ABSTRACT

Title of dissertation: AN INVESTIGATION OF SITE-BASED ADMINISTRATORS' PERCEPTIONS OF THE SCHOOL-BASED FACTORS THAT INFLUENCE STUDENTS' AP ENROLLMENT AND SUCCESS

Charoscar Coleman, Doctor of Education, 2018

Dissertation directed by: Dr. Ellen Fabian, Department of Education

A common goal for high schools is to graduate students who are college ready. Successful participation in Advanced Placement (AP) courses and end-of-course AP exams is a nationally recognized means for students to demonstrate their college readiness. As a result, AP has become an important aspect of high school instructional programs throughout the United States. Using data from across the nation, the College Board EXCELerator group has identified seven key areas that schools and school districts should develop to support AP courses and college readiness. These factors include leadership, curriculum planning and sequencing, a culture of expectations, instructional support, student support, data analysis, and examination readiness. Together, these factors help expand equity and access to AP and served as the basis for this investigation. In addition, research by the Wallace Foundation has shown that, among school-related factors that impact student learning, leadership is second only to teaching in significance.

As such, this study sought to identify site-based administrators' perceptions of school practices regarding the factors that impact AP enrollment and end of course AP exam success. For this study, the researcher defined site-based administrators as high school principals, assistant principals, and AP coordinators, all of whom can impact an AP program. The study used a descriptive, quantitative research methodology through an online survey. The survey data helped the researcher develop a clearer understanding of site-based administrators' perceptions of the factors that impact AP programs. Results from the study indicated the following:

- Site-based administrators perceived a need to develop leadership through the coordination of teacher training, student support, and data analysis for AP programs;
- Site-based administrators perceived a pressing need to develop an academically challenging curriculum across grade levels that prepares students for rigorous AP coursework;
- Site-based administrators identified students' lack of academic readiness as one of the biggest barriers to successful participation in AP programs; and
- Site-based administrators identified training for administrators and teachers as a priority in efforts to support AP programs.

These results represent the most frequent responses of respondents and help frame an approach to strengthening a school's AP program.

AN INVESTIGATION OF SITE-BASED ADMINISTRATORS' PERCEPTIONS OF THE SCHOOL-BASED FACTORS THAT INFLUENCE STUDENTS' AP ENROLLMENT AND SUCCESS

by

Charoscar Coleman

Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Education Doctorate
2018

Advisory Committee:
Ellen Fabian, Ph.D., Chair
Segun Eubanks, Ed.D, Committee Member
Margaret J. McLaughlin, Ph.D., Committee Member
Pat Richardson, Ph.D., Committee Member
Olivia Saracho, Ph.D., Committee Member

Dedication

I dedicate this accomplishment to my mother, Ms. Ceceil Belong. I gave her a new name years ago—Chinoeso, which means, “She is the guiding light.” My mother serves as a constant source of inspiration and love. Thank you mom for all that you have done for me. You are an angel on earth. I would also like to thank the rest of my family for their support over the years. My wife, Yolanda; daughter, Malaika; son, Jamal; brother, Wendell; and sister, Granetta, all played a role in this process; and I appreciate them for believing in me. To my Tamarack family, I love you all and represent the neighborhood with each step that I take.

Acknowledgements

I would like to thank my academic advisor, Dr. Ellen Fabian for providing the constant encouragement, guidance, direction, and advice that made the completion of this program possible. I am forever grateful for her support. To the other members of my cohort, thank you for allowing me to be a part of an amazing learning community dedicated to supporting and encouraging one another through this educational journey. We studied, read, wrote, attended classes, stressed, and laughed together! Thank you for contributing so much to this learning process! I also want to thank my dissertation committee—Dr. Ellen Fabian – chair, Dr. Margaret McLaughlin, Dr. Pat Richardson, Dr. Olivia Saracho, and Dr. Segun Eubanks—for their valuable insights and feedback.

Additionally, I would like to acknowledge my high school principal colleagues for their tremendous support in the collection of the research data. You are difference makers in the lives of children, and I truly appreciate your assistance. Thank you to the assistant principals and advanced placement coordinators who also participated in my research study. Their assistance was vital to the completion of this work. Thank you Dr. Kevin Maxwell and Dr. Monique Davis who encouraged me at the beginning of my doctoral studies and continued to check on my progress throughout the years. Your personal investment in my growth is something I will never forget. Thank you all.

Table of Contents

List of Tables

List of Figures

Section 1: Introduction

Data indicate that a consistent and significant performance gap exists between the number of students in District E, a large public school system that services over 120,000 students from suburban, urban, and rural communities, who are enrolled in Advanced Placement (AP) courses and those who score at or above a three (3) on AP tests (Patterson & Keane, 2013). Each year, the College Board determines the AP success rate by calculating the percentage of total AP test takers who score a three (3) or better on the exam (Patterson & Keane, 2013). Chajewski, Mattern, and Shaw (2011) explained that achieving a three (3) or better on an AP exam is an important benchmark because "[most] postsecondary institutions grant college credit and/or course exemption for AP exam scores of three or above" (p. 16). Chajewski et al. explained, though, that the guidelines for earning college credit vary by college or university because "AP credit-accepting institutions develop their own credit and placement policies to best fit their needs" (p. 16).

Table 1 illustrates that in 2014, students in District E achieved an AP success rate, which is scoring a 3 or better on an AP exam, of 27.4, which was 31.8 percentage points below the national average and 36.8 below the state average. This performance gap, and the importance of developing strategies to address it, serves as the basis for the problem of practice examined in this study. Research indicates that a number of school factors affect students' enrollment in AP courses and their scores on the end-of-course AP exams. Hallett and Venegas (2011) found these factors include teacher preparation, school resources, and the previous knowledge of students. While these elements may indeed have a notable impact on students' performance on the exams, the present inquiry

will examine the significant influence that site-based administrators can have on their school's AP program. Specifically, this researcher proposes to investigate site-based administrators' perceptions of factors that impact students' AP enrollment and success.

Scope and Need for the Study

Research shows that AP courses can play a significant role in helping to ensure that students graduate from high school, college and career ready. In District E, AP performance is a key component of the county's systemic college readiness goal. Unfortunately, data indicate that the performance gap on the AP exam between District E students and those in the state of Maryland and in the nation has the potential to negatively impact students' college readiness, college admissions prospects, and their academic performance once enrolled in a postsecondary program. Studies have shown, however, that school administrators can have a notable influence on the AP programs in their buildings and, ultimately, on students' AP performance.

AP as a college readiness marker. According to the 2015 District E School Strategic Plan, the district aims to increase the college readiness of all students. The strategic plan establishes goals to help schools improve students' performance on key benchmarks by the year 2020 and expresses the following vision for the district: "District E will be a GREAT school system recognized for providing education services which ensure that every student in our diverse school district graduates ready for college and careers in a global society" (District E, 2015a, p. 3). The strategic plan goes on to state, "To ensure that we fulfill the Promise of 2020, we will monitor ongoing performance in the following six areas of academic performance: (1) Kindergarten Readiness Assessment, (2) PARCC, (3) READISTEP, (4) PSAT, (5) AP/IB/Dual Enrollment, and

(6) Technical Licensures/ Certifications" (District E, 2015a, p. 18). Through this document, the school system has declared that students' performance on AP exams is a priority, because success in those courses is an indicator of college and career readiness.

Table 1

AP Success Rate (All Subjects) from SY 2008-2014

Year	District E	Maryland	National	Gap (District E and Maryland)
2008	24.5	60.1	57.7	35.6
2009	26.1	61.2	58.9	35.1
2010	25.8	59.4	58.0	33.6
2011	23.9	58.4	58.0	34.5
2012	25.3	61.3	59.6	36
2013	26.3	60.3	58.9	34
2014	27.4	64.2	59.2	36.8

Sources: Patterson & Keane (2013) and Maryland State Department of Education – Division of Curriculum, Assessment, and Accountability. (4/30/2016). Advanced Placement Trends by Test Administration Year. And The College Board. (2014c). AP score distributions: All subjects 1994-2014.

The AP performance gap. Data show that a consistent and significant gap exists between the AP success rate among students in District E and that of students at the state and national levels on all 18 AP exams across four content areas. According to College Board (2014c) and the Maryland Department of Education (2016), while the success rate for all subjects on AP exams equaled 59.2% for the nation and 64.2% in Maryland during the 2014 school year (SY), students in District E achieved a success rate of only 27.4%. These figures reveal a gap of 36.8 percentage points between the performance of District E students and those at the state level, and a 31.8 disparity between the county and the

national rates. Table 1 lists the AP success rate for District E, Maryland, and the United States over a seven-year period. The data show that District E has had much lower success rates than either the nation or the state over the past several years, and the gap does not seem to be closing.

Table 2

AP Success Rate (Math, Science, English, and Social Studies) from SY 2009-2012

Content area	Cohort year	District E (%)	Maryland (%)
Math	2009	23.5	65.8
	2010	31.5	64.3
	2011	18.6	64.6
	2012	16.3	67.4
Science	2009	22.8	59.4
	2010	23.7	58.3
	2011	21.7	57.1
	2012	23.6	58.8
English	2009	24.1	59.6
	2010	25.8	58.3
	2011	23.3	58.5
	2012	25.8	58.7
Social studies	2009	24.2	60.9
	2010	22.7	57.9
	2011	20.9	56.9
	2012	23.9	61.0

Sources: Patterson & Keane (2013) and Maryland State Department of Education (MSDE) – Division of Curriculum, Assessment, and Accountability. (11/4/2015). Advanced Placement Trends by Test Administration Year – Maryland State

Table 2 shows that the difference in AP performance between District E and the state of Maryland spans all core content areas. From 2009 to 2012, 31.5% was the highest

success rate for District E in any core subject, while over the same period of time, the lowest success rate for Maryland in any of the core subjects was 56.9% (MSDE, 2015). A portion of the data displayed in Table 2 is from a study commissioned by District E, conducted by Patterson and Keane, and published in 2013. While this data is illustrative, unfortunately, this is the most up to date data available.

Table 3

Yearly Trends in AP Performance – Maryland Counties

County	Year	# Students	# AP exams administered	Mean exams per std	% Exams with 3-5	Mean Grade per Exam
District E	2015	5764	9452	1.64	25.8%	1.9
	2014	5904	9660	1.64	27.0%	1.9
	2013	5847	9859	1.69	26.3%	1.9
	2012	5398	8956	1.66	27.2%	2.0
Montgomery	2015	17072	33261	1.95	74.1%	3.4
	2014	17084	33694	1.97	74.0%	3.4
	2013	17073	33790	1.98	73.0%	3.4
	2012	16775	32779	1.95	74.9%	3.4
Howard	2015	4505	9990	2.22	80.8%	3.4
	2014	4291	9453	2.20	81.4%	3.6
	2013	4258	9207	2.16	81.7%	3.6
	2012	3852	8214	2.13	81.9%	3.6
Anne Arundel	2015	6988	14664	2.10	47.4%	2.5
	2014	7111	14657	2.06	47.6%	2.5
	2013	6909	14160	2.05	46.8%	2.5
	2012	6597	13200	2.00	47.4%	2.5
Baltimore	2015	5593	11828	2.11	65.3%	3.1
	2014	5747	11443	1.99	68.1%	3.2
	2013	5412	10758	1.98	67.5%	3.1
	2012	5374	10475	1.95	67.1%	3.1

Source: MSDE - Division of Curriculum, Assessment, and Accountability. (4/30/2016). Advanced Placement Trends by Test Administration Year.

The disparity in AP performance between District E and other Maryland school systems is also stark. Table 3 provides a summary of the overall performance of counties

in Maryland that administered at least 8,000 exams per year across all AP subjects, including fine arts, English language arts, world languages, mathematics, science, and social studies. Based on data compiled on the publicly available website Maryland Report Card by the Maryland State Department of Education (MSDE; 2015), Table 3 shows that while District E is one of the top five counties in the number of students who enrolled in AP courses and the number of exams administered, the percentage of exams that students passed with at least a three is much lower than other Maryland counties.

In 2015, the average percentage of District E students who scored a three or better on AP exams totaled 25.8%, a number significantly lower than the 74.1% rate in neighboring Montgomery County that same year (MSDE, 2015). This difference is even more remarkable when considering the fact that District E administered 9,452 AP exams in 2015, compared to the 33,261 AP exams given in Montgomery County (MSDE, 2015). It is important to note, however, that the data do not indicate whether individual students took only one or multiple AP exams. For example, in 2015 District E averaged 1.64 AP exams per student compared with Montgomery County and Howard County, which averaged 1.95 and 2.22 AP exams per student, respectively. The disparity between counties in the average number of AP exams per student may suggest a different level of academic readiness for students, a different level of expectation for participation in the end of course AP exams, and/or fewer AP courses being offered to students.

It is also important to be cautious when attempting to draw conclusions based on the comparison of AP results among counties because of significant variability in how AP is implemented in each jurisdiction. The Education Commission of the States (2017) also noted that there is significant variability in state policies regarding implementation of AP

programs, which results in varied approaches to AP programs within and across counties (Education Commission of the States, 2017). For example, there is no state mandate on the following AP factors: number of AP courses each high school must offer, financial incentives for counties based on AP participation and exam outcomes, state funding for teacher training, or a requirement that students must take an AP exam to receive course credit (Education Commission of the States, 2017). The state of Maryland only mandates that all counties must report annual AP enrollment and exam results. It then pays a subsidy per AP exam for all low-income students and provides virtual AP course opportunities for districts that may not have the resources to do so on their own (Education Commission of the States, 2017). Despite these uniform state policies, counties do have the autonomy to decide whether they will actually pay the AP exam fees for students. For example, between 2012 to 2015 (the years covered in Table 3), District E covered all AP exam costs; however, in 2017, District E only paid for AP exams for students who participated in the federal Free and Reduced-Price Meals (FARMS) program and earned a grade of "C" or higher during the first two quarters. Students who did not participate in the FARMS program, took four or more AP courses, and/or maintained a "C" or higher were responsible for paying for all exams beyond the first three. This autonomy around who is responsible for paying for the AP exams can impact student enrollment in AP courses and participation in the end of course exams.

AP scores and postsecondary enrollment and performance. Hallett and Venegas (2011) explained that colleges widely use AP exams scores to measure college readiness and to make admissions decisions. Therefore, AP is an important tool for high schools to use as they work to improve rates of postsecondary access for all students.

Geiser and Santelices (2004), however, found that colleges' increased reliance on AP scores when making admissions decisions has created a disadvantage for high schools with large populations of low-income and minority students that generally have less access to AP courses.

Klopfenstein and Thomas (2009) found that AP courses influenced five of the six top criteria used to make college admissions decisions. As of 2000, these criteria included

- high school grade point average or class rank,
- SAT/ACT score,
- high school coursework,
- college-level work in high school,
- AP course enrollment,
- AP course grades,
- letters of recommendation,
- essays, and
- AP exam grades (Klopfenstein & Thomas, 2009, p. 875).

These data indicate that students improve their likelihood of college admission simply by participating in AP courses. Interestingly, most of these admission factors do not relate to how well a student does on the end-of-course AP exam.

Sathre and Blanco (2006) found that 91% of postsecondary institutions had written admissions processes that considered AP courses and/or exams. The authors based their study on the results of an online survey of public and private two- and four-year college and university school academic officers from all 50 states. In total, 539 postsecondary schools responded—65% public and 35% private. Survey questions

included queries about school policies and practices regarding accelerated programs like AP, International Baccalaureate (IB), dual enrollment, and tech prep courses (Sathre & Blanco, 2006). The researchers shared that 91% of the responding postsecondary institutions noted that they reviewed AP data when considering students for admission, however the percentage of students actually admitted due to their AP scores was much lower based on schools' consideration of other factors like AP exam performance and grade point average.

The online survey asked respondents the following four questions about how they used AP course and exam information in admissions decisions:

1. Are students given admission preference if their AP performance meets the school's standards? (30%-Yes)
2. Are students given admission preference if their AP performance meets the standards of College Board (earning a 3, 4, or 5 on exam)? (29%-Yes)
3. Are students given admission preference when AP boosts the students' high school grade point average? (25%-Yes)
4. Are students given admission preference when students take AP courses regardless of the course grade earned? (12%-Yes; Sathre & Blanco, 2006; p. 30).

These results demonstrate that while student participation in AP does appear to boost a student's college admission prospects, enrollment in these courses is not the only consideration that influences college admission decisions. In fact, Sathre and Blanco (2006) noted that when examined more closely, AP course enrollment had a much

smaller impact on admission decisions than it might seem, because colleges also considered factors like students' performance on the AP exams.

Research has also revealed that AP course participation can have an impact on students' postsecondary performance. Godfrey, Matos-Elefonte, Ewing, and Patel (2014), for example, found that taking AP courses and scoring a three or better could have a significant impact on students' academic achievement in college. Mattern, Marini, and Shaw (2013) revealed similar findings, concluding that a positive correlation existed between enrollment in AP courses and academic success in college:

> Based on a national sample of more than 1.5 million students, the odds of enrolling in a four-year institution increased by 171% for students who took one AP Exam, compared with students who took no AP Exams. The increase in odds was even higher for students who took more than one AP Exam. (p. 16)

Likewise, Chajewski, Mattern, and Shaw (2011) explained, "The key effect appears to reside with AP participation, and most saliently, with taking two or three AP exams, which resulted in the highest increase in the odds of enrolling in a 4-year institution" (p. 24).

Geiser and Santelices (2004) also found a positive relationship between taking AP exams and students' postsecondary grade point average (GPA) during their first year and beyond. Similarly, Hargrove, Godin, and Dodd (2008) noted the following:

> The benefits of participating in both AP courses and exams extended across all outcomes and, in particular, for graduation rate, the critical standard for college success. AP course and exam students graduated at consistently higher rates than

> any of the other groups, and those students with the highest AP Exam grades also graduated at the highest rates within four years. (p. 48)

Horn, Kojaku, and Carroll (2001) explained,

> [There is a] consistent advantage experienced by students who completed rigorous high school curricula—and to a lesser extent by those completing midlevel academic curricula—over their peers in core curricula or lower. Those who completed rigorous curricula were more likely to stay enrolled in their first institution, or if they transferred, to stay on track to a bachelor's degree. (p. 37)

Adelman (1999, 2006) explored high school predictors of college success and found that academic intensity and curriculum quality had more of an impact on college degree completion than did AP test scores and high school GPA. Sadler, Sonnert, Tai, and Klopfenstein (2010) explained that researchers have frequently cited this finding to support the expansion of dual credit programs like AP in high schools.

These findings have supported the proliferation of AP programs nationwide. Godfrey, Matos-Elefonte, Ewing, and Patel (2014) noted that since their inception in 1955, AP programs have become an increasingly accepted method for allowing students to engage in college-level courses while in high school. Geiser and Santelices (2004) explained that initially, colleges primarily used AP course participation to confer college credit to students; but by the 1980s, they began considering AP course enrollment as they made college admissions decisions. Geiser and Santelices (2004) stated that now, most selective colleges and universities factor AP into admissions decisions and maintain an institutional policy on how students can earn college credit through high school AP

course participation. These policies have proven to be a powerful incentive that motivates many students to take AP courses and exams.

The College Board (2014a) found a dramatic increase in AP participation from 2003 to 2013 and revealed that in 2003; 331,734 high school graduates scored a 3 or better on an AP exam. By 2013, that number had increased to 607,505 (College Board, 2014a). The report also revealed that the total number of students taking an AP exam increased from 514,163 in 2003 to 1,003,430 in 2013 (College Board, 2014a).

According to College Board (2008), schools in Maryland have experienced growth in AP participation that mirrors national trends. The 2008 *AP Report to the Nation* revealed that Maryland led the nation with a "13.1-point increase in the percentage of [the state's] graduates scoring a 3 or higher on an AP Exam over the past 10 years" (College Board, 2008, p. 14). Unfortunately, District E did not experience this statewide progress on AP exams. The disparity between county, state, and national performance on AP exams has proven quite substantial over the years. As mentioned previously, during SY 2014, the national success rate for all subjects on AP exams was 59.2%; the Maryland success rate was 64.2%; and the success rate in District E was 27.4%.

Site-based administrators' role in AP enrollment and success. Through the proposed research study, this researcher intends to investigate the role that site-based administrators' perceptions of school practices can play in promoting AP course enrollment and end-of-course exam success. A Wallace Foundation study found that, "leadership not only matters: it is second only to teaching among school-related factors in its impact on student learning" (Leithwood, Louis, Anderson, and Wahlstrom, 2004, p.

