of Black and Hispanic students between 2012 and 2019, the study will collect and analyze quantitative data using t-tests and analysis of variance (ANOVA) tests where appropriate. T-tests were used to determine if there was a significant difference in AP participation rates and performance levels for Black and Hispanic students during this time

period. Analysis of variance (ANOVA) tests were used to determine if there was a significant difference in Black and Hispanic AP participant (those who sat for an associated AP exam) ACT, SAT, and state mandated reading and writing exam performance over time. Quantitative research was selected because it provides the basis needed to offer an overall summary of the status of Black and Hispanic participation and performance in AP classes to determine if increases in each have occurred during the defined time period (Cresswell, 2012). Quantitative research will also benefit future investigations into this relationship as it will provide standardized processes which can be replicated in other settings by other researchers for comparisons.

A downside to utilization of qualitative research singularly is that it does not allow for a consideration of the contextual circumstances that may have impacted results. This lack of context may negatively impact results and lead to misperceptions. Student participation and performance data does not take factors such as socioeconomic status, parental education level, giftedness, participation in AP preparation programs, and special education services into account.

Setting

The study was conducted in a midsized, diverse district who intentionally sought to increase the percentage of Black and Hispanic students enrolled in AP courses and allocated funding to promote increased participation for more than a decade. AP is offered at each of the district's comprehensive high schools and high school programs. Specifically, the study site is a suburban mid-Atlantic community of 226,000 and a student population of approximately 26,900. The school district has a diverse student population with 45% of the student population consisting of White students, 28% Hispanic, 10% Black, 9% Asian and 7% identified as Multiple Races. The median household income for all residents is 108k. The median household income

for Hispanic and Black families is \$67.4k and \$61.2k respectively, and for White families is \$125.5k. The school district is well funded, serves a diverse community and is regularly recognized as one of the highest rated districts in the country in regard to metrics such as Advanced Placement exam results, Scholastic Aptitude Test results, and college acceptance rates.

The National Center for Education Statistics (2017) found that 69% of White students were prepared for college enrollment immediately upon high school graduation. This is compared to 67% for Hispanic students, 87% for Asian students, and 58% for Black students. Research shared on the district's website shows that the immediate college enrollment rate rose between the years of 2000 and 2017 for Asian, Hispanic, and White students; however, it remained static for Black students. The district has focused on increasing the number of Black and Hispanic students that are prepared to immediately enroll in postsecondary school upon graduation by making a collective, purposeful, and sustained effort to increase the number of students from each cohort that enroll in and successfully complete Advanced Placement (AP) coursework during high school.

Data Collection Procedures

The study collected data from AP students who sat for AP exams, state mandated reading and writing assessments for all students for the school years between 2012 and 2019. The study site maintains student participation and performance data electronically. The researcher gained access to student participation and performance data through an application for research and evaluation study offered by the study site. Data was organized by AP test participation and non-AP participation by ethnicity, AP performance by ethnicity, and was collected without either student name, identification number, nor any other personally identifying information. The

researcher received data via password protected email and maintained it in a password protected document file on a password personal computer.

Data Analysis Techniques

The data were collected to answer the five research questions were numeric and were used to identify differences over time between and among ethnicities, and between AP participants and nonparticipants. As stated earlier, t-tests and ANOVA were used to identify statistical significance when appropriate. T-tests were used to identify if the independent variable significantly contributes to the dependent variable (Field, 2009). Performance comparisons on ACT, SAT, and state mandated reading and writing tests over time were made within ethnicities (Asian, Black, Hispanic, and White) between students enrolled in AP and sat for an AP exam and those who were not, using t-tests. ANOVA tests were used to identify significant statistical differences in AP performance by ethnicity.

Summary

The purpose of this study was to identify what change, if any, has occurred in Black and Hispanic AP participation and performance on AP, ACT, SAT, and state mandated reading and writing exams. The researcher used deidentified student participation and performance data to conduct tests for significance. These tests included Pearson's chi-square tests to identify significance in AP participation and performance; and One-way ANOVA tests for performance on ACT, SAT, and state mandated reading and writing exams. Chapter 4 provides an analysis of the pertinent data with accompanying tables and narrative descriptions.

Chapter IV

Data Analysis

The purpose of this study was to identify what change, if any, has occurred in Black and Hispanic AP participation and performance on AP, ACT, SAT, and state mandated reading and writing exams. Researchers used parametric and nonparametric analysis to determine statistical significance in AP participation and performance for Black and Hispanic students between 2011-12 and 2018-19. This chapter will provide narratives and be accompanied by tables to provide descriptive demographic information and to illustrate the findings of the following specific research questions:

1. What change, if any, has occurred in Black and Hispanic AP participation between the 2011-12 and 2018-19 school years?
2. What change, if any, has occurred in Black and Hispanic AP performance between the 2011-12 and 2018-19 school years?
3. What change, if any, has occurred in Black and Hispanic AP participants' performance on the ACT exam between the 2011-12 and 2018-19 school years?
4. What change, if any, has occurred in Black and Hispanic AP participants' performance on the SAT exam between the 2011-12 and 2018-19 school years?
5. What change, if any, has occurred in Black and Hispanic AP participants' performance on state mandated reading and writing exams between the 2011-12 and 2018-19 school years?

Table 25, Table 26, and Table 27 provide descriptive data of the sample.

Table 25*Frequencies and Percentages for Categorical Variables of the Overall Student Sample*

	N	%
School Year		
2011-2012	3314	10.7
2012-2013	3635	11.7
2013-2014	3791	12.2
2014-2015	3748	12.1
2015-2016	3884	12.5
2016-2017	4100	13.2
2017-2018	4329	14.0
2018-2019	4157	13.4
AP Course taken by student		
No	27961	90.3
Yes	2997	9.7
Ethnicity (5 groups)		
Asian	2958	9.6
Black	3398	11.0
Hispanic	7258	23.4
White	15499	50.1
Other	1845	6.0
Test Type		
SOL writing	10867	35.1
SOL reading	10772	34.8
SAT	6480	20.9
ACT	2839	9.2

Table 25 above provides information regarding overall sample size of students. Participation between 2011-2012 and 2018-2019 ranged from a high of 4,329 or 14% of the sample in 2017-2018 and a low of 3,314 or 10.7% of the sample in 2011-2012. Table 1 also provides disaggregated data regarding AP participation. The data showed that 9.7% or 2997 students participated in AP courses. Additionally, Table 1 shows that 50.1% or 15,499 of AP participants between relevant years were White. Finally, Table 1 disaggregates test type

administered for all students in the sample. Between 2011-2012 and 2018-2019 35.1% of all students or 10,867 students sat for the State mandated writing exam while 9.2% or 2,839 sat for the ACT.

Table 26

Frequencies and Percentages for Categorical Variables of the Black and Hispanic Student Samples

	<u>Black</u>		<u>Hispanic</u>	
	N	%	N	%
School Year				
2011-2012	407	12.0	789	10.9
2012-2013	446	13.1	835	11.5
2013-2014	370	10.9	926	12.8
2014-2015	446	13.1	874	12
2015-2016	445	13.1	882	12.2
2016-2017	435	12.8	1012	13.9
2017-2018	426	12.5	929	12.8
2018-2019	423	12.4	1011	13.9
AP Course taken by student				
No	3086	90.8	6281	86.5
Yes	312	9.2	977	13.5
Test Type				
SOL writing	1311	38.6	2864	39.5
SOL reading	1313	38.6	2823	38.9
SAT	603	17.7	1150	15.8
ACT	171	5.0	421	5.8

Table 26 above provides the number of Black and Hispanic students in the sample between 2011-2012 and 2018-2019 as well as the percentage they represent across years within each cohort. Black students ranged from 446 or 13.1% (twice) and 370 or 10.9% and Hispanic students ranged from 1,012 or 13.9% and 789 or 10.9%. Table 2 also provides data showing the number of Black and Hispanic students who participated in AP and those who did not throughout

the years of the study. 312 Black students and 977 Hispanic students participated in AP during the study years. 9.2% of Black students and 13.5% of Hispanic students participated in AP during the study years. Finally, Table 2 shows the number and percentage of each cohort who sat for various tests. 1,313 or 38.6% of Black students sat for the state mandated reading test while 171 or 5.0% sat for the ACT. 2,864 Hispanic students or 39.5 sat for the state mandated writing test while 421 or 5.8% sat for the ACT.

Table 27

Means and Standard Deviations for Continuous Variables for the Overall, Black, and Hispanic AP Student Samples

	N	Mean	SD	Min	Max
Overall student sample					
SOL writing	1094	478.01	58.39	301.00	600.00
SOL reading	1075	454.47	47.38	.00	600.00
SAT	555	1402.72	355.80	640.00	2360.00
ACT	273	25.76	5.15	14.00	35.00
Black student sample					
SOL writing	118	339.00	600.00	450.37	47.28
SOL reading	116	.00	576.00	434.57	54.81
SAT	59	670.00	1970.00	1223.56	287.96
ACT	19	17.00	32.00	22.11	4.18
Hispanic student sample					
SOL writing	398	301.00	600.00	453.44	51.45
SOL reading	391	303.00	598.00	435.26	38.01
SAT	140	640.00	2040.00	1239.29	279.07
ACT	48	14.00	34.00	21.85	4.47

Sample size Black AP participants sitting for ACT exams is too small to report

Table 27 above provides data regarding overall student test score means, standard deviations, and score minimums and maximums for the years 2011-2012 through 2018-2019. Overall numbers of test participants ranged from 1,094 state mandated writing tests and 273

ACT tests. Table 27 above also shows that scores were most tightly clustered for all students on the ACT where the standard deviation was 5.15, and most loosely clustered on the SAT. Table 3 also provides test participation and results for Black and Hispanic students. More Black and Hispanic students sat for the state mandated writing test than any other test. Black student test scores were most tightly clustered on the state mandated writing text (47.28) and most loosely clustered on the SAT, while Hispanic scores were most tightly clustered on the ACT and most loosely clustered on the SAT. The number of Black students who sat for the ACT did not meet the minimum of 30 students and is therefore not provided. Minimums and maximums are provided to bring context to decisions made regarding significance in later tables as they were used to eliminate outliers, as they would skew results.

The results of parametric and nonparametric statistical analysis provided the following findings regarding the studies research questions. Superscripts in tables below show significance at $p < .05$. The superscript a in two columns shows that there is no statistical significance between the two numbers in the same table. A number with a superscript a is significantly different from a number with a superscript b or c in the same table. Numbers with multiple superscripts show no statistical significance between any number with the similar superscript, but show significance with any number with a different superscript. For the purpose of this study, only the “yes” row is used to identify significance in tables 4 through 7. Multiple pairwise comparisons were made in each table using a Z test which determines if results from the Chi-Square or ANOVA are valid and repeatable (Almarashi & Aslam, 2021). Each column was compared against every other column in the table to identify year to year significance.

1. What change, if any, has occurred in Black and Hispanic AP participation between the 2011-2012 and 2018-2019 school years?