3). According to King (2002) instructional leadership means having a deep understanding of teaching and learning, professional development, and how to use data to impact instruction. As instructional leaders, site-based administrators can have a notable influence on the AP experiences of both teachers and students in their schools. Administrators design and support teacher training programs, determine which staff members will teach AP courses, allocate resources to support AP programs, create collaborative work opportunities for teachers, and organize recruitment strategies to attract students to participate in AP courses. Teachers then participate in available training on content and methodology and translate this information into lessons that support student understanding, while students contribute to the success of AP programs through their commitment to the work and their efforts to meet the rigorous demands of each course.

Bell Multicultural High School in Washington, DC, provides an example of the impact that principals can have on AP program expansion. In 2007, the administration mandated that all 11th and 12th grade students at Bell Multicultural High School take AP English Language and Composition and AP English Literature, despite the fact that the majority of the school's population consisted of low-income and English language learner students. One of the school's teachers explained, "[The] idea of requiring AP English began with the guidelines that longtime Bell Principal Maria Tukeva laid down for the 800-student school" (Matthews, 2008, p. 1). "The AP English requirement helped Bell jump from 45th to 13th in the Washington Post's 2007 Challenge Index ranking of Washington area schools, which measures college-level test participation" (Matthews, 2008, p. 1).

In another example, Simpson (2011) found that Centennial High School in Colorado was losing students because (a) the community perceived that the school's curriculum lacked rigor and (b) the school was competing with a nearby International Baccalaureate program. While searching for a way to remake his school, the Centennial principal, Mr. Mulberry, prepared a grant in partnership with the Colorado Board of Education to expand the school's AP offerings. The effect was increased AP training for teachers, a more robust teacher referral system for student participation in AP, and an eventual increase in AP enrollment from 35 to 214 students between 2009 and 2011 (Simpson, 2011).

Likewise, the Bellevue School District in Washington State established a goal to provide all students access to a rigorous high school education that prepared them for college (Burney, 2010). The system focused on providing students with an aligned curriculum from kindergarten through 12th grade; engaging teachers in ongoing training and supporting students with after-school tutorials, summer programs, and support classes during regular school days (Riley, 2003). Burney explained that administrators used these strategies to influence students' enrollment in four-year colleges and universities.

Summary. As this section indicated, District E has established the central goal of ensuring that all students in district schools graduate college and career ready. District leaders have identified AP performance as one of the key components of measuring students' college readiness. However, as previously indicated, district success rates on AP exams across content areas are significantly lower than are the rates of other Maryland counties, the state of Maryland, and the nation. This issue is problematic for

the district because research shows that college personnel widely use AP programs in their admissions decisions, and students' underperformance may result in fewer college-going opportunities (Sathre & Blanco, 2006).

Existing data also suggest that students who take AP courses and do well on the end-of-course exams are more academically successful in college, as measured by GPA and college retention rates. Limited student access to AP courses in District E, along with poor grades and exam performance in AP courses, suggests a lack of student readiness for the rigors of college. Research revealed, however, that site-based administrators can have a significant and positive impact on school AP programs. Therefore, the proposed study will seek to investigate site-based administrators' perceptions of school practices regarding the factors that impact students' enrollment in AP and their success on the end of course exams.

Consequences of Not Addressing the Problem

It is clear from extant research that enrollment in AP courses may lead to a higher level of academic readiness than that demonstrated by non-AP students. This readiness translates to greater odds of enrolling in a postsecondary institution (Chajewski, Mattern, & Shaw, 2011). Additionally, Hallett and Venegas (2011) concluded that the failure to support students' participation in AP courses has a negative effect on their ability to prepare for college and restricts their ability to compete for limited seats at four-year colleges and universities.

A 2007 study conducted by The College Board further supports the relationship between AP course participation and college success (National Science Teachers Association [NSTA], 2007). The report relied on two Texas studies that indicated that

students taking AP courses earned higher grades in college and demonstrated higher college graduation rates than academically and economically similar students who did not participate in AP courses (NSTA, 2007). Specifically, the first study, conducted at the University of Texas, concluded, "Students who placed out of introductory college courses as a result of successful AP exam grades earned higher college grade point averages (GPAs) than students who did not enroll in AP courses (nonAP)" (NSTA, 2007, p. 14). This study compared cohorts of college freshmen at the University of Texas at Austin from 1998 to 2001. One group of students was able to skip introductory college level courses by virtue of their AP exam scores, and the other group consisted of high school graduates with similar college admission exam scores and high school class rank, but had not taken AP courses. The results showed that the students who participated in AP courses earned higher grades in college and ultimately had a higher college graduation rate (NSTA, 2007).

The second Texas study found that success on AP exams was not necessary for students to have positive college outcomes like first and fourth-year college GPA and four-year graduation status (American School Board Journal, 2007). Specifically, this study analyzed the college performance of three groups of high school graduates who attended a college or university in Texas. The three groups included (a) students who took AP English Language and Composition and the accompanying exam, (b) students who only took the course, and (c) a third group who did not engage in AP coursework. All three groups had similar Scholastic Aptitude Test (SAT) and Federal Free and Reduced Price Meals program (FARMS) participation, which is used as a measure of poverty. The researchers used the SAT scores to compare AP exam scores among

students of similar academic ability, and used the FARMS data to measure students of equal economic status. The results showed that approximately 40% of the students who took the AP course and exam graduated from college in four years, approximately 25% of students who took the AP course only graduated in four years, and less than 20% of the non-AP students graduated in the same time frame (American School Board Journal, 2007).

The results from these two studies show that students who took one or more AP courses with or without the exams did better on each of the aforementioned college metrics than did non-AP students. These results were evident even when researchers controlled for academic variance and economic status (NSTA, 2007). These findings suggest that the rigor of AP courses better prepares students for college success even when controlling for relevant student academic and socioeconomic factors.

Prior Attempts to Address the Problem

While in office, Former President Barack Obama placed a significant emphasis on improving levels of college readiness by increasing students' access to college-level courses while they are still in high school ("Reforming and Strengthening America's Schools for the 21st Century," 2007, Support Advanced Placement, para. 6). To accomplish this goal, President Obama sought to support "the successful efforts [that were] underway in many states to increase the percentage of students taking rigorous courses and assessments such as Advanced Placement" ("Reforming and Strengthening America's Schools for the 21st Century," 2007, Support Advanced Placement, para. 6). The findings from Long, Conger, and Iatarola (2012) support the notion that a correlation exists between students' engagement in advanced-level high school curriculums, like AP

courses, and their eventual college enrollment and success. The study focused on the effects that high school courses could have on postsecondary success. Long et al. (2012) found that regardless of their race, gender, poverty, or academic ability, students who enrolled in at least one rigorous course, especially in their first two years of high school, had a higher college enrollment rate.

The study by Long et al. (2012) is important because the researchers used data from Florida public school students to include a significant number of minority and low-income subjects. As a result, the demographics of the research sample are similar to that of the student population in District E, which also serves a high number of minority and low-income students. As of 2016, 61.4% of District E students were African-American, 29.6% were Hispanic/Latino, and 63.8% qualified for FARMS (District E, 2016). The findings from the Long et al. inquiry are also significant because the large sample size included over 100,000 students. Long et al. used data from the Florida Department of Education (FDOE) and included all students enrolled in 8th grade during the 1998-1999 SY, as well as students who subsequently entered the cohort and were on track to graduate in four years.

The students included in the study all graduated with a diploma or GED in four academic years, were observed across at least three grades, and enrolled in a four-year Florida college or university by the spring of 2007. Long et al. (2012) compared academic performance for participants across this sample using the students' high school courses, which the FDOE kept in a database. The researchers coded the students' courses for comparison as Level 1 (basic/ remedial), Level 2 (on-grade level), and Level 3 (honors/AP). They then compared the sample of students' academic performance while

taking into account demographics; test scores; and a broad range of completed courses, including English, world languages, and social studies (Long et al., 2012). While the Long et al. study was specific to one state, rather than providing a national perspective, it is still useful because it takes into account state education policies and graduation requirements (p. 290). These researchers drew the following conclusion:

> Students who take a rigorous course before they graduate from high school are 5 to 6 percentage points more likely to enroll in college than students who do not take such courses. And the effect is largely on 4-year college enrollment. Furthermore, students who enroll in college get additional value from their rigorous high school courses; college students who took a rigorous course in nearly any subject earned more college credits and higher college grade point averages and were more likely to earn a bachelor's degree. (Long, Conger, & Iatarola, 2012, p. 316)

National initiatives. A number of federal initiatives have provided vital support for efforts to increase students' access to rigorous courses. In his 2006 State of the Union Address, Former U.S. President George W. Bush, for example, stressed the importance of providing students advanced options for high school coursework. Long et al. (2012) noted that to support this effort, the federal government pledged funding to states and local districts working to improve the number of rigorous high school course offerings (Long et al., 2012, p. 286). Similarly, President Barack Obama pushed an education agenda that focused on increasing the rigor of high school courses. In 2008, President Obama introduced the *Make College a Reality* initiative, with a stated goal of increasing by 50% the number of students taking AP or college-level courses nationwide by 2016"

(Long et al., 2012, p. 286). Former U.S. Secretary of Education Arne Duncan also showed his support by providing federal funds to states and local districts through the American Recovery and Reinvestment Act of 2009 to encourage the provision of rigorous course options like AP classes (Chajewski, Mattern, & Shaw, 2011).

PSAT/NMSQT scores as a predictor of AP course and exam success. To support the national push to increase access to AP courses in high schools, the College Board has promoted the use of the AP Potential tool, which schools can use to identify students who are ready for the rigor of AP courses based on the students' performance on the PSAT/NMSQT. As Grier (2002) explained:

> The College Board and others have conducted a number of research studies that established a high correlation between PSAT test results and a student's ability to take and pass AP courses and tests. Students who score a 51 or higher on the PSAT have a 50% chance of scoring a three or higher on an AP test. (p. 17)

A College Board study by Ewing, Camara, and Millsap (2006) identified sophomores who took the PSAT/NMSQT in October 2000 and juniors who took this assessment in October 2001. The researchers reduced this group to the students who also took at least one AP exam in May 2002 or May 2003. This sample population included approximately one million students from across the country. From this population, Ewing et al. included only students who completed the SAT registration questionnaire in the study, because this questionnaire provided students' high school grade point averages, high school courses completed and the course grades, and college planning information. This filter brought the sample down to approximately 700,000 students.

Ewing et al. (2006) incorporated the SAT questionnaire into the study to investigate the correlation between performance on the PSAT/NMSQT and AP performance, while also considering other academic factors like high school courses taken and the grades earned in those courses. This inquiry served as a replication of a 1998 study by Camara and Millsap and ultimately found, through the use of a 50% larger sample size, a higher correlation than the original study between students' performance on PSAT/NMSQT and their AP exam scores in 19 out of 25 exams (Ewing, Camara, & Millsap, 2006). It is also important to note that the findings of this study held true regardless of students' gender or ethnic group (Ewing et al., 2006).

Grier (2002) found this correlation between PSAT/NMSQT scores and AP readiness has given some schools districts additional reason to encourage students to participate in the PSAT/NMSQT assessment. For example, beginning with the 2002-03 school year, Guilford County Schools in Greensboro, North Carolina, decided to pay for the administration of the PSAT to all students in Grades 9-11, in an effort to develop a profile of AP-ready students.

According to the District E Instructional Specialist from the Office of Advanced & Enriched Instruction in the Department of Academics, District E has paid for the administration of the PSAT to all 10th grade students and provided schools access to the AP Potential tool since at least 2006. School administrators incorporated the AP Potential tool into the strategy to identify students who demonstrated an aptitude for the increased rigor of AP course work. The College Board expressed its support for this approach by stating that the use of PSAT/NMSQT and the AP Potential tool "can be useful [in efforts

to identify] students who are likely to be successful in AP and other rigorous course" (Ewing et al., 2006, p. 23).

In February 2000, the U.S. Department of Education and the College Board jointly conducted a forum to promote the expansion of AP programs to states. The College Board allocated $20 million to support this effort (Burdman, 2000). As part of the initiative, the College Board engaged 27 schools in five cities across the United States in the EXCELerator program, which was designed to broaden students' access to rigorous AP coursework, regardless of whether they fell into the "college bound" category (Gewertz, 2008). "The EXCELerator Group is a team of experts at the College Board focused on improving college readiness for all students, especially those who are traditionally underserved (College Board, 2012a). The resulting data showed that the schools that participated in the program increased the number of AP courses offered and more than doubled the number of AP exams administered, but the exam pass rate did not improve significantly (Gewertz, 2008). In 2011, the American Institutes for Research (AIR) conducted a longitudinal evaluation of the EXCELerator program focused on the results of the program from the 2006-07 school year through the 2009-10 school year. Holtzman and Stancavage (2011) shared that the EXCELerator program had a number of primary goals, among them, increased participation in AP exams and increased success on the AP exams. The AIR study found, "the EXCELerator program is associated with statistically significant increases in the percentage of students who take AP exams in all four years of program implementation" (Holtzman & Stancavage, 2011, p. 73.) However, the study also found that, "by the third year, the program is associated with a statistically significant *negative* effect on the percentage of students scoring 3 or higher on AP exams;

the percentage of students scoring 2 or higher also decrease, although the effects on scores of 2 or higher do not become significantly negative (Holtzman & Stancavage, 2011, p. 73)

In defense of the EXCELerator program results, Michael Riley, vice president of College Board, stated, "The scores will get better through development of the pipeline, with more teacher training, and more support for kids" (Gewertz, 2008, p. 24). In fact, the EXCELerator Group pointed out seven factors they believed to be of the utmost importance when building both school-system-wide and school-specific AP programs. These categories included "leadership, curriculum planning and sequencing, culture of expectations, instructional support, student support, data analysis, and examination readiness" (College Board, 2012, p. 4). The following section provides a more detailed exploration of these factors.

Factors That Affect AP Enrollment and Success

According to the EXCELerator Issue Brief *Equity and Access*, College Board (2012) has identified seven key areas that schools and school districts should develop to support AP courses and college readiness: (a) leadership, (b) curriculum planning and sequencing, (c) a culture of expectations, (d) instructional support, (e) student support, (f) data analysis, and (g) examination readiness. Together, these factors help expand equity and access to AP and comprise the components of a long-term strategy (College Board, 2012). The proposed study will seek to investigate site-based administrators' perceptions of school practices that relate to these factors, because data indicate that these elements can have a significant impact on students' enrollment in AP and their success on the end-of-course exams.

Instructional support/teacher preparation. Education researcher and policymaker Dr. Kristin Klopfstein, founding Executive Director of the Education Innovation Institute at the University of Northern Colorado, indicated that improved teacher training and instructional support—particularly when it dealt with content knowledge, pedagogy, and peer coaching—was a key factor in efforts to increase student outcomes on AP exams (Gira, 2011). Hallett and Venegas (2011) provided the following explanation:

> Although taking a course may not improve student outcomes, the College Board (2005) found a strong correlation between passing AP exams and having academic success in college. As such, providing more AP courses in an urban school setting might not automatically ensure better college outcomes. There are many possible explanations for this disconnect. One possible explanation is the disparity in the quality of experiences in the AP classroom, which may depend upon the quality of teacher preparation, school resources, and previous knowledge of the students. (p. 469)

Hallett and Venegas (2011) found a strong correlation between teacher preparation and students' ability to pass year-end exams. According to the researchers, "Students reported that an important factor in their failure to pass the end-of-course exam could be attributed to the skills or preparation of their high school AP teachers" (Hallett & Venegas, 2011, p. 478). In a 2000 study by the U.S. Department of Education (USDE), the Director of AP Performance in Missouri made a similar statement, claiming, "Teacher training, to me, is the most important component of any successful AP program. And the ongoing professional development of these persons is what makes things successful" (p. 15).

Data analysis. While important, teacher training and preparation is not sufficient to ensure that students engage and achieve success in AP courses. Schlosser (2015) also noted the importance of providing structured opportunities for vertical teacher planning and data analysis to determine students' level of course and examination readiness. Schlosser explained, "vertical teams may examine course enrollment patterns, results from benchmark tests, and student motivation and disposition in a particular content area" (para. 7). According to the USDE (2000),

> [Districts] have to take a K through 12 approach. So when our AP scores are released again, we don't just say how did a particular AP teacher do, but instead how do those scores reflect our entire curriculum K through 12. (p. 15)

Curriculum alignment and sequencing. Hanover Research (2014) asserted that vertical curriculum alignment was vital for building students' skills and preparing them for the rigor of AP courses. Hallett and Venegas (2011) conducted a study of 48 college-bound graduates from low-performing high schools in the Los Angeles area to determine if a connection existed between their AP course experience and their performance on end-of-course AP exams. Student feedback indicated that the material that teachers presented in the class was not as rigorous as the questions on the AP exam; and as a result, the students did not feel prepared as they sat for the exam (Hallett & Venegas, 2011, p. 480).

Conley (2005) stated that curriculum alignment across grade levels was also a critical component of college readiness and AP preparation. Conley (2005) called this academically challenging curriculum across grades "intellectual coherence," which could

include formulating grade-level exit standards or outlining the steps needed to prepare students for AP exams (Conley, 2005). Moore and Slate (2008) explained the following:

> Teachers and administrators should engage in curriculum alignment in all subject areas that prepare all students for taking more rigorous course work prior to their first enrollment in AP classes. We contend that all students should have equal access to AP classes and AP exams. (p. 64)

Dougherty, Mellor, and Jian (2006, February) also noted,

> School districts need to approach 'Advanced Placement' not as a special set of courses for their already well-prepared students, but as a comprehensive program to prepare large numbers of students, starting in the early grades and including disadvantaged students, to be able to do college-level work before they leave high school. (p. 14)

Culture of expectations. Increasing AP enrollment is another key strategy for improving students' eventual success on AP end-of-course exams. This strategy can be a challenge to implement given the occasional misalignment of expectations held by parents and administrators when faced with deficiencies in students' skills and knowledge. Klopfenstein (2003) reinforced this idea by stating the following:

> With the increasing importance of AP experience in college admissions, it is important that parents, counselors, and administrators recognize the costs and benefits of the AP Program. Parents need to understand that AP students are likely to work harder and receive lower grades in AP courses than in other high school courses. The ultimate payoff comes in the form of study skills that will ease the

transition to college and tuition savings if the student earns a passing score on the AP exam. (p. 46)

Leadership. Appropriate leadership in this area involves the provision of a systematic approach to the development of an AP program. School leaders must coordinate the many facets of the program, such as curriculum alignment and sequencing, student support, and teacher training, into one working unit (College Board, 2012). Additionally, as Gewertz (2008) noted, school leaders must be trained "to oversee all of the pieces of a culture shift that presumes college or college-level skills will be the rule, not the exception" (p. 25).

As educational leaders develop their vision for an AP program, they must pay special attention to the balance between promoting increased enrollment and maintaining the rigor of the program by taking into account students' academic readiness. Indeed, Sadler & Tai (2007) point out that in spite of College Board's stance of open access to AP courses for all students, high school policies vary when concluding which students can enroll in AP courses. It is important for leaders to consider taking steps to increase AP enrollment while also working to improve students' performance on AP exams, despite evidence suggesting that enrollment in AP courses alone is not necessarily enough to ensure students' success in college. As Dougherty et al. (2006) stated, participation in AP courses does not inevitably boost college success; what matters most is the AP student success rate on the end-of-course AP exams. It follows, then, that school leaders must work to increase enrollment in AP courses *and* improve the AP success rate. Dougherty et al. asserted the following:

> The conclusions of Geiser and Santelices (2004), who found that the combined number of AP and honors courses on a student's transcript did not predict college success – measured by the student's first-year college grade point average and the odds the student would stay in college for at least two years – but that success on SAT II and AP exams did. (p. 13)

Despite this claim, Klopfenstein (2003) cautioned school and system leaders against basing their evaluations of their AP programs solely on students' AP exam scores. Research suggests that the knowledge gained by learning college-level material is invaluable to students (Klopfenstein, 2003). According to Klopfenstein,

> AP exam scores alone provide a poor measure of overall AP Program quality. Scoring of the AP exams is calibrated based on the performance of a national group of students, but many schools are responsible for educating students whose pre-AP curriculum leaves them at a decided disadvantage relative to the national group. Hispanic, Black, and low-income students tend to arrive in AP classes with less academic preparation and less developed study skills than middle-class white students, and a high score on the AP exam is not the only indication that high-level learning has occurred. (p. 43)

In other words, when assessing their AP programs, Klopfenstein (2003) asserted that school leaders must consider both AP exam outcomes and the progress students make toward earning a three or better on AP exams, because some AP students come less prepared for the rigor of the courses.