Table 28 below illustrates that there was no significant year to year relationship, at $p < .05$, in Black students AP participation for any year of the study. *The N for 2016-2017 was too small to report findings.*

Table 28

Proportions of Black Students that Participated in AP Classes over the 2011-12 to 2018-19 School Years

AP Course taken by student	2011-2012		2012-2013		2013-2014		2014-2015		2015-2016		2016-2017		2017-2018		2018-2019	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
No	366 ^a	89.9	406 ^{ab}	91.0	331 ^a	89.5	395 ^a	88.6	400 ^a	89.9	417 ^b	95.9	383 ^a	89.9	388 ^{ab}	91.7
Yes	41 ^a	10.1	40 ^{ab}	9.0	39 ^a	10.5	51 ^a	11.4	45 ^a	10.1	18 ^b	4.1	43 ^a	10.1	35 ^{ab}	8.3
Total	407	100.0	446	100.0	370	100.0	446	100.0	445	100.0	435	100.0	426	100.0	423	100.0

Note. $\chi^2(7) = 18.52, p = .010$. Proportions with different superscripts differ significantly, $p < .05$.

Table 29

Proportions of Hispanic Students that Participated in AP Classes over the 2011-12 to 2018-19 School Years

AP Course taken by student	2011-2012		2012-2013		2013-2014		2014-2015		2015-2016		2016-2017		2017-2018		2018-2019	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
No	672 ^a	85.2	735 ^a	88.0	812 ^a	87.7	746 ^a	85.4	764 ^a	86.6	876 ^a	86.6	795 ^a	85.6	881 ^a	87.1
Yes	117 ^a	14.8	100 ^a	12.0	114 ^a	12.3	128 ^a	14.6	118 ^a	13.4	136 ^a	13.4	134 ^a	14.4	130 ^a	12.9
Total	789	100.0	835	100.0	926	100.0	874	100.0	882	100.0	1012	100.0	929	100.0	1011	100.0

Note. $\chi^2(7) = 6.01, p = .538$. Proportions with different superscripts differ significantly, $p < .05$.

1. What change, if any, has occurred in Black and Hispanic AP performance between the 2011-12 and 2018-19 school years?

Table 30 below illustrates that when comparing between year to year, there was a significant relationship between school year and AP performance for Black students. The proportion of Black AP participants scoring three or more on associated AP exams was significantly more in 2018-2019 when compared to the proportions of AP students in all

other comparison years except for 2012-2013. The proportion of Black student scores is consistent for most years and then increases significantly in 2018-2019, the last year included in the study. The superscript (a,b) in 2012-2013 shows that 119 is not significantly different from any other year, while the (b) subscript in 2018-2019 shows that 203 is significantly different from every year except 2012-2013.

Table 30

Proportion of AP Exam Scores of 3 or Higher Earned by Black Students over the 2011-12 to 2018-19 School Years

AP Course taken by student	2011-2012		2012-2013		2013-2014		2014-2015		2015-2016		2016-2017		2017-2018		2018-2019	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
No	195 ^a	66.3	166 ^{a,b}	58.2	215 ^a	66.2	212 ^a	68.4	242 ^a	65.8	229 ^a	64.1	281 ^a	64.6	228 ^b	52.9
Yes	99 ^a	33.7	119 ^{a,b}	41.8	110 ^a	33.8	98 ^a	31.6	126 ^a	34.2	128 ^a	35.9	154 ^a	35.4	203 ^b	47.1
Total	294	100.0	285	100.0	325	100.0	310	100.0	368	100.0	357	100.0	435	100.0	431	100.0

Note. $\chi^2(7) = 30.16, p < .001$. Proportions with different superscripts differ significantly, $p < .05$.

Table 31 below illustrates that when comparing between year to year, there was a significant relationship between school year and AP performance for Hispanic students. The proportion of Hispanic AP participants scoring 3 or more on associated AP exams was significantly less in 2011-2012 (superscript a) when compared to the proportions of AP students in all other comparison years (superscript b or c) except for 2016-2017 (superscript a). The year that demonstrated the highest proportion of Hispanic student scores of 3 or higher was 2014-2015. Results for 2011-2012 starts lower than most of the other years but increases significantly in 2012-2013 and increases remain consistent over the remaining years of the study.

Table 31

Proportion of AP Exam Scores of 3 or Higher Earned by Hispanic Students over the 2011-12 to 2018-19 School Years

AP Course taken by student	2011-2012		2012-2013		2013-2014		2014-2015		2015-2016		2016-2017		2017-2018		2018-2019	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
No	435 ^a	56.9	386 ^{b,c}	48.1	435 ^{b,c}	47.6	378 ^c	42.8	429 ^{b,c}	49.1	481 ^{a,b}	51.0	507 ^{b,c}	49.3	468 ^{b,c}	47.4
Yes	329 ^a	43.1	416 ^{b,c}	51.9	479 ^{b,c}	52.4	506 ^c	57.2	445 ^{b,c}	50.9	462 ^{a,b}	49.0	521 ^{b,c}	50.7	519 ^{b,c}	52.6
Total	764	100.0	802	100.0	914	100.0	884	100.0	874	100.0	943	100.0	1028	100.0	987	100.0

Note. $\chi^2(7) = 36.53, p < .001$. Proportions with different superscripts differ significantly, $p < .05$.

2. What change, if any, has occurred in Black and Hispanic AP participants'

performance on the ACT exam between the 2011-12 and 2018-19 school years?

There was an insufficient number of Black AP participants who sat for an associated AP exam and the ACT exam to report per the agreement with the study site.

There was an insufficient number of Hispanic AP participants who sat for an associated AP exam and the ACT exam to report per the agreement with the study site.

3. What change, if any, has occurred in Black and Hispanic AP participants'

performance on the SAT exam between the 2011-12 and 2018-19 school years?

There was an insufficient number of Black AP participants who sat for an associated AP exam and the SAT exam to report per the agreement with the study site.

There was an insufficient number of Hispanic AP participants who sat for an associated AP exam and the SAT exam to report per the agreement with the study site.

4. What change, if any, has occurred in Black and Hispanic AP participants'

performance on state mandated reading and writing exams between 2011-12 and 2018-19 school years?

There was an insufficient number of Black AP participants who sat for an associated AP exam and the state mandated reading exam to report per the agreement with the study site.

Table 32 below illustrates a significant decrease in state mandated reading exam mean scores for Hispanic AP participants from 2011-2012 (superscript a) through the remaining years of the study (superscript b). There is no significant difference in scores between years from 2012-2013 through 2018-2019.

Table 32

Means and Standard Deviations of SOL Reading Scores for Hispanic AP Students over the 2011-12 to 2018-19 School Years

	N	Mean	SD	Min	Max	SE	95% CI	
							L	U
2011-2012	48	463.75 ^a	51.38	373	598	7.42	448.83	478.67
2012-2013	38	431.87 ^b	24.88	370	481	4.04	423.69	440.05
2013-2014	48	426.23 ^b	30.07	358	499	4.34	417.50	434.96
2014-2015	51	435.20 ^b	39.30	338	522	5.50	424.14	446.25
2015-2016	47	430.98 ^b	36.39	357	527	5.31	420.29	441.66
2016-2017	57	423.35 ^b	36.92	303	509	4.89	413.55	433.15
2017-2018	51	436.47 ^b	35.24	323	551	4.94	426.56	446.38
2018-2019	51	435.55 ^b	30.04	363	489	4.21	427.10	444.00

Note. $F(7, 383) = 5.60, p < .001$. Means with different superscripts differ significantly, $p < .05$.

5. What change, if any, has occurred in Black and Hispanic AP participants'

performance on state mandated reading and writing exams between the 2011-12 and 2018-19 school years.

There was an insufficient number of Black AP participants who sat for an associated AP exam and the state mandated writing exam to report per the agreement with the study site.

Table 33 below illustrates that there was no significant difference found in mean state mandated writing scores for Hispanic AP participants who sat for an associated AP exam and the state mandated writing exam.

Table 33

Means and Standard Deviations of SOL Writing Scores for Hispanic AP Students over the 2011-12 to 2018-19 School Years

	N	Mean	SD	Min	Max	SE	95% CI	
							L	U
2011-2012	48	465.40	59.03	369	600	8.52	448.26	482.54
2012-2013	38	447.71	36.27	360	519	5.88	435.79	459.63
2013-2014	49	442.04	42.87	366	536	6.12	429.73	454.35
2014-2015	50	449.02	56.43	326	600	7.98	432.98	465.06
2015-2016	44	455.89	61.46	363	594	9.27	437.20	474.57
2016-2017	58	452.81	47.71	301	565	6.27	440.26	465.36
2017-2018	55	455.58	51.05	356	600	6.88	441.78	469.38
2018-2019	56	457.64	51.26	365	580	6.85	443.91	471.37

Note. $F(7, 390) = 0.92, p = .495$. Means with different superscripts differ significantly, $p < .05$.

Chapter V

Findings

The purpose of this study was to identify what change, if any, has occurred in Black and Hispanic AP participation and performance on AP, ACT, SAT, and state mandated reading and writing exams. The research focused on the following research questions:

1. What change, if any, has occurred in Black and Hispanic AP participation between the 2011-12 and 2018-19 school years?
2. What change, if any, has occurred in Black and Hispanic AP performance between the 2011-12 and 2018-19 school year?
3. What change, if any, has occurred in Black and Hispanic AP participants' performance on the ACT exam between the 2011-12 and 2018-19 school years?
4. What change, if any, has occurred in Black and Hispanic AP participants' performance on the SAT exam between the 2011-12 and 2018-19 school years?
5. What change, if any, has occurred in Black and Hispanic AP participants' performance on state mandated reading and writing exams between the 2011-12 and 2018-19 school years?

This chapter provides a review of major findings and how each aligns with research regarding the various ways AP participation impacts Black and Hispanic students. Additionally, this chapter will offer implications for schools and school leaders who aspire to increase Black and Hispanic AP participation and improve performance as a mechanism to positively impact academic outcomes for each cohort. Lastly, chapter five will discuss the limitations of this study and provide considerations for future research regarding Black and Hispanic AP participation and performance.

Summary of Findings

Chapter four of this study provided data and tables illustrating the results of the study site's efforts to increase AP participation and improve performance for both Black and Hispanic students. Data provided also elucidated how Black and Hispanic AP students, who have sat for at least one AP exam, perform on other measures of academic acumen. Academic performance measures included the ACT, SAT, and state mandated reading and writing exams. Each of these were chosen because they are standardized exams assessed by exterior entities. Results demonstrate varied significance regarding Black and Hispanic AP participation and performance for each cohort over the course of the study.

Discussion of Findings

Finding 1

Black students did not demonstrate significant increases in AP participation, as measured by those Black AP students who sat for an AP exam, throughout the relevant years of the study. Table 28 illustrates that there were no significant increases or decreases in Black student AP participation, as measured by the percentage of Black AP students who sat for an AP exam, throughout the study. Black student AP participation in the study site showed a low of 10.9% in the 2013-2014 school year and a high—witnessed twice—of 13.1% during the 2014-2015 and the 2015-2016 school years. The study site has worked to increase AP participation among Black students throughout the relevant years of the study. These efforts have not significantly increased Black student participation.

The College Board (2014) showed that while Black AP exam participation increased from 2003 to 2013 nationally, The College Board (2020) also showed that Black student

participation decreased in both 2019 and 2020. Black and Hispanic students have historically been underrepresented in AP courses. Increasing Black and Hispanic AP participation has been a focus of school districts for the past several decades. Successful AP participation is seen as an effective way to prepare students for postsecondary study.