Student support. According to the *10th Annual AP Report* (2014), from 2003 to 2013, the total number of AP examinees has increased from 514,163 to 1,003,430

students, respectively. Gira (2011) found that this substantial increase in AP participation left some educators concerned about the reduced quality of AP course rigor. Gira further asserted that the Advancement Via Individual Determination (AVID) Center believed in the expansion of AP programs, provided students have sufficient support. Conley (2007) identified several steps schools should take to support students' college readiness goals appropriately. Conley noted that school must (a) ensure that students are interacting with demanding academic content; (b) provide opportunities for students to develop cognitive skills like thinking and reasoning; and (c) increase students' sense of personal responsibility for their learning over time.

The research indicated that various programs are also available to support students' college readiness goals. *SpringBoard* (2013) encourages college readiness, including preparation for AP courses, by increasing the rigor of curriculums across grade levels and providing instructional materials and performance-based assessments to support preparation efforts. *ACCESS* (2015) stated that the AVID program supported the college readiness of all students through enrollment in rigorous courses like AP and the development of metacognitive skills.

Debating the Benefits of AP Courses

Research indicates that AP program participation across the nation has grown significantly over the past several decades. Klopfenstein and Thomas (2009), for example, found that secondary school participation in the AP program grew from 890 to over 15,000 schools from 1960 to 2009. Some research supports the expansion of AP. As stated earlier, the American School Board Journal (2007), shared two Texas studies where students who took one or more AP courses with or without the exams had a higher

college grade point average and graduation rate than non-AP students. Similarly, Chajewski, Mattern, and Shaw (2011) found that AP participation was a critical factor in increasing students' odds of enrolling in a 4-year institution. With respect to AP exams, Geiser and Santelices (2004) found a positive relationship between taking AP exams and students' postsecondary grade point average during the first year and beyond. Hargrove, Godin, and Dodd (2008) noted a higher college graduation rate as a key benefit of AP course and exam participation, with students earning the highest AP exam scores had the highest college four-year graduation rate. However, even as the federal government, the College Board, and schools across the United States pursue strategies to encourage increases in AP program participation and improvements in quality, some researchers have drawn into question the benefits of student participation in AP courses. For instance, while the College Board declared that AP exam-takers were more likely to graduate from college in four years, contrary findings from Dr. Klopfenstein, from the University of Northern Colorado in Greeley, indicated that there was no difference in graduation probability between an AP and non-AP student (Adams, 2014).

Klopfenstein and Thomas (2009) analyzed a sample of over 28,000 public high school students in Texas who attended 31 four-year colleges/universities in May 1999 by examining their level of AP course participation in high school. The researchers sought to determine whether students' enrollment in AP courses (a) was a predictor of college success or (b) caused college success. Klopfenstein and Thomas compared students' early success in college, as measured by returning for the second year of college and first semester GPA, using a number of high school factors, including SAT scores, race, gender, years of science, world language and honors courses taken, most advanced level

of math completed, high school GPA, and status as an English language learner. They also accounted for social factors and school characteristics, including parents' education level, students' FARMS participation, the percentage of inexperienced teachers at schools, and school size. Their study was unique because it took into account non-AP curricular courses that the students completed (Klopfenstein & Thomas, 2009) study).

After reviewing all of the data, Klopfenstein and Thomas (2009) found "no conclusive evidence that, for the average student, AP experience [had] a causal impact on early college success" (p. 887). Rather, they concluded that AP participation was an indicator that students were academically motivated and thereby more likely to succeed in college. The researchers asserted that the level of advanced math taken and the number of science courses completed was a stronger predictor of early college success than was enrollment in AP courses (Klopfenstein & Thomas, 2009).

Klopfenstein and Thomas (2005) noted the following key shortcoming in College Board's research purporting the impact of AP course participation on early college success:

> Research from the College Board and ETS (Educational Testing Service) is fundamentally flawed because it fails to account for the nature of the typical AP student, who is particularly bright and motivated and likely to experience positive college outcomes even in the absence of AP experience. (p. 2)

The researchers contended that a rigorous high school curriculum, inclusive of non-AP math and science courses, not AP experience, is the key lever for improved early college success (Klopfenstein & Thomas, 2005). The authors explained the following:

> [After] controlling for the balance of a student's high school curriculum, family, and school characteristics, AP students are generally no more likely than non-AP students to return for a second year of college or to have higher first semester grade point averages. These results are likely due, at least in part, to the rapid expansion of the AP Program since 1990. While expanding access to and participation in AP are laudable goals, they must be coupled with diligent attention to program quality. (p. 3)

These findings support efforts to maintain quality AP programs and reinforce the desired goal of college readiness.

In a similar argument, David Oxtoby, president of Pomona College in California, declared that promoting AP participation in high school was the wrong approach to improving levels of college readiness among students (Oxtoby, 2007). Oxtoby explained that he did not believe that increased enrollment in AP courses necessarily translated to a better high school education because "[a] basic foundation in mathematics, science, English, history, and language in high school has been replaced by specialized electives. And a yearlong college course is far deeper and more substantive than a high school AP course" (Oxtoby, 2007, p. 7).

Another issue that draws into question the benefits of AP participation is the lack of a national policy that addresses the acceptance of AP scores for college credit. Adams (2014) revealed that even within individual institutions, some departments may accept AP credit while others do not. Despite this uneven landscape, the incentive of receiving college credit for successful AP course completion remains significant for students. In fact, while the number of students taking AP courses grew from 846,000 in 2005 to 1.5

million in 2014, a survey conducted by the College Board in 2013 revealed that 50% of students said "they'd be less likely to apply to a college or university that didn't give credit for AP exam scores" (Adams, 2014, para. 29).

Despite the aforementioned research that questioned the impact of AP participation on college success, other studies have supported the notion that a positive relationship exists between AP course enrollment and college readiness. Mattern, Shaw, and Xiong (2009), for example, found that academically similar high school students, as measured by SAT scores and GPAs, who scored a 3 or higher on the end-of-course AP exam, earned higher first-year college GPAs than did students who scored below a 3 or who did not take the exam. In a separate study, Keng and Dodd (2008) found that across 10 different AP exam subjects, students who earned AP credit on the end-of-course exams earned a higher first-year GPA and more first-year credit hours than did non-AP students. The AP and non-AP students were of comparable academic ability, as measured by high school class rank and SAT scores (Keng & Dodd, 2008).

In addition, a study by the NSTA (2007) also revealed data supporting the notion that AP course participation had a positive impact on subsequent college success:

> [Students] who [took] one or more AP courses and exams and students who had taken one or more AP courses, but no exam, significantly outperformed non-AP participants on all college outcomes in all years after statistically controlling for SAT score and economic status. (p. 14)

These findings reinforce the assertion that it is vital for students of all socioeconomic and academic levels to have access to rigorous, college-level courses to prepare for academic success in college.

Equitable Access to AP

In 2002, to promote student access to higher education, the College Board adopted an equity policy statement that aligned with the aforementioned philosophy (College Board, 2002). Through this statement, the College Board encouraged schools to open AP courses to all students willing to enroll, especially traditionally underserved minorities. Despite this policy, Maryland still maintains an AP participation gap across different demographic groups. According to the *10th Annual AP Report to the Nation State Supplement* published by the College Board (2014), 35.7% of the nation's 2013 high school graduating class was Black; 22.0% of this group took an AP exam, and 11.7% of the exam takers earned a 3 or better. Comparatively, Latino students made up 9.3% of the graduating class; of these students, 8.6% took an AP exam, and 8.8% of the exam takers scored a 3 or better. White students made up 61.3% of the graduating class; 52.6% of this group took an AP exam, and 47.5% of the exam takers scored a 3 or better (College Board, 2014).

According to the College Board's *District Integrated Summary for Prince George's County Public Schools* (2013), during SY 2012-2013 White students comprised 53.7% of all AP test-takers for the state of Maryland, while only 19.3% of Black students and 8.0% of Hispanic students sat for the exam. In District E, like the state of Maryland, the AP participation gap is significant. Patterson and Keane noted that in District E, the AP participation rates for Black and Hispanic students in the 2012 cohort were 33% and 27%, respectively, compared to 60% and 70% for White and Asian students, respectively. In essence, of the 6,950 Black students eligible to participate in AP courses, 2,285 took at least one AP exam; comparably, of the 416 eligible White students, 250 sat for at least

one exam. Nationally, White students represented 55.5% of all AP test-takers, while Black students accounted for 8.3%, and Hispanic students represented 18.1% of test-takers (College Board, 2013). These numbers show a sizeable gap in enrollment between White, Black, and Hispanic students, despite College Board's Equity policy.

As a national organization, the College Board relies on each school system to develop policies to promote AP access for all. According to Wakelyn (2009),

> During the past decade, the College Board, working with leading states and school districts, has advocated that AP be open to all interested students. Since 2000, the federal government's AP Incentive Program has provided $191 million in grants to 140 states and districts, mostly to increase AP access and success among underrepresented students. (p. 1)

The College Board (2010) explained that, to align with the College Board Equity Policy, schools should seek to provide open access to students who are motivated to participate in AP courses by employing specific practices, including (a) using data to provide targeted student support; (b) creating rigorous pre-AP honors courses; (c) aligning curricula across grade levels and bolstering this approach by having experienced upper grade teachers teach 9th-grade courses; (d) developing writing skills in all courses; (e) providing regular professional development for teachers; and (f) offering tutorials for students.

Prior Attempts to Address the Problem in Maryland

The College Board (2014) *10th Annual AP Report to the Nation – Maryland Supplement* presented a number of strategies that states across the nation had implemented to support AP performance. According to the College Board (2014b), AP

performance was "included in the state accountability system" (p. 3), and states had "set clear, measurable statewide goals toward improvement" (p. 3). The College Board encouraged educators to take part in the development of AP programs at local schools by serving as AP Exam Readers or joining course and exam development committees (p. 3). College Board subsequently encouraged districts to "develop policies that allow AP course work and exam scores for sophomores and juniors to substitute for statewide graduation requirements and/or end-of-course assessments" (College Board, 2014b, p. 3).

The College Board (2014b) report showed that the statewide number of AP participants and the AP success rate increased from 2003 to 2013. In 2003, 13,315 high school graduates took at least one AP exam, and in 2013, that number rose to 27,370. Likewise, the number of graduates scoring a 3 or better on an AP exam increased from 9,184 in 2003 to 17,111 in 2013 (College Board, 2014b). While state efforts over the past decade have had a positive impact on the promotion of AP programs, District E has not met with similar success, and district students' pass rate on AP exams lags well behind state averages. To compound matters, there has not been a clear and sustained strategy implemented across the district to improve students' access and enrollment in AP courses or their success on the end-of-course exams.

Burdman (2000) found that increased teacher training, paying the AP exam fees for students, and offering AP courses online have all been strategies employed in a number of states. In fact, in 2000, the California legislature allocated $30 million dollars to expand AP programs across the state (Burdman, 2000). In the *10th Annual AP Report to the Nation – Maryland Supplement*, College Board (2014) recommended similar strategies for Maryland schools. Suggested strategies included supporting additional

professional development opportunities for teachers, creating regional training across districts, and identify funding sources so students can participate and perform in AP.

Prior Attempts to Address the Problem in District E

According to a study conducted by Patterson and Keane (2013), the aggregate gap in the AP success rate between District E and the State of Maryland was at least 33% between 2009 and 2013. The county has taken a number of steps to increase students' AP performance, including (a) increasing students' access to AP courses through the implementation of the AP-8 initiative, (b) facilitating the use of the AP Potential tool by local schools, (c) providing AP training for teachers and organizing vertical articulation opportunities, and (d) implementing a weighted grading scale for AP courses.

The AP-8 initiative. In 2006, District E implemented the AP-8 initiative, which mandated that each high school offer at least eight AP courses. This decree resulted from the county's commitment to an open-door policy for all students interested in taking AP courses and dictated that any students who wanted to enroll in an AP course should be able to do so (District E, 2006). This policy aligned with the College Board's Equity Policy statement. According to the policy, each high school should, at minimum, offer the following AP courses: one math (statistics) and one science (biology) course, two English (English Literature and English Language) courses, and four social studies courses (U.S. Government and Politics, Human Geography, Psychology, and World History; District E, 2006). In practice, offering each of these courses proved a difficult undertaking for many schools. According to Patterson and Keane (2013), "[While] 20 of the regular 22 District E high schools offered at least eight AP courses in SY2012, only seven offered the prescribed 'AP8' courses" (p. ii).

According to the 2014-2015 county AP coordinator, there were a number of barriers to implementing the AP-8 policy in full (County AP coordinator, personal communication, December 2014). According to the coordinator, District E did not provide staff or funding allocations to support the implementation of the policy at each school. As a result, there were not enough teachers to teach many of the requested AP courses, especially since schools varied in size and program offerings. Some smaller schools already offered a variety of specialty programs like International Baccalaureate (IB) and Career Academies, which meant that fewer staff members were available to take on additional AP courses. The county AP coordinator also explained that a lack of training designed to help teachers prepare to teach AP courses limited the impact of AP-8. Additionally, she noted that some principals failed to assign some of the trained AP teachers to teach AP courses based on competing school priorities (County AP coordinator, personal communication, December 2014). In the end, while the AP-8 initiative increased students' access to AP courses, it did not close the AP exam success rate gap between District E and Maryland.

AP Potential program. According to a District E Academic Program Instructional Specialist for Advanced and Enriched Instruction, in 2006, the district launched a second effort to improve AP enrollment and success on AP exams (Academic Program Instructional Specialist, personal communication, September 2016). This initiative, the AP Potential program, was designed to assist with the identification of students who would excel in AP courses. Principals and counseling teams received training on how to use the AP Potential tool and to modify the qualification scale for courses according to the needs of each individual school.

Teacher training. According to the county AP coordinator, building teacher capacity was a major priority, and the county spent over $100,000 in 2013-14 on teacher training (County AP coordinator, personal communication, December 2014). In addition, District E formed vertical teacher teams to increase articulation between feeder courses. In 2014, the county formed three content review centers staffed by teachers with demonstrated success in preparing students for AP exams. The county AP coordinator explained that the centers offered monthly opportunities for teachers to review course content, anchor papers, and selected response items. The county also purchased an online teaching tool, Shmoop, to engage students with the AP content. However, Shmoop was not evenly utilized within each school to support student growth (County AP coordinator, personal communication, December 2014). College Board does not require a particular type or amount of training or certification to teach an AP course, though schools are encouraged to have teachers participate in training in their content area prior to teaching the course and periodically thereafter. These trainings may include AP summer institutes and workshops, participating as an AP exam reader/scorer, and/or attending the AP conference (Master of Arts in Teaching Guide, 2017).

According to the Education Commission of the States, Maryland does not mandate each county to offer specific training for AP or pre-AP teachers (Education Commission of the States, 2017). As a result, each district and even individual schools must cover the cost of providing training for AP teachers, which, in addition to the cost of the training registration, can also include the cost of travel, room and board. However, College Board does encourage teacher ongoing professional development and having

high standards for teachers in the areas of: content knowledge, pedagogy, analysis, and reflection (College Board, 2016d).

Weighted grading scale. To encourage students to participate in AP courses, District E also implemented a weighted grading scale for advanced course completion. Administrative Procedure 5128, spells out the methodology for calculating weighted GPAs for advanced courses, and Attachment 2 of the procedure lists the weighted AP courses available for students (District E, 2015b). Attewell (2001) found that schools that weighted GPAs for AP courses had an overall impact of highlighting the most academically successful students from their classmates. Attewell further noted that weighting "substantially improves the chances of individuals' admission to selective colleges, since it pushes the best students above the 4.0 ceiling that once defined a top performance" (Attewell, 2001, p. 281).

Logic Model

The logic model depicted in Figure 1 is a conceptual map illustrating how district policies and procedures, potential constraints, the environmental context, stakeholders, factors from the research literature that may impact AP enrollment and performance, and the possible outputs of each factor may address the AP enrollment and performance gap. As outlined earlier, there is a consistent and significant gap between the number of students in District E who are enrolled in AP courses and those who score at or above a three on AP tests. District performance on AP exams across content areas is significantly lower than that of (a) other Maryland counties and (b) the overall Maryland and national averages.

District E has declared, through its strategic plan, that the district's primary goal is to graduate all students, college and career ready, with a score of three or better on an AP exam being an accepted measure of college readiness. The efforts mentioned previously were designed to facilitate the achievement of this objective. Unfortunately, students' lack of academic readiness for a rigorous curriculum serves as a potential constraint on the district's efforts to expand access to and performance in AP courses. Klopfenstein and Thomas (2009) found that the rigor of AP courses may be a significant obstacle for students who are not adequately prepared for the academic demands of the advanced coursework. Klopfenstein (2003) further established that Hispanic, Black, and low-income students have significant deficits in their study skills and academic training when compared with their middle-class White counterparts. Against this backdrop of limited academic student readiness, College Board promotes, through an Equity Policy, an AP philosophy of inclusion for any students willing to accept the challenge presented by each course.

As noted earlier, the College Board has identified seven key areas that school districts and schools should develop to support AP and college readiness: leadership, curriculum planning and sequencing, culture of expectations, instructional support, student support, data analysis, and examination readiness. Together these factors help expand equity and access to AP and comprise the components of a long-term strategy (College Board, 2012).

For the purposes of this study, the sample group will include school administrators (i.e., principals, assistant principals, and AP coordinators) in 30 county high schools. These individuals serve as the focus of this study because they can impact

the AP experiences of both teachers and students in their schools, as any one of the subjects in these roles may find themselves responsible for implementing school-based

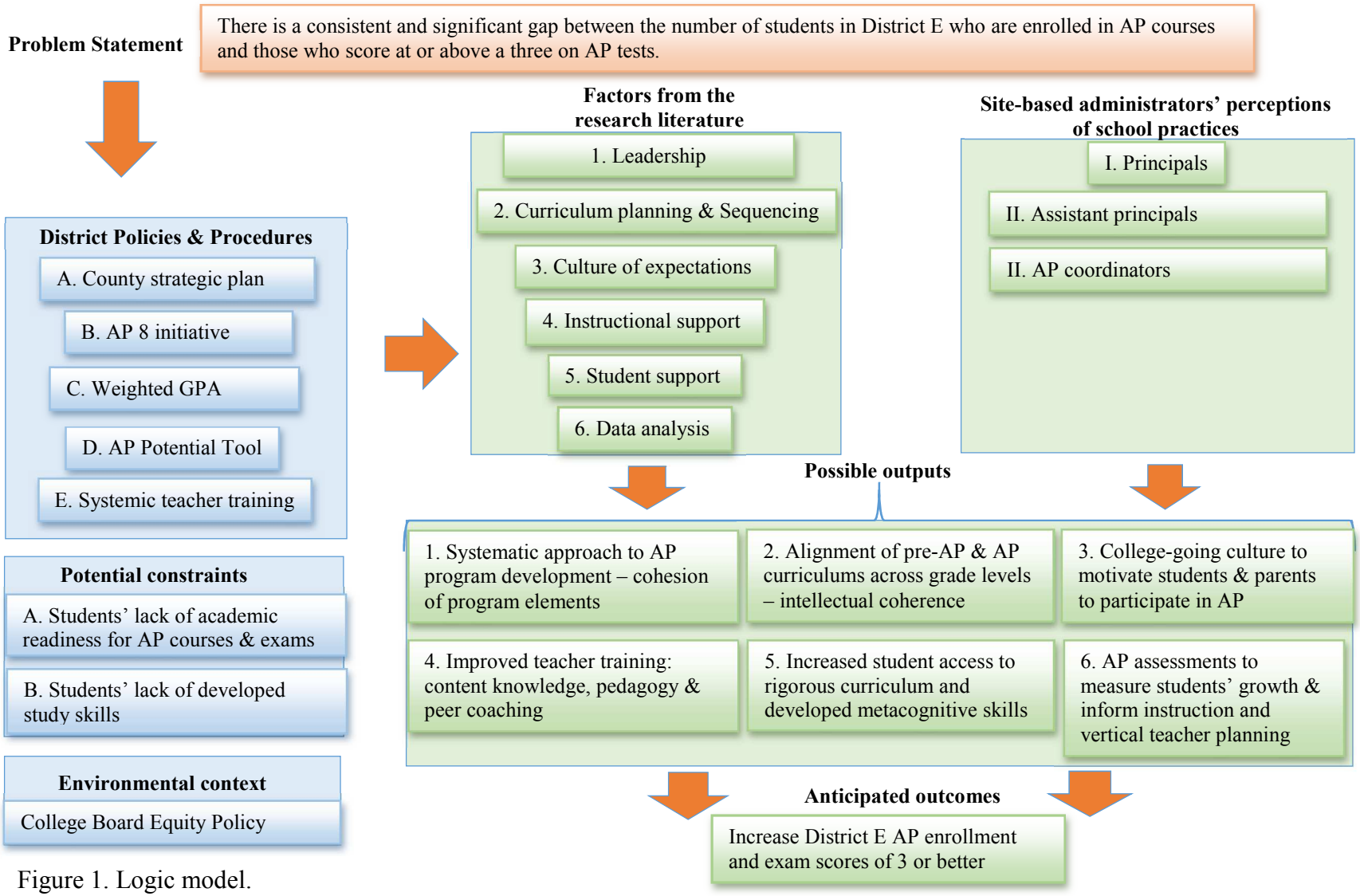


Figure 1. Logic model.