Finding 2

Hispanic students did not demonstrate significant increases in AP participation, as measured by those Hispanic students who sat for an AP exam, throughout the relevant years of the study. Table 29 shows that data from the study site shows that Hispanic participation, as measured by the percentage of Hispanic AP students who sat for an AP exam, ranged from a low of 12% during the 2012-2013 school year, to a high of 14.8% during the 2011-2012 school year, which was the first year of the study.

The College Board (2004, 2014, and 2020) reported that Hispanic students nationally have shown disproportionately higher AP participation rates when compared to their overall percentage of graduating classes following the 2013 and 2019 school years after showing equal participation in 2003 among Hispanic graduates. Flowers (2008) found that Hispanic AP participants scored more than 100 points higher on college entrance examinations than did Hispanic non-AP participants.

Finding 3

Black AP students who sat for an AP exam demonstrated a significant increase in AP performance, as measured by earning a score of three or higher on an associated AP exam, during the final year of the study when compared to six of the seven other years in the study. Table 30 shows that Black AP participants in the study site demonstrated significant

increases in performance, as measured by the percentage of students who earn a three or higher on associated AP exams, throughout the study; with the final year of the study showing the most significant difference between all but one year. From a low of 31.6% in 2014-2015 to a high of 47.2% in 2018-2019, Black students in the study site demonstrated higher AP exam pass rates than the national average for Black students in both 2013 and 2019 (College Board, 2014 and 2020). Black AP test-takers in the study site demonstrated pass rates of 41.8% and 47.1% while the national pass rates of Black students were 4.6% and 4.3% during the respective corresponding years. Research has shown that Black AP participants score more than 100 points higher than Black non-AP participants (Flowers, 2008).

The College Board (2021) showed that the percentage of Black AP participants who earn exam scores of three or higher nationally increased between 2000 and 2010. The College Board (2014 and 2020) also showed increased AP exam performance percentages nationally for Black students between 2003 and 2013. Finally, the College Board (2014) reported national Black AP exam pass rates of 4.5 and 4.3 in 2013 and 2019 respectively.

Finding 4

Hispanic AP students who sat for an AP exam demonstrated a significant increase in performance on AP exams between the first two years of the study and then remained consistent throughout the study. Table 31 shows that 43.1% of Hispanic AP participants in the study site who sat for an associated exam earned a score of three or higher following the 2011-2012 school year, which was the first year of the study. Hispanic AP participants who sat for an AP exam demonstrated a significant increase in the following year when 51.95% earned an AP exam score of three or higher. The percentage of Hispanic AP participants who earned a score of 3 or higher did not vary significantly throughout the remaining years of the study. Hispanic AP

participants in the study site outscored Hispanic AP participants nationally in the 2012-2013 and 2018-2019 school years according to data provided by The College Board (2014 and 2020).

The College Board (2021) showed that the percentage of Hispanic AP participants who earned exam scores of 3 or higher nationally increased between 2000 and 2010. Subsequent College Board data (2013 and 2020) showed that 16.9% and 24.7% of Hispanic AP participants earned at least one AP exam score of 3 or higher respectively.

Finding 5

Beyond the significant decrease in the mean score between the first two years of the study, there is no significant difference in state mandated reading exam scores for Hispanic AP students who sat for an AP exam. Table 32 shows that while mean scores were above the proficient level, Hispanic AP participants who took at least one AP exam experienced a significant decrease in mean state mandated reading exam scores between the 2011-2012, first year of the study, and all subsequent years. Following this first year there were no significant differences in mean scores throughout the remainder of the study. While Hispanic AP participants never fell below proficiency scores as an aggregate, they also did not show significant mean score improvement at any point in the study.

Finding 6

Hispanic AP participants who sat for an AP exam did not show statistical differences in state mandated writing exam scores at any point during the study. Table 33 shows that while mean scores were above the proficient level, Hispanic AP participants who took at least one AP exam showed no significant difference in mean state mandated writing exam scores throughout the study years.

Implications

In consideration of the findings of this study, the following implications are identified.

Implication 1

School division leadership should place an emphasis on ensuring that Black and Hispanic students demonstrate on or above grade level literacy and numeracy skills as they matriculate through grades K-12. This implication is associated with Findings 1 and 2. Based on the results of this study, Black and Hispanic students have not significantly increased AP participation as measured by course enrollment and AP exam attempts. To focus on developing efficacy in Black and Hispanic students to pursue coursework with advanced rigor, schools must first ensure that they possess grade level reading, writing, and mathematics skills throughout elementary and middle school. Division leadership should implement valid and reliable universal screeners in reading, writing, and mathematics for students at all grade levels. Results of these screeners should be used to identify which Black and Hispanic students need remediation and which need enrichment, especially in elementary. Accurately identifying each cohort ensures that efficacious interventions are offered and that effective resources are allocated for use by teachers across schools and grades.

Implication 2

School-based leadership should work to ensure that the parents/guardians of Black and Hispanic students have accurate and timely information regarding the benefits of AP participation and the requirements of success in this college level setting. This implication is associated with Findings 1 and 2. It is suggested that division leadership work to ensure that parents/guardians of Black and Hispanic students are accurately and fully informed of their

student's options for academic advancement as they progress through school. School leadership and school counselors should continually offer information sessions and conduct outreach in multiple languages, settings, and on multiple dates and varied times to ensure that all families have access to the information regarding course options and support resources available to make informed decisions during course selection processes. Offering these sessions virtually or in recorded form would increase access to families that have difficulty attending in person or during their work hours. These efforts should begin in elementary school and continue through high school to build knowledge capacity throughout the community. It is further suggested that parents/guardians of Black and Hispanic students be made aware of the behaviors and executive functioning skills that will be needed to be successful in these settings. Ensuring that students have developed time-management, study, and test-taking skills is a jointly shared responsibility and benefits greatly when schools actively partner with homes.

Implication 3

School division and building-level leadership should allocate professional learning time and funding to ensure that teachers have the skills to effectively prepare Black and Hispanic students for success in AP courses. This implication is associated with Findings 1 and 2. In order to effectively teach Black and Hispanic students to read, write, and do math teachers need research-based, job-embedded, individualized, and ongoing professional development. It is suggested that school division leadership conduct an audit to assess the efficacy of existing professional learning. Effective practices should be brought to scale and implemented across schools and grades, while those proven to be ineffective should be discontinued. Additionally, school-based administrators should disaggregate student achievement data by teacher to identify which teachers are most successful with Black and Hispanic students. Those with strong results

should be placed in settings where they can impact the most Black and Hispanic students and those who have experienced the greatest difficulty must be offered the professional learning, they need to advance their abilities.

Implication 4

School division leadership should incorporate the continued support of educational equity experts to ensure that collective efforts seek to address the varied educational and social needs of the entire community of students and parents/guardians. This implication is associated with Findings 1 and 2. It is suggested that schools thoughtfully engage in each of the previously mentioned suggestions through an equity lens. As stated earlier, Black and Hispanic students have been historically underrepresented in AP and other advanced level course work. Incorporating the support and guidance of an ethnically and thought diverse group of professionals, students, and parents/guardians increases the likelihood that culturally responsive choices regarding pedagogy, curriculum and resources, allocation of human resources, and funding is appropriate and efficacious.

Implication 5

Division and school-based leadership should actively participate in the identification and recruitment process beginning in elementary school to ensure that Black students who have demonstrated readiness for advanced levels of academic rigor are guided to enroll in AP courses. This implication is associated with Finding 3. Study results show that while there were no significant increases in participation during the years of the study, participating Black students who earned a three or higher on an associated exam increased significantly when comparing most years with the final year of the study. This suggests that Black students with

prerequisite skills are enrolling in AP and that their teachers have the expertise and resources required to help increasing numbers of Black students earn college credit by scoring 3 or higher on associated AP exams. Continuing to build upon these successes, the school division should develop and institute a formal and exhaustive screening process to identify Black students who have demonstrated strong, but not necessarily advanced, reading, writing, and mathematics skills at early ages. These screening processes should begin during elementary school and continue through high school and serve as an opportunity for school counselors to engage early to help Black students and families make informed decisions regarding opportunities and prerequisite skills needed for success in AP classrooms. Middle and high school counselors should be continually enrolled in professional learning to ensure that they have the information and skills needed to help students and parents/guardians make course selections that best fit their academic preparedness and personal interests.

Implication 6

Division and school-based leadership should consider auditing pedagogical strategies and resources being utilized to determine the efficacy of each as it relates to supporting Hispanic AP students. This implication is associated with Finding 4. While the study site demonstrated a significant increase in Hispanic AP exam performance, as measured by the percentage of Hispanic students who earn AP exam scores of three or higher, between the first year of the study and all remaining years, pass rates have become static. Conducting an exhaustive audit of pedagogical approaches and resources should be used to determine the value added by each as teachers seek to support the learning of Hispanic students across the spectrum of academic ability. The audit should also seek to identify the fidelity with which teachers are utilizing resources and interventions. Data collected from those teachers who are using each

correctly will provide leadership with the best indications of the effectiveness of the tools. Teachers who are not using resources and interventions with fidelity should be re-trained to ensure that assessments of effectiveness are accurate and reliable. Lastly, the audit should seek to identify which teachers regularly earn the best academic outcomes, measured by percentage of Hispanic students who earn exam scores of 3 or higher on associated exams, and which teachers do not.

Data collected via the audit should be used to allocate funding. Effective practices should be funded such that they can be brought to scale and used universally. Ineffective practices should be terminated and the funds used to support them be reallocated to either identify replacements or to support increased access to currently used and proven practices. Data regarding teacher effectiveness should be used to strategically place Hispanic students in the classrooms that have proven to earn the best results. Professional development should be offered to all educators who aspire to teach AP courses, and especially to those current AP teachers who have not proven to be effective in terms of exam pass rates for Hispanic students.

It is further suggested that school leaders interview Hispanic AP students and their teachers annually to gather qualitative data. Combined with quantitative exam performance data, this feedback will help identify which pedagogical and interpersonal approaches are most effective with Hispanic AP students, so as to employ them more frequently.

Implication 7

School division leadership should audit Hispanic state mandated reading and writing exam performance by standard to identify where underperformance exists and use this data to inform pedagogy, curriculum and resource selection, and professional learning decision making. This implication is associated with Findings 5 and 6. Study results show that while

Hispanic AP participants who sat for an associated AP exam scored above proficiency levels on both the state mandated reading and writing exams throughout the study, neither demonstrated significant improvement over time. Continued formal scrutiny of Hispanic AP student reading and writing performance, disaggregated by standard and teacher will assist in the process of selecting professional learning for teachers, curriculum and resources choices, and guide funding allocations. Additional consideration to the fact that Hispanics are more likely to be dual language speakers than the average AP course enrollee, it is reasonable to expect that they take longer to demonstrate either English reading and writing proficiency than native English speakers. Disaggregating performance data by English Language (EL) and World-Class Instructional Design and Assessment (WIDA) would also support accurate decision making across schools and grades.