AP policies and procedures. School administrators develop, identify, and support teacher training programs, select which staff members will teach AP courses, designate resources to support AP programs, organize collaborative work opportunities for teachers, and coordinate recruitment strategies to attract students to participate in AP courses. Because of this potential influence on AP programs, understanding these stakeholders' perceptions about the factors that influence the effectiveness of AP programs is critical.

In addition, of the seven key areas recommended by the College Board, this researcher omitted examination readiness from the list of factors reflected in Figure 1, because it deals primarily with the logistics of effectively administering the exams. As outlined in the *Bulletin for AP Students*, examination readiness includes maintaining adequate AP exam security, maintaining a distraction free test environment, providing test accommodations for qualifying students, and ensuring students accurately complete the AP exam registration process on the first day of testing (College Board, 2016c). Further, the *AP Coordinator's Manual* provides clear examination readiness guidelines regarding the proper timing of exams, instructions on the training of exam day proctors, and student seating policies (College Board, 2016a). Due to the straightforward, logistical nature of each of these items, examination readiness was not an area of focus for this study.

Figure 1 details the remaining six factors and the possible outputs of each element. As Figure 1 illustrates, the possible outcome for leadership is a systemic approach to the development of an AP program, with resultant cohesion among the different elements. Curriculum planning and sequencing may result in alignment of pre-AP and AP curriculums across grade levels. Establishing a culture of expectations may result in the development of a college-going culture, which motivates students to engage in AP courses and parents to demonstrate their support for the AP programs, despite the challenges to students. Additionally, a focus on instructional support

(i.e., professional development) may result in improved teacher training opportunities and a stronger command of course content, pedagogy, and peer coaching skills.

The figure also illustrates that the provision of student support can lead to increases in students' access to the rigorous curriculum and their development of metacognitive skills that support their own learning. Finally, effective data analysis may result in the effective use of assessment data including AP benchmark assessments to measure students' growth, which can inform instruction and vertical teacher planning. The anticipated outcomes from the effective implementation of these factors are an increase in the AP enrollment in District E and an increase in the number of AP exam scores of three or better.

Summary

In *A Test of Leadership*, a report sponsored by former U.S. Secretary of Education Margaret Spellings, and written by the Commission on the Future of Higher Education, the USDE (2006) recommended that high school reform is a critical component of improving students' college access and success. The report supports programs, like AP, that determine the college readiness of high school students and simultaneously prepare them with college-level coursework. This assertion was underscored by the *Affordability, Accessibility and Accountability* report from the Community College Virtual Summit, where the USDE (2007) stated that to address the issue of students' college access, high schools must offer students more rigorous, college-level course options.

Gollub, Bertenthal, Labov, and Curtis (2002) confirmed that AP was the most widely used national program for college-level courses in high school. Hallett and Venegas (2011) shared that over the past 20 years, AP has greatly expanded due to the perception that AP participation supports college readiness. In addition, "increasingly AP is seen as an indication of school quality

and a measure of equity (Burdman, 2000, p. 29). Additionally, by earning a 3, 4, or 5 on the end-of-course exams, many students can also earn college credit for completed AP courses.

College Board has promoted increased accessibility to AP by establishing an open access policy that encourages schools to allow all students who are willing to take AP courses. Despite the significant increase in student participation in AP, there is still debate on how best to utilize AP to support students' learning. On one hand, open access proponents have demonstrated that by participating in AP courses, students are better prepared for success in college, as measured by first-year GPA and college graduation rates, regardless of their scores on AP exams (NSTA, 2007). In addition, Geiser and Santelices (2004) explained that increasingly, college representatives take AP courses into account when making admissions decisions. Hallett and Venegas (2011) noted that, as a result, efforts have increased to expand the number of AP courses offered in urban areas to improve college access for underrepresented groups. Klopfenstein (2003) found that Black and Hispanic high school students enrolled in AP courses at nearly half that of White students.

In contrast, Dougherty et al. (2006) suggested that access to the rigor of AP courses is not enough to improve students' college performance. Instead, Dougherty et al. found that students in AP courses must also demonstrate proficiency on the end-of-course exams for the benefits of AP programs to be realized in college graduation rates. Otherwise, the rigor of the AP courses will make the content inaccessible to the students, and they will be unable to keep up with the demanding work (Klopfenstein & Thomas, 2009). Despite these contrary findings, the expansion of AP across the country has continued to accelerate.

College Board has identified seven key factors that schools and systems can leverage to increase both AP enrollment and end-of-course success: leadership, curriculum planning and sequencing, a culture of expectations, instructional support, student support, data analysis, and

examination readiness (College Board, 2012). These strategies help schools prepare students to face the demands of AP coursework and perform at a higher level both in the class and on the exam.

In *The Promise of 2020 School System Strategic Plan*, District E stated its aim to increase students' access to AP courses and improve their performance on the end-of-course AP exams. Currently, District E schools offer a variety of different AP courses, with varying degrees of success. According to the 2014-15 county AP coordinator, variances in success may result from a lack of standardization in teacher training and the student selection process. Some schools allocate more teacher and training resources to AP, while others offer less (County AP coordinator, personal communication, December 2014).

The school system would benefit from the identification of a key set of recommended strategies that would support AP enrollment and performance in each school. Without a prevailing, mandated strategy for implementing AP, individual high school administrators in District E have significant autonomy in how they build and sustain the AP programs. As a result, site-based administrators' perceptions on the factors that influence AP are critically important to the implementation of AP programs.

The proposed study seeks to investigate the role that site-based administrators' perceptions can play in promoting AP course enrollment and students' success on the AP end-of-course exam. Through this inquiry, the researcher will identify site-based administrators' perceptions of school practices regarding the factors that impact AP enrollment and end of course AP exam success. The results gleaned from this study will benefit District E by identifying effective strategies that principals can implement to strengthen AP programs across the system.

Section 2: Methodology

The purpose of this study was to investigate site-based administrators' perceptions of school practices relating to the key factors that influence students' AP course enrollment and success on the end-of-course exams. Six of the seven key factors outlined by the College Board EXCELerator Group served as the basis for this investigation.

Context of the Study

Klopfenstein and Thomas (2005) noted that the AP program ideally affords high school students from across the country the opportunity to engage with a rigorous, college-level curriculum. Adelman (2006) affirmed the importance of exposing students to a rigorous curriculum by asserting that the strongest predictor of postsecondary completion was the demand and quality of a student's high school coursework. Chajewski et al. (2011) found that most colleges and universities followed the American Council on Education's recommendation to give college credit and/or course exemption for students who passed AP exams with a 3, 4, or 5, because these scores satisfactorily demonstrated mastery of the course content. The College Board (2006) provided a specific interpretation of AP scores:

> AP Exam grades of 5 are equivalent to the top A-level work in the corresponding college course. AP Exam grades of 4 are equivalent to a range of work representing mid-level A to mid-level B performance in college. Similarly, AP Exam grades of 3 are equivalent to a range of work representing mid-level B to mid-level C performance in college. (p.1)

The College Board (2002) has established an equity statement that encourages administrators, AP coordinators, and teachers to support the enrollment of any students in AP courses who are willing to take on the challenge of these dual credit courses. Furry and Hesch (2001) also noted that AP teachers need the support of their principals and school districts to thrive. Because different stakeholder groups, like principals, assistant principals, and AP

coordinators, can have an impact on AP programs, this study included subjects from each of these populations in the survey sample.

Studies indicate that, in addition to the principal, assistant principals, and AP coordinators may be responsible for implementing school-based AP policies and procedures. The Association for Career and Technical Education (2008) stated "The U.S. Department of Labor (DOL) describes the role of the assistant principal as aiding the principal in the overall administration of the school" (p. 9). This shared responsibility includes supporting the instructional program to prepare students for higher education. In fact, Van Reusen, Shoho and Barker (2001) found school administrators need to take into account the added pressure to prepare students for admission into institutions of higher education. This preparation includes student admission into advanced courses (Hawkins, 2004; Solorzano & Ornelas, 2002). The College Board (2016b) *AP Program Guide* also noted that each school offering AP courses must designate an AP coordinator who is centrally responsible for organizing and overseeing the AP program. The guide goes on to say that the AP coordinator can "be a full- or part-time administrator, counselor, faculty member, or other school staff member who does not teach an AP course" (College Board, 2016, p. 9). Because assistant principals and AP coordinators share the responsibility of implementing AP programs, the perceptions of these stakeholder groups can potentially influence the enrollment of students in AP courses and effect the implementation of strategies to support AP programs. For this reason, it was instructive to gather data on, and draw comparisons of, their views on AP offerings.

To provide additional support for efforts to include students in AP courses, College Board (2012) established the EXCELerator Group to aid school systems and schools with the development of robust AP programs. As mentioned previously, this group has identified seven factors that are important to efforts to build system-wide and school-specific AP programs:

"leadership, curriculum planning and sequencing, culture of expectations, instructional support, student support, data analysis, and examination readiness" (College Board, 2012, p. 4).

Research Questions

The six key factors used to assess administrators' perceptions were drawn directly from those of the EXCELerator Group described in Section 1. These factors were based on the considerable expert input, research, and implementation studies conducted by College Board in 27 schools across five urban districts including Chicago, Denver, Duval County, Florida, Hillsborough County, Florida, and the District of Columbia (Gewertz, 2008). These factors help expand equity and access to AP and comprise the components of a long-term strategy (College Board, 2012). Holtzman and Stancavage (2011), from the American Institutes for Research, conducted a longitudinal evaluation of the EXCELerator program focused on the results of the program from the 2006-07 school year through the 2009-10 school year and found that schools who participated in the EXCELerator program increased participation in AP exams. As a result, they served as the construct of best practices in AP for this investigation. The following research questions guided the development and implementation of the inquiry:

1. How do principals, assistant principals, and AP coordinators perceive school practices related to the six factors (i.e., leadership, curriculum planning and sequencing, culture of expectations, instructional support, student support, and data analysis) that influence AP enrollment and success rates?
2. How do perceptions differ among principals, assistant principals and AP coordinators regarding school practices related to the six factors (i.e., leadership, curriculum planning and sequencing, culture of expectations, instructional support, student support, and data analysis) that affect AP enrollment and success rates?

3. What barriers and supports do principals, assistant principals, and AP coordinators encounter when implementing school practices related to the six factors (i.e., leadership, curriculum planning and sequencing, culture of expectations, instructional support, student support, and data analysis) that support AP enrollment and success rates?

Design

The researcher determined that a descriptive, quantitative research methodology was most appropriate for this inquiry, and as such, used a survey design. Creswell (2009) noted the following benefits of the survey design:

> A survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population. From sample results, the researcher generalizes or makes claims about the population. (p. 145)

Creswell (2012) further explained that the survey design is useful when seeking to (a) describe trends in data through a longitudinal study or (b) collect data during one time period using a cross-sectional survey design. The researcher conducted a cross-sectional survey because it allowed for the examination of "current attitudes, beliefs, opinions, or practices. Attitudes, beliefs, and opinions are ways in which individuals think about issues, whereas practices are their actual behaviors" (Creswell, 2012, p. 377).

The survey design allowed for the collection of data from multiple participants in a short period of time. The study had a non-experimental design because it collected data on participants' perceptions, but did not seek to determine causality. This inquiry sought to examine the perceptions of principals, assistant principals, and AP coordinators regarding research-based school practices that support AP programs. The researcher also sought to identify any differences in the stakeholders' perceptions of the six key factors that influence AP enrollment and success

rates. Finally, the research aimed to identify any barriers encountered and assistance needed for each of the three stakeholder groups when working to support an AP program. A descriptive, quantitative research methodology using an existing survey instrument that was adapted was used in this investigation. An existing survey was adapted for this purpose. For this study, the researcher implemented a descriptive-survey process, as outlined by Lodico, Spaulding, and Voegtle (2010), which involves the following steps:

1. Designing and developing the survey
2. Selecting the sample
3. Piloting the survey
4. Administering final survey and collecting data
5. Analyzing data (p. 159)

Methods

In the following sections, I describe the sample, the survey instrument and the survey procedures. All members of the sample were from District E.

Sample. The sample consisted of principals, assistant principals, and AP coordinators in 22 of 31 high schools across the district. Two high schools in the system, Delaney High School and Edwin High School, were excluded from the study because the researcher had served as the principal of Delaney High School from 2014 to 2017 and at the time of the study supervised the principal of Edwin High School. Including staff members with varying roles in the survey provided important information from multiple perspectives and school settings. Creswell (2012) explained that this approach aids in measuring current attitudes and practices and allows for the comparison of the attitudes, beliefs, opinions, and practices of two or more educational groups. In addition, because the names in the target population could be acquired by the researcher and contacted directly, this researcher utilized a single-stage sampling procedure (Creswell, 2009).

Survey instrument. The AP Perceptions Scale served as the primary data collection instrument for this study. The scale measured the perceptions of school practices of the target population related to the six EXCELerator Factors. The instrument also collected demographic and background information for each respondent. The AP Perceptions Scale used in this study was adapted from an existing scale developed and subsequently published by Dr. Steve Wood (2010), in a dissertation entitled *Student Access to Advanced Placement (AP) Coursework: Principals' Beliefs and Practices*. Wood stated that the original survey aligned with six research factors:

- Value of AP Coursework and Communicating That Value to Stakeholders
- General Course Offerings
- AP Placement Policies – Open vs. Limited Access
- Attracting More Students to AP Courses
- Teachers' Adaptability and Commitment to AP Expansion
- Expecting and Ensuring Success for Students in AP Courses

The adapted survey was realigned from the elements listed above to the six factors noted as best practices for supporting AP enrollment and success rates. The original survey included 56 items. Wood (2010) noted the following:

> The questionnaire is arranged and will be analyzed in such a way that higher numerical values indicate beliefs and perceptions that remove barriers to student participation in more rigorous courses and prepare students to be successful. Lower scores indicate a structure that reserves these courses for a select few of the brightest students or that don't provide complete preparation for a successful experience (p. 102).

The researcher contacted Dr. Wood via email to ask permission to adapt the survey for this study. Dr. Wood consented to the modification of the study in a written email reply (see Appendix

B for consent). The section on Instrument development details the process of modifying Dr. Wood's scale.

The researcher used the online application Qualtrics to create the survey instrument and disseminate it to the respondents via email. Lodico et al. (2010) recommended that surveys open with a statement outlining the purpose of the study, a confidentiality statement, and questions to collect demographic information from respondents. Specific demographic information included the respondents' role at the school, years of experience in the current role, time devoted to the AP program, and the extent of their AP training. The survey also began with potential disqualifying questions about whether the school currently has an AP program and the person's level of responsibility for or involvement with the AP program. If the respondent did not work with the AP program in the school, then their response shifted the survey to the end.

Instrument development. The first step in instrument development was extracting the operational definitions of each of the six EXCELerator factors used in this study. According to the EXCELerator Issue Brief *Equity and Access*, College Board (2012) identified and defined key areas that schools and school districts should develop to support AP courses and college readiness: (a) leadership, (b) curriculum planning and sequencing, (c) a culture of expectations, (d) instructional support, (e) student support, (f) data analysis, and (g) examination readiness. Together, these factors help expand equity and access to AP and comprise the components of a long-term strategy (College Board, 2012). As noted above, College Board (2012) provided the following descriptions for each the research-based best practices that support AP programs:

1. *Leadership* addresses the role that school leaders play in developing a systematic approach to the development of an AP program by coordinating the many facets of the program (i.e., teacher training, student support, data analysis, etc.).

2. *Curriculum planning and sequencing* refers to the development of an academically challenging curriculum across grade levels that prepares students for rigorous AP coursework. Examples of curriculum alignment could include the creation of grade level exit standards and the identification of the steps needed to prepare students for these assessments.
3. *Culture of expectations* addresses educators' intentional efforts to align the expectations of students, parents, and counselors with the costs and benefits of AP program participation, especially when faced with deficiencies in students' skills and knowledge. Stakeholders must understand that the increased workload that comes with AP may not translate to higher grades, but that the benefit will be improved study habits and college preparation.
4. *Instructional support* refers to targeted professional development for teachers focused on improving content knowledge, pedagogy, and peer coaching.
5. *Student support* speaks to ensuring students are developing cognitive skills, such as thinking and reasoning skills, and becoming more responsible for their own learning over time.
6. *Data analysis* refers to opportunities for vertical and horizontal teacher planning through an examination of student performance data, such as assessment benchmarks, course enrollment patterns, and AP exam data.

The second step was to reorganize Wood's survey according to each of the above listed factors, so the researcher enlisted seven raters to evaluate each item on Wood's scale. Third, the raters re-categorized each original survey item using the six EXCELerator factors and the operational definitions described earlier. The raters who completed the calibration task included one University of Maryland professor, one former high school principal currently serving as a

county leadership development coach, three current assistant principals, a current AP coordinator, and the researcher (a former high school principal and now principal supervisor). Each of the raters used the summary of the six best practices for supporting AP programs to categorize each of the 56 items on the original Woods scale. They then identified which of the six factors was most closely associated with each of the 56 original questions. Fourth, the researcher collected all of the responses and charted them on a spreadsheet (see Appendix A). Fifth, the researcher used the following question exclusion criteria: each survey item that five of seven respondents grouped under the same factor, they were included in the modified survey. When four out of seven participants grouped it under the same factor further discussion was held between the researcher and the researcher's academic advisor on how to better align the questions to the study factors, and questions where three or fewer participants agreed on the factor were not used. The researcher also excluded all survey questions under "Your Personal Beliefs," because they did not align with the focus of this study. Only questions related to perceptions of "Your School's Practices" were considered. Through this process, the researcher identified 19 questions that aligned with the research-based best practices without revision. The researcher included an additional six questions for a total of 25.

To create the additional five questions, the researcher re-worded the original questions where four or fewer raters agreed with how to align the questions. Next, the researcher discussed the five revised questions with an assistant principal to gain feedback on the accurate alignment of each question to one of the six factors. Two additional questions were added after the 25 Likert-style questions to gather data from respondents regarding potential barriers and supports for AP programs. One of these questions was forced-choice and the other question open-ended. Seven multiple choice questions were added to the survey to gather information about the respondents including but not limited to their gender, years as a teacher, and years as an administrator. The

final survey totaled 34 items. Subsequently, the entire modified instrument was reviewed by a school system advanced placement expert to discuss proper alignment of the questions to the research-based factors. Finally, the researcher made revisions to the survey questions based on the expert's feedback. The majority of the survey responses were captured using the same six-point Likert scale as in the original study: Strong Disagree (1), Disagree (2), Somewhat Disagree (3), Somewhat Agree (4), Agree (5), Strongly Agree (6). The survey modification process is shown in Figure 2.