Suggestions for Future Studies

In addition to reviewing the quantitative data provided by this study, it is recommended that researchers conduct qualitative studies to identify the social-emotional impact for students and staff of encouraging all traditionally underrepresented student cohorts in academically rigorous or college preparatory environments. These student cohorts include not only Black and Hispanic students, but also students with disabilities, and those identified as economically disadvantaged. The following is a listing of possible studies that will further explain the value of concerted efforts to increase AP participation and performance of various student populations:

1. Conduct a qualitative study to explore how efforts to increase Black and Hispanic AP participation and performance has impacted Black and Hispanic students, their teachers, school counselors, and administrators. Specifically, the study would seek to understand how Black and Hispanic AP participants feel about their participation in

- AP. Additionally, the study would seek to understand school counselors and AP teachers' perceptions and understanding of their roles in the initiative to increase Black and Hispanic AP participation and performance.
2. Conduct a quantitative study to compare academic outcomes of participating and non-participating AP Black and Hispanic students across the ACT, SAT, and any local or state-mandated exams.
 3. Conduct an evaluation of the academic outcomes, as evidenced by performance on AP, ACT, SAT, and local and state-mandated exams, experienced by Black and Hispanic AP participants by specific AP course.
 4. Conduct a study similar to this, but increase the sample size to include students who enrolled in AP courses, but did not sit for an associated AP exam. This study limited the sample size to include only those Black and Hispanic AP students who sat for an associated AP exam.
 5. Conduct a study similar to this, but expand the setting to include other school districts with similar student, teacher, school counselor, and administrator demographics, and access to funding and resources.
 6. Conduct a study that includes both the academic and social-emotional impact of Black and Hispanic AP participation in other academically rigorous environments such as Dual Enrollment and International Baccalaureate.

Summary

Chapter 5 provides a summary of key findings of the study to identify the progress the study site has made toward increasing Black and Hispanic AP participation and improving performance on AP exams, ACT exams, SAT exams, and state mandated reading and writing

exams. Findings were discussed, implications presented, and recommendations for future studies offered. This study, in summary, showed that while the study site has not significantly improved Black or Hispanic AP participation, each group demonstrated improved performance on associated AP exams.

Reflections

Disproportionate participation in advanced level coursework in high school such as Advanced Placement, International Baccalaureate, and Dual Enrollment has been a concern of educators for decades. As each course of study is seen as college preparatory and college acceptance and success is increased through successful participation, it is essential that school systems identify strategies to increase the percentages of traditionally underrepresented cohorts. Two of these cohorts are Black and Hispanic students, each of whom has consistently lagged behind Asian and White students with regard to participation and performance. I chose to conduct this study examining efforts to address disproportionality because I was interested in determining the value added to participants.

Throughout the course of this study, I interacted with professionals to include teachers, school counselors, and administrators as well as students and parents. While some consideration was given to International Baccalaureate or Dual Enrollment, each cohort generally believed that AP participation was the best way to prepare students for postsecondary study. Opinions were based on previous experience, research conducted during the college application process, the media, or by word-of-mouth. I thought it wise to identify the true benefits of the program for historically underrepresented populations, specifically Black and Hispanic students.

The study site I chose has focused attention and funding to support efforts to close persistent gaps in academic performance between majority and minority students. A significant

component of this process has been to ensure that Black and Hispanic students had equal or proportionate access to highly rigorous coursework. As the years progressed, it became clear that the number of Black and Hispanic students and families who were aware of the rigorous academic opportunities available to them by the fact that increases in enrollment were seen during the early years of the initiative. Unfortunately, this trend did not include the number of Black and Hispanic students who sat for associated AP exams. This is problematic for two reasons. The first reason is that college credit is awarded based on scores earned on those exams. The second reason that this is troubling is that the study site awards weighted credit only to those students who sit for exams, regardless of the score earned. My concern is that Black and Hispanic students, especially those who don't have efficacy regarding standardized tests, choose to avoid the exams. These students don't accrue the additional weight associated with that grade, therefore do not improve their grade-point average, and they don't build a resume that would make them attractive college applicants. An additional concern is that ill-prepared students, or those who lack efficacy, sit for the exam but don't put forth their best effort which would negatively skew collective performance.

I suggest that the study site engage in a holistic longitudinal audit of their pedagogy, curriculum, resources, and professorial learning to ensure that they are responding to the needs of Black and Hispanic students. It is essential that purposeful efforts be made, beginning in elementary school and continuing through high school, to ensure that students have literacy and numeracy skills that are at or above grade level as measured by internal and external assessments. Additionally, it is key that both students and parents are aware of the personal behavioral requirements of success in advanced level courses such as AP. Waiting until high school to impart sufficient academic knowledge and an appreciation for the behavioral

expectations will result in Black and Hispanic students enrolling in classes that are beyond their current grasp.

I regret not including qualitative methods in this study. This was not a part of this study, but warrants consideration for future study in a qualitative study. Qualitative studies would help decision-makers understand the thought process used by Black and Hispanic students and families to determine if they would enroll in AP. Additionally, it would be helpful to learn what factors drove their decision to sit for associated exams—or not. Lastly, I'd recommend that researchers seek to learn how Black and Hispanic students feel about the decision, both short-term and long term, to enroll in AP courses and to sit for AP examinations. I have concerns regarding the intentional recruitment of Black and Hispanic students into the AP program, regardless of their interest or readiness. Actively encouraging unprepared students to enroll in AP or other advanced level coursework could damage student and educator morale. Further, it could jeopardize the overall effectiveness of the AP program as teachers amend curriculum and expectations to meet the need of students lacking prerequisite skills. Having this information would help inform decision making in the future.