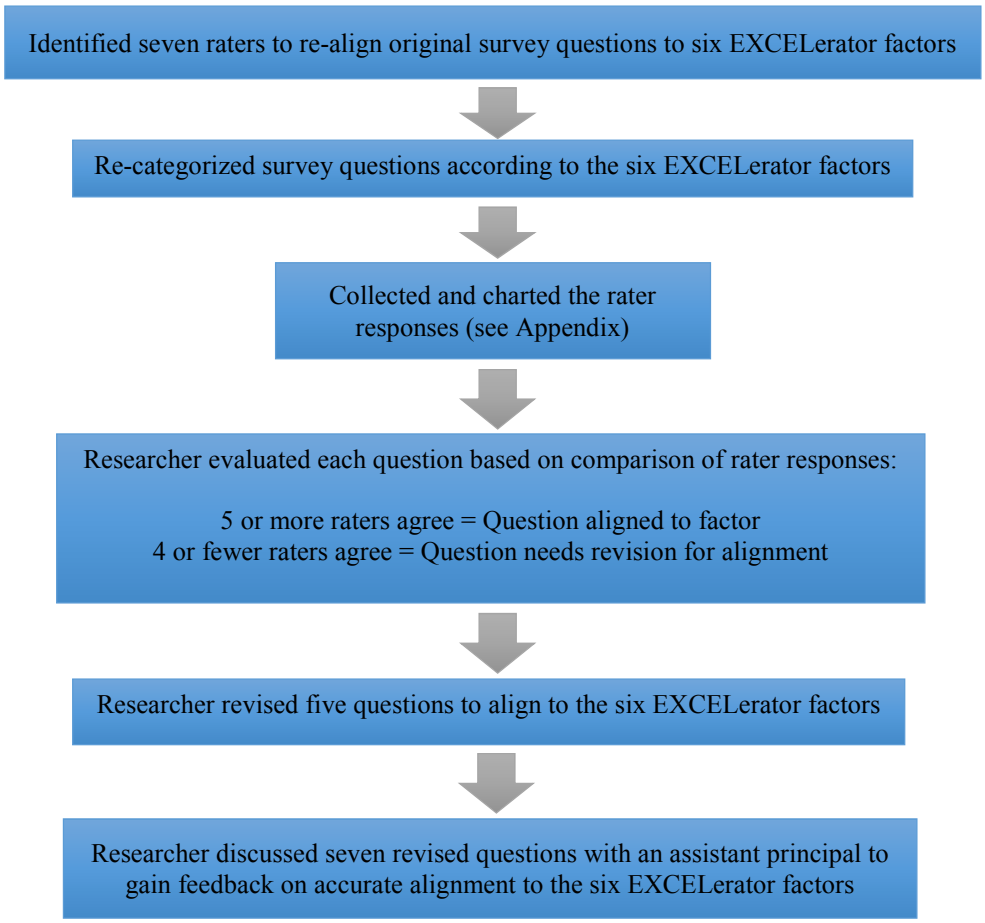


Figure 2. Process for modifying the survey instrument.

Procedures. After obtaining approval from the University of Maryland Institutional Review Board (IRB) and the school district's Department of Research and Evaluation, the researcher retrieved email contact information for each of the potential respondents included in the study: principals, assistant principals, and AP coordinators. The email contact information was

collected from the website of each school and by contacting the Office of Human Resources, Senior Data Quality Partner. After collecting all necessary contact information, the researcher disseminated an introductory letter, which included a description of the research study, a confidentiality statement, assurance of the voluntary nature of the study, a description of the incentives for survey participation, the risks and benefits of the study, an informed consent section, and a link to the survey. A reminder email was sent to participants during the survey administration window after one week. The researcher tracked the number of completed surveys during the administration window. After collecting the survey responses from participants, the researcher moved to analyze the data. The researcher estimated the survey would be fielded for two weeks, but the window was actually open for three weeks. To provide an incentive for the completion of the survey a drawing was conducted for sixteen, $25 gift cards. All respondents who completed the survey within the first five days of the dissemination of the survey had their names entered into the drawing twice. All respondents who complete the survey from the sixth through the twenty-first day had their names entered into the raffle once. The drawing was held directly after the survey window closed and the prizes disseminated to the winners.

Reliability and Scoring

The survey instrument included 34 items structured into two sections. Most of the survey items were forced-choice, requiring a respondent to select from predetermined categories; however, one item allowed for open-ended responses. The first section of the survey consisted of items focused on the six identified EXCELerator factors that schools and school districts can develop to support AP courses and college readiness. Items in the second section of the survey captured background data about the subjects, including professional role, gender, years of teaching experience, and years of administrative experience.

In the primary portion of the survey, 25 items measured site-based administrators' perceptions of school practices in six key areas of the AP program, including the following:

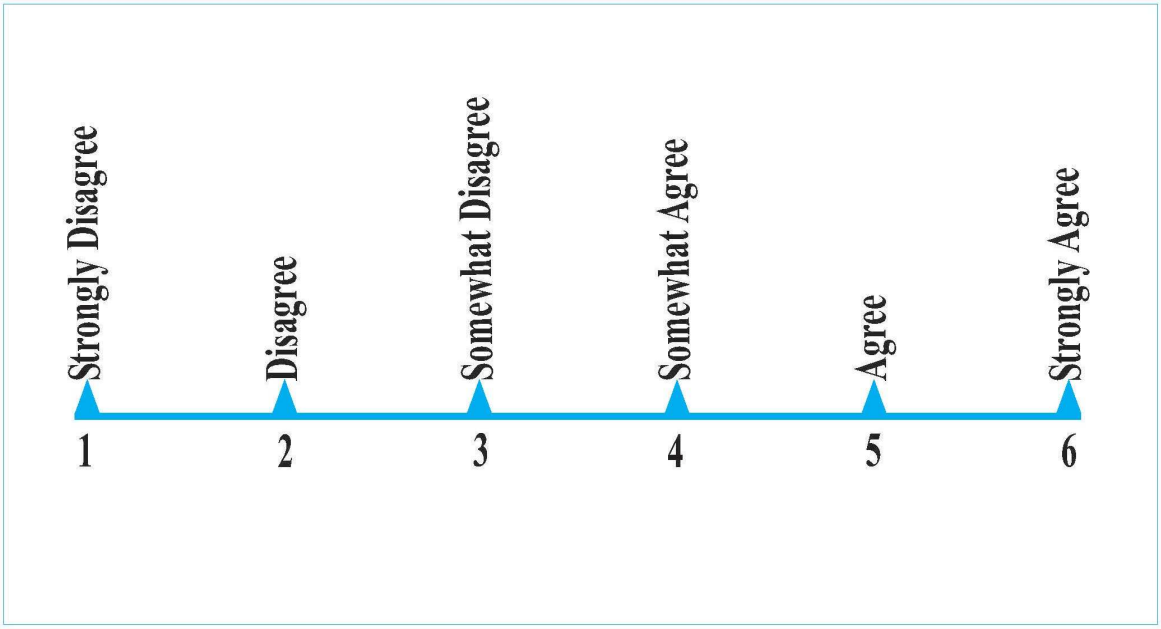
- Factor 1: Leadership,
- Factor 2: Curriculum Planning & Sequencing,
- Factor 3: Culture of Expectations,
- Factor 4: Instructional Support,
- Factor 5: Student Support, and
- Factor 6: Data Analysis.

For analysis, each of these 25 items received a rating value ranging from 1-6 that represented a subject's Likert response. Figure 3 presents a schematic representation of the six-point Likert response scale used for items in section one of the survey.

As Figure 3 shows, the strongest level of adherence to a survey item elicited a response of "*Strongly Agree*," which was assigned a value of six. When the respondent's viewpoint or perception was in complete opposition with a statement, "*Strongly Disagree*," which had a value of one, was the appropriate choice. Participants also had the option of selecting one of four intermediate response categories to indicate lesser levels of agreement or disagreement with items in Section 1.

After respondents completed the survey, the researcher combined the numerical value for each of their responses into a composite score that represented a subject's overall perspective on various AP factors. The statistical appropriateness of this measurement strategy is well documented in the literature on survey methods (Guilford, 1954; Kish, 1995; Thorndike, 1982).

Figure 3. Schematic representation of response scale for *"AP Factor"* items**.**



To assess reliability, the researcher conducted an internal consistency analysis for each of the six factor scales that employed the Likert response structure (Cronbach, 1951; Thurstone, 1925). Table 4 presents the results of the reliability analysis. For Factor 1 and Factor 6, the analysis revealed a reliability coefficient of .80 for the four items comprising the scale and even higher alpha coefficients in other instances. The researcher found a coefficient of .86 for the four items comprising the Factor 5 scale; and the Factor 4 scale, which included five items, demonstrated a reliability coefficient of .85. Factor 4 resulted in the lowest coefficient of .70.

The researcher employed a two-step procedure to generate summary scores for each factor scale. Initially, the procedure resulted in a mean value for all items included in the scale. For example, Factor 4: *Instructional Support* included five items, and values for any single item could range from one to six points. Thus, a mean response for this subscale could fall anywhere between one and six for a given subject. A second step in the scoring procedure involved multiplying the average response by ten to generate higher magnitude subscale scores, with values ranging from 10 to 60 points. Resulting scores maintained the descriptive characteristics while enhancing score

interpretability, similar to procedures commonly used with standardized tests scores (Babbie, 1973; Johnson, 1977).

Table 4

Reliability Coefficients for the School Advanced Placement Factor Scales (N = 107)

Factor scale	Number of items	Alpha coefficient
Factor 1: Leadership	4	.80
Factor 2: Curriculum, Planning, & Sequencing	4	.84
Factor 3: Culture of Expectations	4	.70
Factor 4: Instructional Support	5	.85
Factor 5: Student Support	4	.86
Factor 6: Data Analysis	4	.80

Data Analysis

Since the survey respondents were anonymous, the researcher was not able to compare respondents to non-respondents, but reported response rates by category. Participant information was reported on variables used in the survey (i.e., role at the school, years of experience in current role, time devoted to the AP program, and the extent of AP training of the respondent.) Using SPSS Version 21, descriptive statistics (means and standard deviations) were reported for each of the items on the survey for the total group and by stakeholder category—role at the school, years of experience in the current role, time devoted to the AP program, and the extent of AP training of the respondents—and by the six best practice categories: leadership, curriculum planning and sequencing, culture of expectations, instructional support, student support, and data analysis. An

analysis of the differences by respondent group on survey categories was conducted using ANOVAs.

Summary

This chapter described the methodology used in this research study. Specifically, it described the purpose of the study, outlined the research design, identified the population and sample group for the study, detailed the process for the development and distribution of the survey instrument, reviewed the process for determining survey reliability and scoring, and summarized the data analysis process. The researcher started with an existing, validated survey from Dr. Steve Wood. Next, the researcher shared the steps taken to validate the modified survey, which was re-aligned to the research based best practices to support AP programs from the College Board. "The College Board's EXCELerator Group has worked with nearly 20 districts to improve college readiness infrastructure. Through its work with educational leaders across the country, EXCELerator has identified seven elements of effective districtwide AP readiness systems and schoolwide AP programs" (College Board, 2012, p. 4). The collected survey data was used to answer the research questions, identify the perceptions of school practices around the factors that impact AP, and recommend areas for possible continued research.

Section 3: Results, Conclusions, Implications, Limitations, and Recommendations

This section presents the results of the investigation and provides a response to the research questions stated in Section 2. The section begins with a description of the survey respondents. Tables and figures support the discussion of the findings. After the presentation of the results, the researcher shares relevant conclusions and discusses the potential impact of the data. The section also includes an examination of the limitations of the study, as well as potential areas for continued research. Finally, the section concludes with recommendations for the school district drawn from the research findings.

Description of Respondents

As mentioned previously, over a three-week period, the researcher conducted a cross-sectional survey of principals, assistant principals, and AP coordinators from 22 of 31 high schools across District E. The targeted sample group across the 22 secondary schools included 22 principals, approximately 90 assistant principals, and 28 AP coordinators for a total of 140 potential respondents to the survey. Table 5 details the response rates for the survey.

Table 5

Response Rates

	Number surveyed	Completed surveys	Completed surveys
Principals	22	20	91%
Assistant principals	90	62	69%
AP coordinators	28	22	79%

The principals demonstrated the largest response rate (91%), followed by the AP coordinators at 79%, and assistant principals at 69%. However, it is worth noting that the respondent group for assistant principals was much larger than the other two groups.

Table 6

Descriptive Profile for Research Sample (N = 107)[1]

Category	Frequency	Percent	Cumulative percent
Gender of subject			
Female	39	37.5%	37.5%
Male	65	62.5%	100.0%
Role of subject			
Principal	20	19.2%	19.2%
Assistant principal	62	59.6%	78.8%
AP coordinator	22	21.2%	100.0%
# of years as a teacher			
0 to 5 years	21	20.6%	20.6%
6 to 10 years	40	39.2%	59.8%
11 to 15 years	20	19.6%	79.4%
16 to 20 years	15	14.7%	94.1%
Over 20 years	6	5.9%	100.0%
# of years as an administrator			
0 to 5 Years	44	43.1%	43.1%
6 to 10 Years	17	16.7%	59.8%
11 to 15 Years	24	23.5%	83.3%
16 to 20 Years	16	15.7%	99.0%
Over 20 Years	1	1.0%	100.0%

[1]Note: Table values reflect actual responses from sampled individuals.

The principals demonstrated the largest response rate (91%), followed by the AP coordinators at 79%, and assistant principals at 69%. However, it is worth noting that the respondent group for assistant principals was much larger than the other two groups.

Table 6 contains a summary of background characteristics for the sample school administrators selected for this study. As shown in the table, a majority of respondents were female (65 respondents or 62.5%), with male respondents totaling (39 respondents or 37.5%) of the sample. These findings are also displayed graphically in Figure 4. Table 6 and Figure 4 show that 20 respondents (19.2%) were high school principals at the time of data collection, a total of 62 respondents (59.6%) were serving as high school assistant principals during data collection, and the remaining 22 respondents (21.2%) held the position of high school AP coordinator.

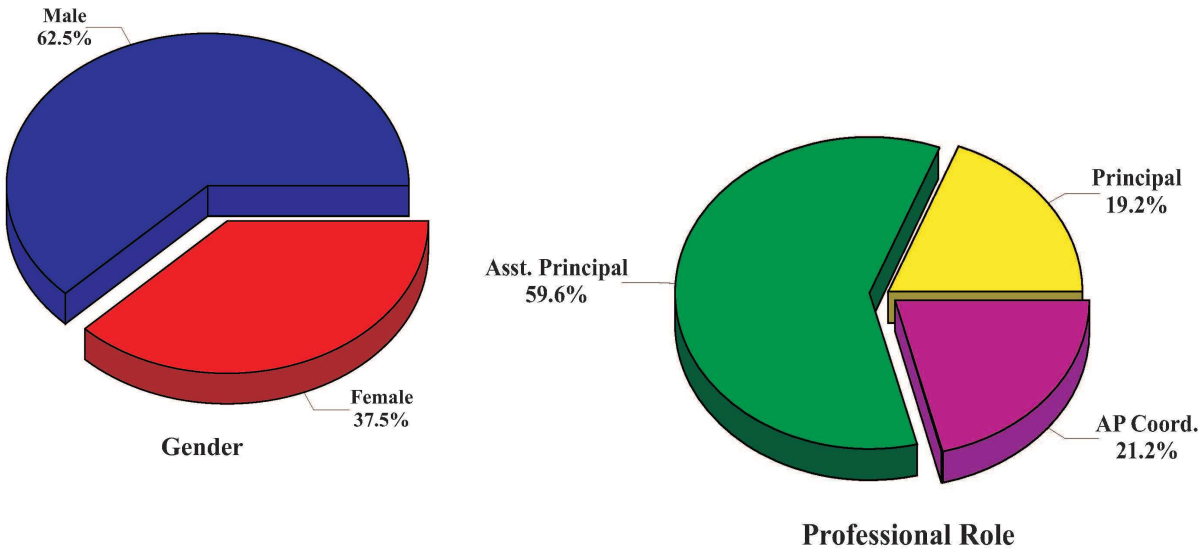


Figure 4. Subject background information. The pie charts provide a graphic representation of the descriptive profiles of the research subjects.

There was a considerable range in the years of experience amongst the respondents participating in this study. As Table 6 and Figure 5 demonstrate, 21 (20.6%) of the respondents had five or fewer years of teaching experience prior to moving into school administration. A majority of the participants (40 or 39.2%) taught for six to ten years before becoming an administrator. The data indicated that 20 (19.6%) of respondents had 11 to 15 years of teaching

experience, and 15 (14.7%) participants reported having 16 to 20 years of teaching experience. Six (5.9%) respondents had over 20 years of teaching experience before assuming professional roles as a school administrator.

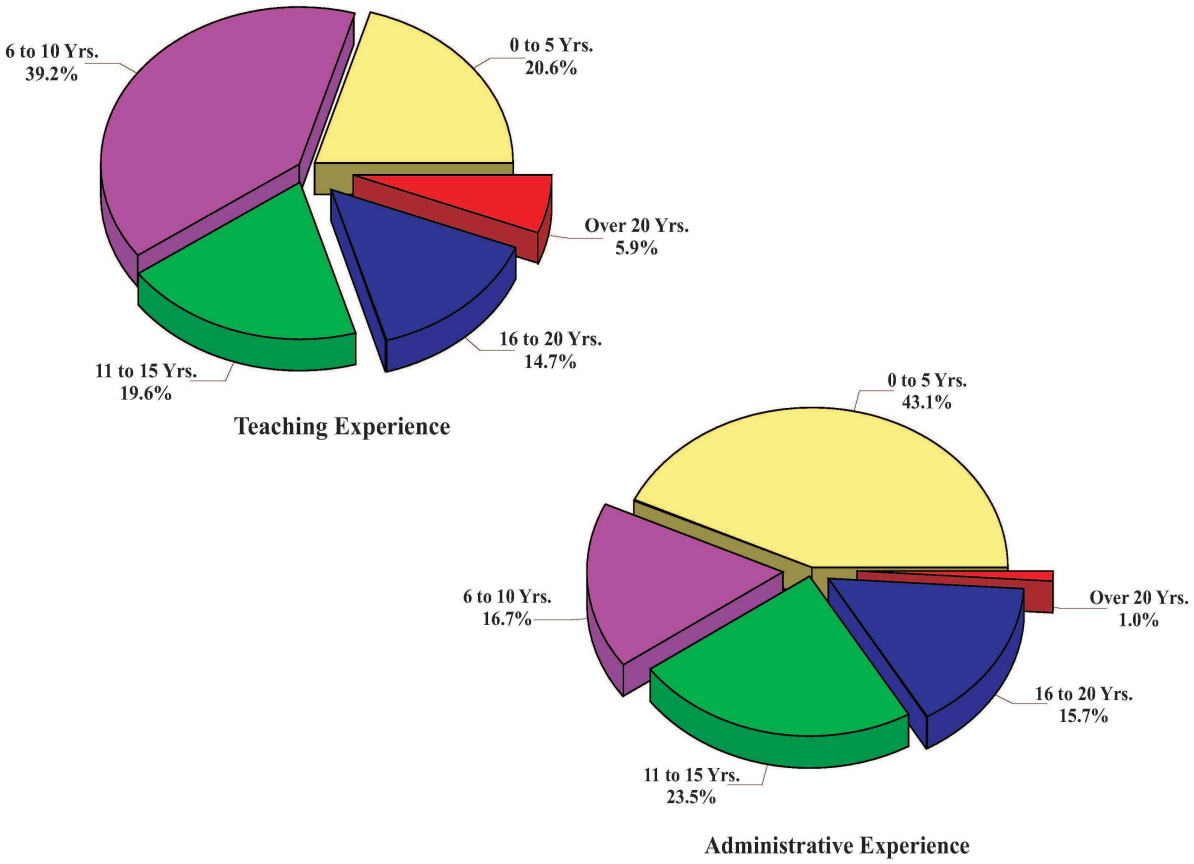


Figure 5. Years of professional experience. The pie charts provide a graphic representation of the subjects' years of professional experience as both a teacher and an administrator.

Results Responding to Research Questions

The data collected throughout this inquiry aided the researcher in responding to the following research questions regarding the perceptions of school administrators. These data are presented in the following sections.

Research Question 1

Research Question 1 focused on site-based administrators' perceptions of key factors that have proven effective in efforts to increase AP enrollment and performance on end-of-course AP exams. Specifically, the research question asked the following: How do principals, assistant principals, and AP coordinators perceive school practices related to the six factors that influence AP enrollment and success rates (i.e., leadership, curriculum planning and sequencing, culture of expectations, instructional support, student support, and data analysis)? To respond to this question, the researcher employed a descriptive approach to the statistical analysis of the survey data. It is important to note that this research question was framed to examine response trends for the entire sample. Subsequent analyses will provide comparative data.

The scoring method utilized in this study, described in Section 2, produced scale scores for each of the key factors for the subjects. The six factor scales included the following:

- Factor 1: Leadership,
- Factor 2: Curriculum Planning & Sequencing,
- Factor 3: Culture of Expectations,
- Factor 4: Instructional Support,
- Factor 5: Student Support, and
- Factor 6: Data Analysis.

Each scale score had the same numeric range of 10 to 60 points. Higher mean values for a given scale score indicated that the respondent rated that factor as having a higher level of implementation in a school's AP program.