In addition to learning more about how students feel about AP participation, learning how professionals feel about the efficacy of the initiative to increase participation would also be helpful. As I conducted this study I engaged with teachers, school counselors, and administrators who believed that it was harmful to encourage ill prepared students to enroll in AP courses and to sit for associated exams. Determining the pervasiveness of this view and identifying how that impacts recruitment, enrollment, and performance would help identify which practices were most helpful and should be brought to scale across the division, and which are ineffective and should therefore be discontinued.

I have thoroughly enjoyed my dissertation journey. While it has taken considerably more time to complete than I originally predicted, I am proud of what I have been able to learn about the subject of Black and Hispanic student performance at large as well as what I've learned about myself professionally and personally. My confidence in the truism that all students can succeed in academically rigorous environments when they have access to the right educators and resources remains. I've also learned that I have the ability to push through doubts and attain long-established goals and objectives. I look forward to continuing to attend to this topic as I mature as a researcher and member of the K-12 educational community.

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Appendix A

Earnings and Unemployment Rates by Education Attainment, 2021

Earnings and unemployment rates by education attainment, 2021		
Educational Attainment	Median usual weekly earnings	Unemployment rate
Doctoral degree	\$1,909	1.5%
Professional degree	1,924	1.8
Master's degree	1,574	2.6
Bachelor's degree	1,334	3.5
Associate's degree	963	4.6
Some college, no degree	899	5.54
High School Diploma	809	6.2
Less than a high school diploma	626	8.3

Note: Data are for persons age 25 and over. Earnings are for full-time wage and salary workers.
Source: U.S. Bureau of Labor Statistics, Current Population Survey.

Proportions of Black Students that Participated in AP Classes over the 2011-12 to 2018-19 School Years

AP Course taken by student	2011-2012		2012-2013		2013-2014		2014-2015		2015-2016		2016-2017		2017-2018		2018-2019	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
No	366 ^a	89.9	406 ^{a,b}	91.0	331 ^a	89.5	395 ^a	88.6	400 ^a	89.9	417 ^b	95.9	383 ^a	89.9	388 ^{a,b}	91.7
Yes	41 ^a	10.1	40 ^{a,b}	9.0	39 ^a	10.5	51 ^a	11.4	45 ^a	10.1	18 ^b	4.1	43 ^a	10.1	35 ^{a,b}	8.3
Total	407	100.0	446	100.0	370	100.0	446	100.0	445	100.0	435	100.0	426	100.0	423	100.0

Note. $\chi^2(7) = 18.52, p = .010$. Proportions with different superscripts differ significantly, $p < .05$.

Appendix B

Virginia Tech Institutional Review Board



Division of Scholarly Integrity and
Research Compliance
Institutional Review Board
North End Center, Suite 4120 (MC 0497)
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-3732
irb@vt.edu
<http://www.research.vt.edu/sirc/hrpp>

MEMORANDUM

DATE: August 5, 2022
TO: Carol S Cash, Tyrone Qovodis Byrd
FROM: Virginia Tech Institutional Review Board (FWA00000572)
PROTOCOL TITLE: Evaluation of AP participation and performance for Black and Hispanic students in one school division in Virginia
IRB NUMBER: 22-647

Based on the submitted project description and items listed in the Special Instructions section found on Page 2, the Virginia Tech Human Research Protection Program (HRPP) has determined that the proposed activity is not research involving human subjects as defined by HHS and FDA regulations.

Further review and approval by the Virginia Tech Human Research Protection Program (HRPP) is not required because this is not human research. This determination applies only to the activities described in the submitted project description and does not apply should any changes be made. If changes are made you must immediately submit an Amendment to the HRPP for a new determination. Your amendment must include a description of the changes and you must upload all revised documents. At that time, the HRPP will review the submission activities to confirm the original "Not Human Subjects Research" decision or to advise if a new application must be made.

If there are additional undisclosed components that you feel merit a change in this initial determination, please contact our office for a consultation.

Please be aware that receiving a "Not Human Subjects Research" Determination is not the same as IRB review and approval of the activity. You are NOT to use IRB consent forms or templates for these activities. If you have any questions, please contact the Virginia Tech HRPP office at 540-231-3732 or irb@vt.edu.

PROTOCOL INFORMATION:

Determined As: **Not Human Subjects Research**
 Protocol Determination Date: **August 5, 2022**

ASSOCIATED FUNDING:

The table on the following page indicates whether grant proposals are related to this protocol, and which of the listed proposals, if any, have been compared to this protocol, if required.

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Appendix C

Permission to Complete Research

Dear Mr. Byrd:

Our research committee has completed its review of your application to conduct the research study entitled “*An Investigation into Black and Hispanic Participation and performance in Advanced Placement Courses in a School Division that has Targeted Increased Participation as a Goal*” in XX. The committee has approved your research contingent on the following requirements:

- The participation of any APS staff member, student, or family who might be involved is completely voluntary at all times. Each participant (or parent of participating students) must be informed in writing of the scope and potential impact of their participation. You should be prepared to provide proof of their informed consent, if requested.
- You must maintain the total anonymity of all students, staff, and schools associated with XX in any discussions or reports. Any disclosure that may reveal the participation of an XX student, staff member, school, or the school system must be approved in advance by the XX Office of Planning and Evaluation.
- Any change to the proposed research must be submitted to and approved by the APS Office of Planning and Evaluation in advance of implementation.
- The principal of any participating school or program must approve your request to conduct research. Please retain evidence of approval in your files and be prepared to provide it later, if requested.
- Prior to beginning research, the following must be forwarded to [XX](#)
 - A Letter of Authenticity from your sponsoring university
 - Documentation of IRB Approval from your sponsoring university
- The consent form template that will be used for staff who will be surveyed
 - The staff survey template that will be used
 - A more detailed description of how data will be analyzed.

We wish you success as you carry out this study.