Table 7 presents descriptive statistics for scores on the six AP factors. The highest score values for the sample occurred for Factor 3, with a mean of □ = 46.11 and standard deviation of σ = 8.31. The score range for Factor 3 was 12.5 to 60.0. As reflected in Figure 5, the score

distribution for Factor 3 displays a clustering of scores toward the high end of the possible mean scale scores. The second highest score values were found for Factor 5, with a mean of □ = 43.6 and standard deviation of 9.22. According to Figure 5, these mean scores also showed a distinct trend for respondents indicating high ratings on the survey items pertaining to Factor 5. The next highest scale scores were found for Factor 4 and Factor 6, with respective means of □ = 43.45 (σ = 9.96) and □ = 43.41 (σ = 9.41). Scores for Factor 4 ranged from 14.0 to 60.0, while the range for Factor 5 and Factor 6 were equivalent (17.6 to 60.0).

As displayed in Table 7, the lowest scores were found for Factor 1 and Factor 2, with comparable score ranges of 10.0 to 60.0. Factor 1 yielded a mean of □ = 42.45, with a standard deviation of σ = 9.77. Although some scores for this factor trended toward the high end of the distribution, the mean scale scores were lower by comparison than were all of the other factors, with the exception of curriculum planning and sequencing (see Figure 6). Factor 2 had a noticeably lower score trend than did other factors, with a mean of □ = 39.5 and a standard deviation of σ = 10.24.

Table 7

Descriptive Analysis for the School AP Factor Scale Scores (N=107)

Factor scale	**Mean**	**Standard deviation**	**Range**
Factor 1: *Leadership*	42.45	9.77	10.00-60.00
Factor 2: *Curriculum, Planning, & Sequencing*	39.50	10.24	10.00-60.00
Factor 3: *Culture of Expectations*	46.11	8.31	12.50-60.00
Factor 4: *Instructional Support*	43.45	9.96	14.00-60.00
Factor 5: *Student Support*	43.60	9.22	17.50-60.00
Factor 6: *Data Analysis*	43.41	9.41	17.50-60.00

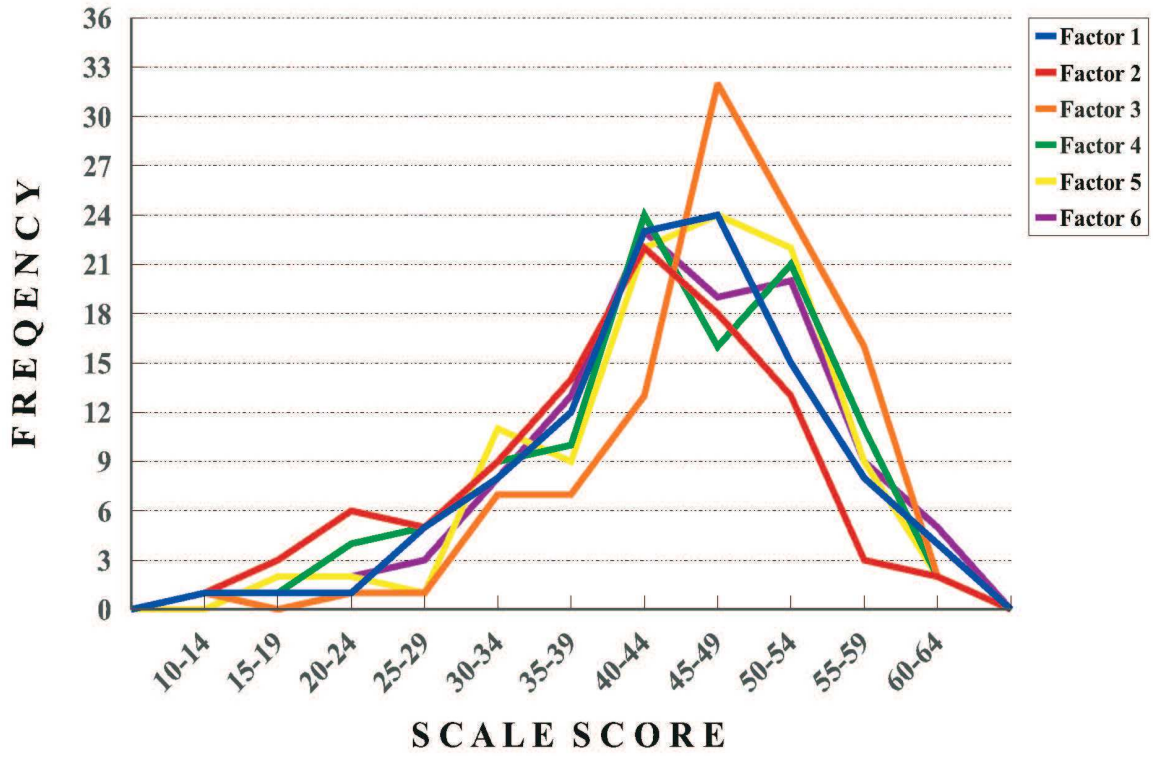


Figure 6. Score distributions for the factor scales. The frequency polygon provides a graphic representation of the scorer distribution for the six AP factor scales.

Summary. The findings from the analysis of factor score data indicate that respondents viewed certain AP practices within their schools more positively than they did others. Specifically, the participants noted the most positive perceptions for Factor 3, which related to the culture of expectations within the school. Most respondents reported that their schools projected a positive atmosphere that encouraged expectations for higher student performance in AP courses. As demonstrated by the mean scale scores, all of the respondents also gave high ratings to student support and instructional support, with data analysis posting only a slightly lower mean scale score when compared to Factor 4, instructional support. Components of student support include (a) whether AP teachers offer intensive review sessions to prepare students for the AP exams, (b) opportunities for students to take AP practice exams in preparation for the actual tests, and (c) an instructional focus that supports the development of students' study and test-taking skills. Instructional support considers characteristics like how routinely AP teachers work together to

share best practices, how regularly professional development is offered to AP teachers, and whether AP teachers receive observation feedback to improve their instructional practices. Data analysis looks at whether AP teachers utilize data, including the Instructional Planning Report from the College Board, to plan instructional improvements and identify students for participation in AP courses.

In contrast, respondents reported a lack of leadership regarding school practices that supported AP programs. This perception was indicated by a lower mean score for leadership than for nearly all of the other factors. Theoretically, this lack of leadership may involve the failure to make specific, measurable goals for AP participation an integral part of the school's mission, vision, and /or school values statement. In addition, school leadership may have been remiss in (a) effectively communicating AP participation goals to the school's faculty and (b) promoting AP courses to encourage student participation. The perceptions of school practices regarding curriculum planning and sequencing was another area of concern for respondents in this investigation and received the lowest mean score of all six factors included within the survey.

Research Question 2

Research Question 2 focused on the differences in the respondents' perceptions of school practices that influenced AP enrollment and success on the end-of-course AP exams. Specifically, the research question asked the following: How do perceptions differ among principals, assistant principals, and AP coordinators regarding school practices related to the six factors that affect AP enrollment and success rates (i.e., leadership, curriculum planning and sequencing, culture of expectations, instructional support, student support, and data analysis)? To address Research Question 2, six separate ANOVAs were conducted examining each of six factor scale scores. Separate tests of statistical significance were performed on each of the six factors, using the professional role of subjects as the independent variable. Specifically, the analysis of variance was

performed on scale scores for each factor, with principals, assistant principals, and AP coordinators forming independent groups. The viability of this analysis approach was based on the measurement quality and structure of scores generated for the six factors defined in this study. As discussed earlier, response data from the survey were combined into scale scores reflecting intensity levels for each factor, and the scores were measured at the interval level. Comparisons of mean scores for the three professional-role groups within the analysis of variance revealed any statistically significant differences that existed between the groups.

Multivariate approaches to this analysis approach were considered for this study, yet the assumptions required for such methods were not met. Specifically, the multivariate analysis of variance proves useful in instances where two or more dependent variables might combine into a single variate (Dillon & Goldstein, 1984; Mertler & Vannatta, 2005). The logic for forming such a variate must be established on an empirical basis prior to data analysis.

Moreover, there must be an advantage to forming a multivariate that explains group difference beyond the capability of single dependent variables. Given the complexity of explaining results of multivariate tests, the logic of combining several dependent variables into a single variate must outweigh the reduced robustness of estimates associated with the statistical procedure (McNemar, 1969; Andrews, Klem, et al., 1981; Maxwell, 1977).

Univariate analysis of variance approaches yield outcomes with stronger mathematical validity than the multivariate alternatives, and there are far fewer confounding measurement issues associated with the univariate tests. Even when multivariate analysis of variance is appropriately applied to data, secondary procedures must be used to identify which of the specific dependent variables were most influenced by the independent variables within the analysis (Heise, 1975; Hays, 1994; Shavelson, 1996). Therefore, univariate statistical tests are subsequently conducted to identify significant influences. Further, there are negligible challenges to committing decision

errors (i.e., Type I and Type II) when univariate analysis of variance tests are performed on several dependent variables that have no implicit relationship with one another. Each test is considered a single event with its own predetermined confidence level (Hays, 1994; Ferguson & Takane, 1989).

Table 8 presents a summary of the results of the six ANOVAs for the three respondent groups. As the table shows, the group comparison scores revealed a statistically significant result for scores on Factor 2: *Curriculum Planning & Sequencing*, with *F(degrees of freedom)* = 2.83 ($p < .05$). For this comparison, assistant principals demonstrated the highest mean (= 51.67; $\sigma = 9.00$), followed by principals (= 49.27; $\sigma = 9.49$). The mean for AP coordinators (= 45.94; $\sigma = 9.92$) on Factor 2 was substantially lower than were the means for the other two groups, which likely led to the significant test outcome.

Table 8

Summary of Analysis of Variance on AP Factor Scale Scores by Professional Role

Factor scale	Professional role						F-ratio
	Principals		Asst. principals		AP coordinators		
	$\overline{X}$	σ	$\overline{X}$	σ	$\overline{X}$	σ	
Factor 1: *Leadership*	51.41	10.46	50.69	9.65	46.75	10.31	1.52
Factor 2: *Curriculum, Planning & Sequencing*	49.27	9.49	51.67	9.00	45.94	9.92	2.83*
Factor 3: *Culture of Expectations*	51.36	7.10	50.84	10.59	46.38	11.60	1.88
Factor 4: *Instructional Support*	49.55	10.59	51.16	10.66	47.13	9.25	1.35
Factor 5: *Student Support*	48.80	10.66	50.95	9.51	48.40	10.88	.70
Factor 6: *Data Analysis*	48.37	11.00	51.30	9.97	47.82	8.93	1.32

*$p < .05$

Although not statistically significant, two other comparisons yielded notable score differences for Factor 3: *Culture of Expectations*. Again, the mean for AP coordinators (= 46.38; $\sigma = 11.60$) was lower than were the means for principals (= 51.36; $\sigma =$ 7.10) and assistant principals (= 50.84; $\sigma = 10.59$). The group comparison for Factor 1: *Leadership* produced the *F (degrees of freedom)* = 1.52 which was not significant. The mean for AP coordinators (= 46.75; $\sigma = 10.31$) was also lower than the mean scores for

principals (□ = 51.41; σ = 10.46) and assistant principals (□ = 50.69; σ = 9.65). Other analysis-of-variance outcomes were not significant and produced lower mean score differences between groups.

Table 9 presents frequency data and chi-square test results for three survey items related to AP practices in the school. As the table shows, there was a significant difference in response patterns for the three subgroups on the following survey item, "*Describe the amount of time devoted to AP*." The data showed that 95.2% of AP coordinators responded that they "*sometimes*" or "*often*" devoted time to the AP program within their schools. A similar pattern of 90.0% was found for principals. In contrast, only 62.3% of assistant principals responded that they "*sometimes*" or "*often*" devoted time to the AP program. The different responses for the three groups on this item resulted in a statistically significant chi-square value of χ^2 (degrees of freedom) = 20.17 ($p < .01$). The contingency coefficient of $C = .41$ ($p < .01$) suggested a moderate, yet significant, relationship between the subjects' professional role and their responses to this item.

The next survey item posed the following question, "*Describe extent of your AP training"* (see Table 9). Fifty percent of the AP coordinators responded that they had "*a moderate amount*" or "*a great deal*" of training with respect to the AP program. Comparatively, 30% of principals and 17.7% of assistant principals noted the same responses for this item, a difference that was reflected in the chi-square value of χ^2 (degrees of freedom) = 19.81 ($p < .01$) and the associated contingency coefficient of $C = .40$ ($p < .01$).

The third survey item presented in Table 9 provided the following instruction: *"Describe your level of AP influence*." Sixty-five percent of the principals responded that

they were "*very influential*" or "*extremely influential*" in the AP processes and procedures within their schools. Conversely, 19.3% of assistant principals and 22.7% of AP coordinators gave the same two responses for this survey item. Again, this analysis revealed a statistically significant chi-square value of $\chi^2 = 19.81$ ($p < .01$), with an associated contingency coefficient of $C = .40$ ($p < .01$). For this comparison, the difference in responses for principals contributed substantially to the chi-square statistics significance.

Table 9

Summary of Chi-Square Analysis for AP Involvement Survey Items by Professional Role (N=107)

Survey item	Principal		Assistant principal		AP coordinator		Chi-square (Contingency coefficient)
	f	%	*f*	%	*f*	%	
"Describe the amount of time devoted to AP."							
None	0	0.0%	7	11.5%	0	0.0%	
Rarely	2	10.3%	16	26.2%	0	0.0%	20.17**
Sometimes	13	65.0%	21	34.4%	12	57.1%	(.41)
Often	5	25.0%	17	27.9%	8	38.1%	
Always	0	0.0%	0	0.0%	1	4.8%	
"*Describe extent of your AP training*."							
Never	3	15.0%	22	35.5%	2	9.1%	
Rarely	2	10.0%	18	29.0%	5	22.7%	19.81*
Occasionally	9	45.0%	11	17.7%	4	18.2%	(.40)
A moderate amount	4	20.0%	9	14.5%	8	36.4%	
A great deal	2	10.0%	2	3.2%	3	13.6%	
"Describe your level of AP influence."							
Not at all influential	0	0.0%	10	16.1%	2	9.1%	
Slightly influential	3	15.0%	10	29.0%	8	36.4%	19.61*
Somewhat influential	4	20.0%	22	35.5%	7	31.8%	(.06)
Very influential	10	50.0%	11	17.7%	3	13.6%	
Extremely influential	3	15.0%	1	1.6%	2	9.1%	

p<.05 **p<.01

Summary. Certain trends emerged in this comparative analysis of the three professional groups–principals, assistant principals, and AP coordinators targeted in this study. Scale scores comparisons indicated that AP coordinators viewed the processes of curriculum planning and sequencing, Factor 2, as less evident in school practices than did the administrators. The differences in scores for the three groups were statistically significant in this instance. Other score comparisons revealed a similar trend, although not statistically significant. More specifically, the means for the AP coordinators were also substantially lower than were those of their counterparts for Factor 3, which related to the culture of expectations at their schools, and for Factor 1, which focused on leadership.

When comparing responses for three key items within the survey, other clear trends emerged. For example, principals and AP coordinators reported they devoted a considerable amount of time to the school's AP program. By comparison, assistant principals' responses showed they perceived spending less time on the AP program. Additionally, half of the AP coordinators responded that they had a moderate-to-high amount of relevant training. By contrast, 30% of principals felt they received a moderate-to-high amount of training and less than 20% of assistant principals felt they received a moderate-to-high amount of training. Further, the principals expressed having a high level of influence over AP. These data are significant because 65% of principals felt they were "*very influential*" or "*extremely influential*" over the building's AP program, yet 70% of principals and 82.2% of assistant principals stated that they "*never, rarely*, or *occasionally*" participated in AP training.

Research Question 3

The analysis addresses Research Question 3, which focused on the subjects' perceptions of aspects of the school environment that could hinder or help the school's AP program. Specifically, the research question asked the following: What barriers and supports do principals, assistant principals, and AP coordinators encounter when implementing school practices related to the six factors that support AP enrollment and success rates (i.e., leadership, curriculum planning and sequencing, culture of expectations, instructional support, student support, and data analysis)?

Two items within the survey captured respondents' viewpoints regarding "*barriers*" and "*supports*" that were relevant to the AP program. The first of the two items presented six possible barriers that might impede a school's ability to enroll students in AP courses and improve scores on the end-of-course AP exams. Respondents ranked the barriers from highest to lowest, based on their perceived level of importance. A rank of one indicated that a barrier was of the highest importance; a rank of two denoted which barrier was second in importance, and so on. The researcher generated mean rankings for each barrier presented for ranking, with the lowest mean value reflecting the barrier with the highest importance, according to the respondents, and higher mean values indicating lesser importance. In addition, the researcher generated a modal rank for each barrier to indicate the most commonly ascribed rank for a particular barrier.

Table 10 presents the results of the analysis of perceived barriers to AP programs. The table lists the six barriers presented to respondents by their overall ranking. According to the data, the respondents believed that the top three barriers to AP success

are (a) students' lack of academic readiness, (b) insufficient teacher training opportunities, and (c) the need for additional teachers. "*Students' lack of academic readiness"* had the lowest overall mean of □ = 1.86 for the total sample, which earned it the rank of one (1). The modal rank was *md* = 1.0 for this barrier, as well. The researcher also generated means and modes for each of the three sample subgroups: Principals (□ = 1.73), assistant principals (□ = 1.82), and AP coordinators (□ = 2.06) ranked "*students' lack of academic readiness"* highest in importance of the six barriers presented.

The participants' ranked the barrier "*insufficient teacher training opportunities*" as second in importance, with a total sample rank of □ = 2.71. This barrier was also uniformly ranked second by the three subgroups of principals (□ = 3.00), assistant principals (□ = 2.54), and AP coordinators (□ = 2.94). Modes for the subgroups differed considerably for this analysis; principals and assistant principals gave this barrier the same modal rank of *md* = 1.0, while AP coordinator assigned it a rank of *md* = 3.0.

As Table 10 shows, respondents ranked the "*need for additional teachers"* third (***#3***) in the overall ranking process, as this barrier earned a mean rank of □ = 3.83 for the total sample. Means differed notably for this barrier among the three subgroups, with assistant principals ranking the barrier higher in importance (□ = 3.62 and a mode of *md* = 3.0) than did the AP coordinators (mean of □ = 3.89 and mode of *md* = 4.0) and the principals (□ = 4.47 and mode of *md* = 4.5). Table 10 also presents the rankings and statistical values for the other included barriers, along with an exploration of the differences in rankings and values among the sample subgroups.

Table 10

Rankings of Perceived AP Barriers by Professional Role

Rank of barrier	Professional role						Total sample	
	Principals		Assistant principals		AP coordinators			
	$\overline{X}$	Mode	$\overline{X}$	Mode	$\overline{X}$	Mode	$\overline{X}$	Mode
#1 Students' lack of academic readiness	1.73	1.5[1]	1.82	1.0	2.06	1.0	1.86	1.0
#2 Insufficient teacher training opportunities	3.00	1.0	2.54	1.0	2.94	3.0	2.71	1.0
#3 Need for additional teachers	4.47	4.5[1]	3.62	3.0	3.89	4.0	3.83	3.0
#4 Lack of teaching materials aligned to AP	3.93	4.0	4.02	4.0	4.44	5.0	4.10	4.0
#5 Insufficient time for instructional planning	4.20	5.0	4.60	5.0	3.44	3.0	4.28	5.0
#6 Ineffective student recruitment strategies	4.20	5.0	4.62	6.0	4.44	6.0	4.51	6.0

[1]Note that this value is an average of two contiguous modes.

The second survey item related to Research Question 3 sought open-ended responses from the respondents to perceived supports for AP course enrollment and end-of-year exams. The open-ended survey responses were read and organized into categories to identify the themes that emerged. The themes that surfaced became the categories used to organize the responses by respondent group. All survey responses were placed under a theme to determine the frequency of a response falling into a given category. Table 11 presents the eight thematic responses that emerged from the response data. As the table shows, subjects within each subgroups identified *test preparation and study groups for AP exams* as the most important support needed to enhance student enrollment and performance in AP courses. This rating was demonstrated by the fact that the respondents mentioned the support with the highest frequency. Both principals and assistant principals rated *teacher training and development for AP classes* second in importance (and frequency); however, the AP coordinators did not mention this support at all. *Increased AP enrollment and earlier student involvement* proved to be third in importance and emerged as a valuable form of support for all three subgroups based on the frequency with which they mentioned it within their survey responses. The participants mentioned additional forms of support, but no other response appeared with the frequency demonstrated by the aforementioned items (see Table 11).

Summary. The analysis for data related to Research Question 3 revealed specific patterns in the differences and similarities that were evident among the three sample subgroups. The data indicated that all subjects—including principals, assistant principals, and AP coordinators—viewed a lack of academic readiness and limited teacher training as the most critical barriers to enhancing AP performance in schools. However, there was

less uniformity in responses related to the need for additional teachers. Principals did not view this purported barrier with the same level of importance as did the other two administrator groups. According to the data, principals felt a lack of AP teaching materials was the next largest barrier to successful AP programs. However, the survey design did not allow for the researcher to determine whether the AP teaching materials referenced by the principals included resources needed to support staff lesson planning, student tutorials for AP exam preparation, or another purpose. This limitation of the present inquiry would prove a useful area of examination for future research.

The sample subgroups were relatively uniform in their identification of supports that could enhance AP enrollment and student performance. Test preparation and study groups for AP exams, increased AP enrollment and earlier student enrollment in AP courses emerged as key supports identified by each principal, assistant principal, and AP coordinator. Principals and assistant principals also identified a need to provide teacher training and development for AP classes. There were other suggestions offered by respondents, but the three areas mentioned above were noted with higher frequency than were the others.

Conclusions and Discussion

The findings from this inquiry show that Factor 3: Culture of Expectations had a higher mean score among site-based administrators than any other factor that affected AP enrollment and performance. However, it is important to note that when looking at the difference in the mean scores for principals and assistant principals, compared to AP coordinators, there is a substantial difference. The mean score for AP coordinators was substantially lower for Factor 3. This result reveals an opportunity for further

Table 11

Supports That Improve AP Enrollment and Performance on AP Examinations

Types of support	Frequency		
	Professional role		
	Principals	Assistant principals	AP coordinators
Test preparation and study groups for AP exams	5	12	8
Teacher training and development for AP classes	4	10	
Increased AP enrollment & earlier student involvement	3	6	3
Increased funding and planning	2	4	1
Enhanced parent involvement	1	3	
Greater public awareness of AP classes		6	1
Smaller class sizes to improve student performance			1
Provide on-line AP courses for students			1

examination of the ways that schools bolster the goals of AP through their communication with parents and students and how they leverage the professional school counseling teams to develop a supportive culture for the AP program.

Study findings also revealed that site-based administrators perceived a need to clarify school leaders' role in developing a systematic approach to schools' AP programs through the coordination of teacher training, student support, and data analysis. Among all subgroups, leadership had the second lowest mean score, and some respondents gave it the lowest possible range score. This finding is significant given the fact that site-based administrators are responsible for guiding all facets of the instructional program in their schools. When looking at responses to leadership for participants in each role; principals, as expected, rated leadership highest, as it is their direct responsibility. AP coordinators, however, rated leadership lowest amongst the three respondent groups, which may suggest they do not feel that their school's leadership fostered a coherent and comprehensive vision for AP.

Survey results demonstrated that site-based administrators perceived the most pressing AP-related need at their school to be the development of an academically challenging curriculum across grade levels that prepares students for rigorous AP coursework. This factor achieved the lowest combined mean score across all respondent groups, with some respondents giving it the lowest possible range score. Compared to both principals and assistant principals, AP coordinators felt most strongly that curriculum planning and sequencing was an area of need for the district. This finding is significant given they are typically closer to the day-to-day work of accessing the curriculum for lesson planning and teaching. It is also important to note that curriculum

planning and sequencing had the highest mean score among assistant principals, a finding in direct opposition to the scores of AP coordinators, which speaks to a possible disconnect between assistant principals and the actual needs being expressed by the AP coordinators regarding the AP program. AP coordinators also indicated that the need to develop a culture of expectations and a lack of leadership around AP were the next most important factors to address.

When given the opportunity to identify the largest barriers to AP programs, site-based administrators cited students' lack of academic readiness as the top hindrance. This barrier is closely related to curriculum sequencing and alignment, which they also cited as an area of concern. Identifying students' lack of academic readiness as a top barrier logically aligns with the administrators' survey responses regarding the supports that would most improve AP enrollment and student performance on end-of-course AP exams. The participants identified student test preparation and study groups for AP exams most frequently as the most important forms of support, which logically and directly related to the barrier of students' lack of academic readiness.

Site-based administrators also identified training for administrators and teachers as a top priority. Interestingly, 65% of principals felt they were "*very influential*" or "*extremely influential*" over the building's AP program, yet 70% of principals stated that they "*never, rarely, or occasionally*" participated in AP training. This incongruity represents a real opportunity to support student success by providing training for principals so their knowledge of AP programs can match their perceived level of influence. This additional training would also address the perceived lack of leadership and culture of expectations cited by AP coordinators.

Assistant principals and AP coordinators also expressed a need for additional AP training. In fact, 82.2% of assistant principals and 50% of AP coordinators responded that they "*never, rarely, or occasionally*" received AP training. The respondents also identified insufficient teacher training as the second most significant barrier to successful AP program implementation. Assistant principals felt strongest about this need for training, followed by AP coordinators and then principals.

Study Limitations

These findings point to limitations of this inquiry and also potential areas for additional research. Through this study, the researcher sought to understand the perceptions of site-based administrators regarding school practices around six key factors that impact AP programs; however, the survey was limited to broad findings. For example, administrator and teacher training was a key need shared by survey respondents, but the survey results did not provide information about the type of training that would be most beneficial. In the same way, principals felt a lack of AP teaching materials was a key barrier to successful AP programs. However, the survey design prevented the researcher from identifying the type of AP teaching materials the principals were referencing. Similarly, 95.2% of AP coordinators and 90% of principals reported that they "*sometimes*" or "*often*" devoted time to AP, but the survey did not specify how they spent this time. As noted previously, these limitations speak to the need for additional research that provides further details in these areas.

In addition, because this study was descriptive, and not causal, in nature, the researcher could not determine specific cause and effect relationships for each factor, nor

did the data reveal the individual impact of each factor on AP enrollment and end-of-course exam success.

Finally, site-based administrators determined that students' lack of academic readiness and insufficient teacher training opportunities were the top two barriers to the success of AP programs; however, these responses were two of the survey's six forced choice options. Future studies may consider posing an open-ended question about the barriers to successful AP program implementation, so that survey respondents could share their thoughts on possible barriers.

Recommendations

The results of this study indicated that site-based administrators perceived a need to develop school-level leadership to support AP programs. In addition, respondents shared that to bolster AP programs, school administrators needed to devote additional attention to curriculum sequencing and alignment. They also identified the need to provide additional training for administrators and teachers. Survey findings also suggested the that added supports would be useful in addressing students' lack of academic readiness. Given these findings the researcher puts forth the following recommendations:

1. The school system should provide site-based administrators with recommendations on how to take a systematic approach to the development of AP programs that include teacher training, student support, data analysis, and the development of a culture of expectations. Guidance should include strategies for establishing specific, measurable goals for AP participation and effectively communicating these goals to school stakeholders. In addition,

district leaders should could promote students' access to and success in AP courses and end of course AP exams by helping schools determine the proper sequence of AP courses to offer at each grade level.

2. To prepare students for rigorous AP coursework, the school district may benefit from examining the alignment of curriculum that prepares students for AP courses to ensure the proper sequencing of the academically challenging curriculum across grade levels (including elementary and middle school). This alignment may involve the creation of grade level exit standards and the identification of steps needed to prepare students for academic success in AP courses. District E would also benefit from expanding the pre-AP student pipeline by increasing the rigor of pre-AP coursework and adjusting the sequence of courses in elementary and middle school for students. Increasing the rigor of the pre-AP courses would help prepare students for the eventual rigor of AP coursework. The district may also benefit from establishing pre-AP cohorts of students in middle school and ninth grade. The district would need to be proactive about communicating these opportunities, and the expectations for AP programs, to students and their parents/guardians. Instruction focused on the development of study skills and test-taking strategies should also be made available to students, as well as regular review sessions that include practice AP exams that align with the structure of the actual end-of-course exams.
3. The school district should look into the implementation of programs designed to support students' preparation for end-of-course AP exams. This effort may

include specific test preparation efforts on the part of the district, as well as study groups in preparation for the exams.

4. The school district should provide additional training for site-based administrators and teachers on the components of an effective AP program. Potential training could include techniques to recruit students to enroll in AP programs, strategies to support effective teacher collaborative planning, methods to analyze data, approaches to craft a vision and goals for AP programs, practices to effectively engage parents, ways to leverage professional school counselors, strategies to most effectively teach the curriculum and assess students' progress. As stated earlier, additional research would be needed to determine the specific training areas needed for administrators and teachers.
5. The school district may benefit from further examination of how a culture of expectations is supported around the AP program. District leaders should give special consideration to how the expectations for AP participation are communicated by site-based administrators to all stakeholders, along with the benefits of the program. Identifying why the principals' and assistant principals' responses on Factor 3 were substantially higher than AP coordinators could be an important area of future study. In addition, the District should examine the role that the professional school counselor plays in supporting the success of AP programs.
6. Due to the descriptive, and not causal, nature of this study future research opportunities should be conducted to determine specific cause and effect

relationships for each factor and reveal the individual impact of each factor on AP enrollment and end-of-course exam success. This further research should involve the examination of the factors identified by administrators as least impactful in their schools and the determination of which barriers prevent administrators from implementing AP programs with fidelity. For example, these future studies might explore the specific barriers that prevent the effective exertion of leadership within schools' AP programs, the barriers that contribute to a lack of curriculum planning and sequencing, or students' lack of academic readiness for AP courses. Future inquiries could also seek to identify more specifically the areas of leadership and curriculum planning and sequencing that need to be addressed.

Though there are opportunities for continued study research, the following dissertation findings make a contribution to the body of knowledge regarding site-based administrators perceptions of the factors that support AP enrollment and end of exam success. Additional training for administrators on the components of an effective AP program, an examination of curriculum sequencing and alignment, and the development of student supports in preparation for end of course AP exams.

APPENDICES

Appendix A

Calibration Response Chart

Green =	5> of 7 agree						
Yellow =	4 of 7 agree						
Red =	3< agree						
Blue =	Beliefs						
Questions	Coleman	Dr. Fabian	Charles	Gregory	Makell	Dr. Rozanski	Dr. Holden
1	3	3	3	3	3	3	3
2	3	3	3	3	3	5	3
3	3	6	3	3	4	6	5
4	3	3	3	1	2	6	6
5	3	3	3	3	3	5	3
6	1	1	1	1	1	1	1
7	1	1	1	4	3	1	1
8	3	3	3	3	3	3	1
9	2	2	2	2	3	2	2
10	3	3	3	3	3	3	3
11	2	5	1	2	2	2	3
12	2	-	1	2	2	5	3
13	3	2	1	2	3	3	3
14	2	4	1	2	1	4	1
15	2	3	1	2	2	5	2
16	2	2	2	2	2	6	6
17	2	2	2	2	6	2	2
18	2	2	2	2	1	2	2
19	1	4	2	2	1	1	1
20	1	3	3	3	1	3	1
21	2	2	2	2	1	2	6
22	1	2	3	2	1	2	6
23	1	1	3	3	1	3	6
24	3	5	3	3	5	3	3
25	3	5	3	3	2	2	3
26	1	1	2	1	2	1	1
27	3	3	3	3	3	3	1
28	3	5	3	2	3	1	2
29	1	3	1	1	1	1	1
30	3	3	6	1	3	6	6
31	3	5	3	1	3	3	3

32	1	3	6	1	3	6	6
33	1	3	6	6	1	1	3
34	3	3	6	3	1	3	1
35	1	6	6	1	1	6	6
36	6	1	6	1	1	6	5
37	3	1	5	1	3	5	5
38	6	6	6	6	6	6	6
39	3	1	4		3	3	3
40	4	4	4	4	5	4	4
41	3	4	1	4	3	4	3
42	3	6	1	4	3	4	3
43	3	3	6	4	1	4	4
44	1	3	6	4	5	6	1
45	4	4	6	4	6	4	4
46	5	5	5	5	5	5	5
47	5	3	5	5	3	5	5
48	3	3	3	3	3	3	3
49	4	4	4	4	4	4	4
50	4	4	4	1	3	4	4
51	5	5	5	5	5	5	5
52	3	1	3	3	3	3	3
53	6	6	6	6	4	4	6
54	6	6	6	6	4	6	6
55	4	4	4	4	4	4	4
56	4	1	4	4	6	4	4

APPENDIX B

REQUEST AND PERMISSION TO ADAPT EXISTING SURVEY

PGCPS

Charoscar Coleman <charosc.coleman@pgcps.org>

Request to adapt dissertation survey questions
5 messages

Charoscar Coleman <charosc.coleman@pgcps.org>
To: swood@d125.org
Sun, Feb 26, 2017 at 9:01 PM

Dear Dr. Wood,

My name is Charoscar Coleman and I am a doctoral student at the University of Maryland at College Park. I am seeking an Ed.D in Educational Leadership. I am also the current principal of Dr. Henry A. Wise High School located in Prince George's County, Maryland.

My dissertation topic is dealing with principals' perceptions of the factors that influence advanced placement (AP) performance. As my study has similarities to your own, I am writing to formally request permission to adapt your research survey questions for my quantitative study. I plan to survey principals, assistant principals, AP coordinators, and professional school counselors at 16 high schools in our school district, Prince George's County Public Schools.

The six factors that impact AP performance, that will serve as the basis for my study, are outlined by the EXCELerator Group as follows: Leadership, Curriculum Planning and Sequencing, Culture of Expectations, Instructional Support, Student Support, and Data Analysis. My survey will center around these factors rather than the six conceptual factors from your work.

Through this study, I am seeking to contribute to our school system's understanding of how to better support AP programs and bolster students' AP enrollment and performance on the AP exams.

I anticipate beginning my study in spring of 2017. Please let me know if I have your permission to adapt your survey for my research and if there are any fees for adapting your work in this manner.

Also, I wanted to ask several additional questions:

1. Was your dissertation ever published?
2. Has your survey been used / adapted by other researchers?

I have to say, I thoroughly enjoyed reading your dissertation.

Thank you in advance for your assistance.

Yours truly,

—
Mr. Charoscar Coleman
Principal
Dr. Henry A. Wise, Jr. High School
12650 Brooke Lane
Upper Marlboro, Maryland 20772
(phone) 301-780-2100; **(fax)** 301 780-2112

Steven Wood <swood@d125.org>
To: Charoscar Coleman <charosc.coleman@pgcps.org>
Sun, Feb 26, 2017 at 10:53 PM

Hi Charoscar,

Thanks for your note and your passion for this important topic!

I'd be delighted and honored if you found some of the things I created/found to be helpful. You certainly can use/modify whatever would be helpful. The only "fee" required is a copy of your dissertation (pdf is great!) when you are done!

My dissertation was not published per se, although I have presented the findings in several settings (AP Nat'l Conference and others). I have been contacted by some other researchers over the years, but am not sure exactly how they used my work.

APPENDIX B cont.

My best to you on this journey! Please don't ever hesitate to call or email if you have questions or would like a listening ear! Keep the faith--the journey can be daunting, but is worth the work!

Steve
[Quoted text hidden]

--
Steve Wood, Ph.D.
Director of Science
Adlai E. Stevenson High School
swood@d125.org
847-415-4401

Charoscar Coleman <charosc.coleman@pgcps.org> Mon, Feb 27, 2017 at 8:18 AM
To: Steven Wood <swood@d125.org>

Dr. Wood,

I appreciate your willingness to share your work and look forward to giving you attribution in my finished paper!

I will certainly share my dissertation with you once I've completed the program and also may reach out to you to discuss the work.

Thank you so much!
[Quoted text hidden]

Charoscar Coleman <charosc.coleman@pgcps.org> Mon, Feb 27, 2017 at 4:38 PM
To: Charoscar Coleman <web4i@hotmail.com>

FYI,
[Quoted text hidden]

Charoscar Coleman <charosc.coleman@pgcps.org> Sat, Mar 11, 2017 at 11:15 AM
To: Monica Gaines <monica.gaines@pgcps.org>

As requested...

---------- Forwarded message ----------
From: **Charoscar Coleman** <charosc.coleman@pgcps.org>
Date: Mon, Feb 27, 2017 at 8:18 AM
Subject: Re: Request to adapt dissertation survey questions
To: **Steven Wood** <swood@d125.org>

[Quoted text hidden]
[Quoted text hidden]

APPENDIX C

INTRODUCTORY EMAIL TO RESEARCH PARTICIPANTS

Fall 2017

Dear Principal, Assistant Principal, or Advanced Placement Coordinator,

I am conducting a dissertation research study for my Ed.D. in Educational Leadership at the University of Maryland College Park. My dissertation is entitled: An investigation of site-based administrators' perceptions of school practices regarding the factors that impact students' Advanced Placement (AP) enrollment and success.

Through your role as a high school principal, assistant principal, or Advanced Placement (AP) coordinator you have been identified as potentially having an impact on your school's AP program.

Due to the influence site-based administrators can have on AP programs, principals', assistant principals', and AP coordinators', perceptions of school factors impacting AP programs is important. You are being asked to complete a 15-minute online survey regarding your perceptions of school practices in the following areas, which can impact an Advanced Placement program:

1. Leadership
2. Curriculum planning and sequencing
3. Culture of expectations
4. Instructional support
5. Student support
6. Data analysis

As a token of appreciation for completing the survey drawings will be conducted for $25 gift cards. More importantly, it is hoped the school system's increased understanding of school practices regarding the factors that impact AP programs will result in the identification of a key set of recommended strategies that support AP enrollment and performance in each school.

If, through your job duties, you do NOT support the AP program in your school, please click on the link and you will be able to opt out of the survey. In addition, you are free to withdraw from participation at any time, for any reason, with no penalties whatsoever.

Please click on the link below to open the 15-20-minute survey. Thank you for your support!

(Survey link)

If you have any questions, you can contact me at (301) 325-4226 or charosc.coleman@pgcps.org. You may also contact Dr. Ellen Fabian at efabian@umd.edu or (301) 405-2346.

I appreciate your help with my research.

APPENDIX C cont.

Sincerely,

Mr. Charoscar Coleman
University of Maryland College Park
Charosc.coleman@pgcps.org

APPENDIX D

FOLLOW-UP EMAIL TO RESEARCH PARTICIPANTS

Fall 2017

Dear Principal, Assistant Principal, or Advanced Placement Coordinator,

Approximately one week ago you received an email request to participate in a dissertation research study I am conducting for my Ed.D. in Educational Leadership at the University of Maryland College Park. My dissertation is entitled: An investigation of site-based administrators' perceptions of school practices regarding the factors that impact students' Advanced Placement (AP) enrollment and success.

You may have already completed the questionnaire. If so, thank you so much for providing me information that will help school leaders better understand how to leverage the factors that impact AP programs. If you have not yet had a chance to complete the online survey, I would truly appreciate your taking the time to do so. The link for the survey is below:

(Survey link)

Please understand that all survey responses information will be kept strictly confidential. The researcher will have sole access to the information and your school will not be identified by name. Since the survey respondents will be anonymous, the researcher will not be able to compare responders to non-responders, but will report response rates by category and respondents' role in the building.

If you have any questions, you can contact me at (301) 325-4226 or charosc.coleman@pgcps.org. You may also contact Dr. Ellen Fabian at efabian@umd.edu or (301) 405-2346.

I appreciate your help with my research.

Sincerely,

Mr. Charoscar Coleman
University of Maryland College Park
Charosc.coleman@pgcps.org

APPENDIX E

Site-based administrators' perceptions of school practices regarding the factors that influence students' AP course enrollment and success on the end-of-course exams

Please understand that your participation in this research is completely voluntary. There is no penalty for deciding not to participate. In addition, you are free to withdraw from participation at any time, for any reason, with no penalties whatsoever. Do you wish to participate in this survey?

- *Consent (Active link begins survey)*
- *Do not consent (Active link ends survey)*

Instructions: Please rate the degree to which "Your School's Practices" are reflected by each of the following statements. Place a check mark along the continuum from Strongly Disagree to Strongly Agree. (Likert scale - 1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Disagree, 4 = Somewhat Agree, 5 = Agree, 6 = Strongly Agree)

1. Our school has specific, measurable goals about AP participation as part of our mission, vision, and /or school values statement. (1)

2. Our school effectively communicates our AP participation goals to our school's faculty. (1)

3. Our school has taken proactive measures to effectively communicate the opportunities and expectations of our AP program to parents and students. (3)

4. Our students know the high school course sequence they need to prepare for AP classes. (2)

5. Our counselors proactively communicate the value of participating in AP courses to all students. (3)

6. Our school's non-AP courses lay a foundation of academic rigor that will prepare students to succeed in AP coursework. (2)

7. Our school has developed a vertically-aligned curriculum to prepare students for AP coursework. (2)

8. Our typical course sequence includes students' taking an AP course. (2)

9. Our school has promoted specific AP courses that would allow greater numbers of students a successful initial experience with an AP course. (1)

APPENDIX E cont.

10. We allow students and their parents to ultimately decide if they are prepared to take an AP course. (3)

11. Our school closely monitors the percentage of students who have a successful AP experience (e.g. College Board's Equity and Excellence Report – which tells the percentages of a school's entire 10th-, 11th- and 12th-grade classes who scored a 3 or higher on at least one AP Exam and the percentage of the senior class that scored a 3 or higher on at least one AP Exam during high school.) (6)

12. Our AP teachers routinely work together to share best-practices ideas. (4)

13. Our AP teachers offer intensive review sessions to prepare students for the AP exam. (5)

14. Our school has excellent support structures outside of the classroom for students to be successful in AP courses. (5)

15. Our students are expected to take the AP exam if they enroll in an AP course. (3)

16. Our teachers utilize the Instructional Planning Report from the College Board to plan instructional improvements. (The College Board Instructional Planning Report is a subject-specific report that compares the performance of your students against the global population of test takers, helping you target areas for increased attention and focus in the curriculum.) (6)

17. Our teachers have been trained in the use of data to improve AP instruction. (6)

18. Our school encourages and pays for teachers to attend AP meetings or other AP training. (4)

19. Our school supports administrators' training by offering professional development in how to manage and grow our AP program. (4)

20. School leaders have determined that AP teachers should also teach non-AP courses. (1)

21. Our AP teachers receive observation feedback on their instructional practices as part of their on-going training. (4)

22. Students participate in AP practice exams to assist with preparation for the actual AP exams. (5)

APPENDIX E cont.

23. Students engage in instruction to support the development of study skills and test-taking strategies. (5)

24. Our school team uses student performance data to actively seek out students who may be candidates to take AP courses. (6)

25. All of our AP teachers have participated in some form of AP training, such as, professional development workshops, summer courses, AP exam readings and/or AP conferences. (4)

26. Rank the top three barriers to increasing AP enrollment and/or students scoring a three or better on the AP exams.
    a. Insufficient teacher training opportunities
    b. Students' lack of academic readiness
    c. Need for additional teachers
    d. Lack of teaching materials aligned to AP course
    e. Insufficient time for instructional planning
    f. Ineffective student recruitment strategies

27. Please share one or two supports that contribute to increasing AP enrollment and/or students scoring a three or better on AP exams.

Please provide background information by completing the following questions:

28. What is your professional role at the school?
    A. Principal
    B. Assistant Principal
    C. Advanced Placement Coordinator

29. Gender
    A. Female
    B. Male

30. How many years were you a teacher?
    A. 0 - 5 years
    B. 6 - 10 years
    C. 11 – 15 years
    D. 16 – 20 years
    E. 21 or more years

APPENDIX E cont.

31. How many years have you served as an administrator?
    A. 0 – 5 years
    B. 6 – 10 years
    C. 11 – 15 years
    D. 16 – 20 years
    E. 21 or more years

32. Describe the amount of time you devote to Advanced Placement in your current role.
    A. Never
    B. Rarely
    C. Sometimes
    D. Often
    E. Always

33. Describe the extent of your Advanced Placement Training.
    A. None
    B. Rarely
    C. Occasionally
    D. A moderate amount
    E. A great deal

34. Describe your level of influence or involvement with the AP program:
    A. Not at all influential
    B. Slightly influential
    C. Somewhat influential
    D. Very influential
    E. Extremely influential

Thank you for completing the survey. Your participation was very much appreciated. Please note that all answers will remain confidential. Please enter the requested information below (in this new link) in order to be eligible for one of the $25 gift cards through a random survey.

- First name
- Last name
- School
- Email address

We thank you for your time spent taking this survey. Your response has been recorded.

APPENDIX E cont.

Note – Alignment of survey questions #1- 25 to the six AP Factors:

(1) = Leadership
(2) = Curriculum, Planning & Sequencing
(3) = Culture of Expectations
(4) = Instructional Support
(5) = Student Support
(6) = Data Analysis

References

ACCESS Advancement Via Individual Determination. (2015, Fall). *AVID's Educational Journal*. Retrieved from http://www.avid.org/_documents/ACCESS_Fall_2015.pdf

Adams, C. (2014, December). Colleges vary on credit for AP, IB, dual classes. *Education Week, 34*(14). Retrieved from http://www.edweek.org/ew/articles/2014/12/10/colleges-vary-on-credit-for-ap-ib.html?qs=advanced+placement+dartmouth

Adelman, C. (1999). *Answers in the tool box.* Washington, DC: U.S. Department of Education.

Adelman, C. (2006). *The toolbox revisited: Paths to degree completion from high school through college*. Washington, DC: U.S. Department of Education.

American School Board Journal. (2007). The benefits of AP courses. *Up Front*, *194*(4), 10

Andrews, F. M., Klem, L., et al. (1981). *A guide for selecting statistical techniques for analyzing social science data* (2nd ed.). Ann Arbor: Institute for Social Science, The University of Michigan.

Association for Career and Technical Education. (2008). The role of the assistant principal. *Leadership Matters.* Retrieved from https://acteonline.org/WorkArea/DownloadAsset.aspx?id=3193

Attewell, P. (2001, October). The winner-take-all high school: Organizational adaptations to educational stratification. *Sociology of Education*, *74*, 267-295. Retrieved from

http://www.asanet.org/sites/default/files/savvy/images/members/docs/pdf/featured/attewell.pdf

Babbie, E. R. (1973). *Survey research methods.* Belmont, CA: Wadsworth Publishing, 270-276.

Burdman, P. (2000). Extra credit, extra criticism. *Black Issues in Higher Education*, *17*(18), 28-33.

Burney, V. H. (2010). High achievement on advanced placement exams: The relationship of school-level contextual factors to performance. *Gifted Child Quarterly*, *54*(2), 116-126.

Camara, W. J., & Millsap, R. (1998). *Using the PSAT/NMSQT and course grades in predicting success in the Advanced Placement Program* (College Board Research Report No. 98-4). New York, NY: College Board.

Chajewski, M., Mattern, K. D., & Shaw, E. J. (2011). Examining the role of Advanced Placement® exam participation in 4-year college enrollment. *Educational Measurement: Issues & Practice*, *30*(4), 16-27. doi:10.1111/j.1745-3992.2011.00219.x

The College Board. (2002). *Equity policy statement*. Retrieved from http://www.sduhsd.net/documents/Parents%20and%20Students/Special%20Programs/Access_Equity_4.10.6.1.pdf

The College Board. (2005). *Advanced Placement report to the nation*. New York, NY. Retrieved from http://media.collegeboard.com/digitalServices/pdf/ap/rtn/ap-report-nation_2005.pdf

The College Board. (2006). *Advanced Placement report to the nation*. New York, NY. Retrieved from http://media.collegeboard.com/digitalServices/pdf/ap/rtn/2006_ap-report-nation.pdf

The College Board. (2008). *The 8th annual report to the nation.* Retrieved from https://research.collegeboard.org/programs/ap/data/nation/2012

The College Board. (2010). *Increasing access to AP for traditionally underserved students. Spotlight on success: Student supports*. Retrieved from https://secure-media.collegeboard.org/digitalServices/pdf/professionals/spotlight-on-success-student-supports.pdf

The College Board. (2012). *EXCELerator issue brief*. Retrieved from http://media.collegeboard.com/digitalServices/pdf/excelerator/AP-Equity-and-Access_IB_June-2012_FINAL.pdf

The College Board. (2012a). *Common challenges districts face on the road to college readiness*. Retrieved from http://media.collegeboard.com/digitalServices/pdf/excelerator/Common-Challenges_June2012.pdf

The College Board. (2013). *District integrated summary: 2012-2013 Prince George's County Public Schools.* Retrieved from https://collegereadiness.collegeboard.org/about/scores/reporting

The College Board. (2013). *SpringBoard frequently asked questions*. Retrieved from http://media.collegeboard.com/digitalServices/pdf/springboard/2013_SpringBoard-FAQ.pdf

The College Board. (2014a). *The 10th annual report to the nation.* Retrieved from http://apreport.collegeboard.org/

The College Board. (2014b). *The 10th annual AP report to the nation: Maryland supplement*. Retrieved from http://media.collegeboard.com/digitalServices/pdf/ap/rtn/10th-annual/10th-annual-ap-report-state-supplement-maryland.pdf

The College Board. (2014c). *AP score distributions*: All subjects 1994-2014. Retrieved from http://media.collegeboard.com/digitalServices/pdf/research/2014/2014-Score-Distribution-All-Subjects.pdf

The College Board. (2014d). *College completion: Comparing AP®, dual-enrolled, and non-advanced students.* Retrieved from https://research.collegeboard.org/sites/default/files/publications/2014/10/comparing-ap-dual-enrolled-nonadvanced-students_college-board.pdf

The College Board. (2016a). *AP coordinator's manual*. Retrieved from https://secure-media.collegeboard.org/digitalServices/pdf/ap/ap-coordinators-manual.pdf

The College Board. (2016b). *AP program guide*. Retrieved from https://secure-media.collegeboard.org/digitalServices/pdf/ap/ap-program-guide-2016-17.pdf

The College Board. (2016c). *Bulletin for AP students and parents*. Retrieved from https://secure-media.collegeboard.org/digitalServices/pdf/ap/bulletin-ap-students-parents-2016-17.pdf

The College Board. (2016d). *AP course audit.* Retrieved from http://www.collegeboard.com/html/apcourseaudit/faq.html

Conley, D. T. (2005). *College knowledge: What it really takes for students to succeed and what we can do to get them ready.* San Francisco, CA: Jossey-Bass.

Conley, D. T. (2007). *Toward a more comprehensive conception of college readiness.* Prepared for the Bill & Melinda Gates Foundation. Educational Policy Improvement Center. Retrieved from https://docs.gatesfoundation.org/documents/collegereadinesspaper.pdf

Creswell, J. W. (2009) *Research design: Qualitative, quantitative, and mixed methods approaches (3rd ed*.). Thousand Oaks, CA: SAGE Publications, Inc.

Creswell, J. W. (2012) *Educational research: Planning, conducting, and evaluating quantitative and qualitative research (4th ed.).* Boston, MA: Pearson Education, Inc.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16, 297-334.

Dillon, W. R. and Goldstein, M. (1984). *Multivariate analysis: methods and applications*. New York: John Wiley & Sons.

District E Public Schools. (2010). *Selection of valedictorians and salutatorians.* District E Public Schools Administrative Procedure (No. 5128). Retrieved from http://www1.pgcps.org/generalcounsel/index.aspx?id=179107

District E Public Schools. (2015a). *SY2016-2020 strategic plan.* Retrieved from http://www1.pgcps.org/promise/

District E Public Schools. (2015b). *Administrative procedure: Selection of valedictorians and salutatorians (Attachment 2).* Retrieved from http://www1.pgcps.org/generalcounsel/index.aspx?id=179107

District E Public Schools. (2016). *PGCPS facts and figures*. Retrieved from http://www1.pgcps.org/factsandfigures/

Dougherty, C., Mellor, L., & Jian, S. (2006). *The relationship between Advanced Placement and college graduation* (2005 AP Study Series, Report 1, February 2006). Austin, TX. Retrieved from https://eric.ed.gov/?id=ED519365

Education Commission of the States. (2017). *Individual state profile: Advanced Placement policies – All State Profiles.* Retrieved from http://ecs.force.com/mbdata/mbprofgroupall?Rep=APA

Ewing, M., & Howell, J. (2015). *Is the relationship between AP participation and academic performance really meaningful?* (Report No. 2015-1). New York, NY: College Board.

Ewing, M., Camara, W., & Millsap, R. (2006). *The relationship between PSAT/NMSQT scores and AP examination grades: A follow-up study* (Report No. 2006-1). New York, NY: College Board.

Ferguson, G. A. and Takane, Y. (1989). *Statistical analysis in psychology and education* (6th ed.). New York: McGraw-Hill Book Company.

Furry, W., & Hecsh, J., (2001). *Characteristics and performance of Advanced Placement classes in California.* Retrieved from California State University Institute for Education Reform website: http://www.csus.edu/ier/materials.html

Geiser, S., & Santelices, V. (2004). *The role of advanced placement and honors courses in college admissions*. Center for Higher Education Studies Research and Occasional Paper Series.

Gewertz, C. (2008). Opening AP to all. *Education Week*, *27*(27), 23-25.

Gira, R., (2011). Advanced Placement: Some research reflections – An interview with Dr. Kristin Klopfenstein. *Access,* 10-13. Retrieved from http://www.avid.org/dl/abo_access/access_ip_2011_drkristinklopfenstein.pdf

Gira, R., (2011). Equity and quality in AP. *Access*, 6-9. Retrieved from http://www.avid.org/dl/abo_access/access_ip_2011_trevorpacker.pdf

Glense, C. (2011). *Becoming qualitative researchers: An introduction (4th ed.).* Boston, MA: Pearson Education, Inc.

Godfrey, K., Matos-Elefonte, H., Ewing, M., & Patel, P. (2014). *College completion: Comparing AP, dual-enrolled, and non-advanced students* (Report 2014-3). Washington, DC: College Board.

Gollub, J. P., Bertenthal, M. W., Labov, J. B., & Curtis, P. C. (Eds.). (2002). *Learning and understanding: Improving advanced study of mathematics and science in U.S. high schools*. Washington, DC: National Academies Press.

Grier, T. B. (2002). Advanced placement: Access to excellence. *Principal Leadership*, *2*(8), 16-19.

Guilford, J. P. (1954). *Psychometric methods*. New York, NY: McGraw-Hill Book Company.

Hallett, R. E., & Venegas, K. M. (2011). Is increased access enough? Advanced Placement courses, quality, and success in low-income urban schools. *Journal for the Education of the Gifted, 34, 468-487*. doi:10.1177/016235321103400305. Retrieved from http://jeg.sagepub.com/content/34/3/468

Hanover Research. (2014). *Best practices for AP programs*. Retrieved from http://www.hanoverresearch.com/media/Best-Practices-for-AP-Programs.pdf

Hargrove, L., Godin, D., & Dodd, B. (2008). College outcomes comparisons by AP and non-AP high school experiences (*College Board Research Report 2008-3*). New York, NY: The College Board.

Hawkins, D.A. (2004). *The state of college admission 2003-2004.* Alexandria, VA: National Association for College Admission Counseling.

Hays, W. L. (1994). *Statistics* (4th ed.). Fort Worth, TX: Harcourt Brace.

Heise, D. R. (1975). *Causal analysis*. New York: John Wiley & Sons.

Holtzman, D.J., & Stancavage, F., (2011). *College readiness systems longitudinal evaluation: EXCELerator program impact, year 2 report.* Retrieved from American Institutes for Research website: http://www.air.org/sites/default/files/downloads/report/EXCELerator_Impact_Year_2_report_0.pdf

Horn, L., Kojaku, L. K., & Carroll, C.D. (2001). *High school academic curriculum and the persistence path through college persistence and transfer behavior of undergraduates 3 years after entering 4-year institutions*. Washington, DC: U.S. Department of Education.

Johnson, M. C. (1977). *A review of research methods in education.* Chicago, IL: Rand McNally, 158-159.

Keng, L., & Dodd, B. (2008). *A comparison of college performances of AP and non-AP student groups in 10 subject areas*. New York, NY: College Board.

Kerlinger, F. N. (1986). *Foundations of behavioral research* (3rd ed.). New York: Holt, Rinehart & Winston.

King, D. (2002). The changing shape of leadership. *Educational Leadership, 59*(8), 61-63

Kish, L. (1995). *Survey sampling.* New York, NY: Wiley & Sons, 384-401.

Klopfenstein, K. (2003). Recommendations for maintaining the quality of Advanced Placement programs. *American Secondary Education*, *32*(1), 39-48.

Klopfenstein, K., & Thomas, M. K. (2005). *The Advanced Placement performance advantage: Fact or fiction*. The Texas Schools Project, Texas Christian University and Mississippi State University.

Klopfenstein, K., & Thomas, M. K. (2009). The link between advanced placement experience and early college success. *Southern Economic Journal*, *75*(3), 873-891.

Leithwood, K., Seashore, K., Anderson, S., & Wahlstrom, K. (2004). *Review of research: How leadership influences student learning. Executive summary.* Retrieved from https://conservancy.umn.edu/bitstream/handle/11299/2102/CAREI%20Executive Summary%20How%20Leadership%20Influences.pdf?sequence=1&isAllowed=y

Lodico, M. G., & Spaulding, D. T., & Voegtle, K. H., (2010). *Methods in educational research: From theory to practice*. San Francisco, CA: Jossey-Bass.

Long, M., Conger, D., & Iatarola, P. (2012). Effects of high school course-taking on secondary and postsecondary success. *American Educational Research Journal*, *49*(2), 285-322. doi:10.3102/0002831211431952

Maryland State Department of Education. (2015, November 4). *Advanced Placement trends by test administration year.* Retrieved from http://reportcard.msde.maryland.gov/college_readiness/AP/2015_AP_99AAAA.pdf

Maryland State Department of Education. (2013, November 15). *Advanced Placement trends*. Retrieved from http://www.mdreportcard.org/college_readiness/AP/2013_AP_16AAAA.pdf

Maryland State Department of Education. (2015, November 4). *Advanced Placement trends by test administration year*. Retrieved from http://reportcard.msde.maryland.gov/college_readiness/AP/2015_AP_15AAAA.pdf

Maryland State Department of Education. (2016, April 30). *Advanced Placement trends by test administration year*. Retrieved from http://reportcard.msde.maryland.gov/Entity.aspx?K=16AAAA

Master of Arts in Teaching. (2017). Do teachers need special qualifications to teach AP classes?. *Master of Arts in Teaching Guide.* Retrieved from http://www.masterofartsinteaching.net/faq/do-teachers-need-special-qualifications-to-teach-ap-classes/

Mattern, K. D., Marini, J. P., & Shaw, E. J. (2013). *Are AP students more likely to graduate from college on time?* (Research Report 2013-5). New York, NY: College Board.

Mattern, K. D., Shaw, E. J., & Xiong, X. (2009). *The relationship between AP exam performance and college outcomes.* New York, NY: College Board.

Matthews, J. (2008, April 14). Embracing the challenge. *The Washington Post.* Retrieved from http://www.washingtonpost.com/wp-dyn/content/article/2008/04/13/AR2008041302211.html

Maxwell, A. E. (1977). *Multivariate analysis in behavioral research*. New York: John Wiley & Sons.

McNemar, Q. (1969). *Psychological statistics* (4th ed.). New York: John Wiley & Sons.

Mertler, C.A. and Vannatta, R.A. (2005). *Advanced and multivariate statistical* (3rd ed.). NewYork: John Wiley & Sons.

Moore, G. W., & Slate, J. R. (2008). Who's taking the advanced placement courses and how are they doing: A statewide two-year study. *The High School Journal, 92*(1), 64. doi: http://www.jstor.org/stable/40660788

National Science Teachers Association. (2007, April). Studies confirm relationship between AP and college success. *NSTA Reports,* 14-15.

Oxtoby, D. W. (2007). The rush to take more AP courses hurts students, high schools, and colleges. *Education Digest*, *73*(1), 43-46.

Patterson, M. B., & Keane, C. P. (2013). *Trends in Advanced Placement (AP) participation and success, 2009-2012.* Prince George's County Public Schools, Division of Performance Management/Department of Research Evaluation. Retrieved from http://www.pgcps.org/researchandevaluation/pub.aspx?id=177775

"Reforming and Strengthening America's Schools for the 21st Century." (2007, November). Retrieved from Obama for American website: http://obama.3cdn.net/3297d77a034ada10f5_hpdhmvj1s.pdf

Riley, M. N. (2006). A district where everyone's on the advanced track. *School Administrator*, *63*(1), 33.

Sadler, P. M., & Tai, R. H. (2007). Weighting for recognition: Accounting for AP and honors courses when calculating high school grade point averages. *NASSP Bulletin*, 91(1), 5-32. doi:10.1177/0192636506298726

Sadler, P., Sonnert, G., Tai, R., & Klopfenstein, K. (2010). *AP: A critical examination of Advanced Placement program*. Cambridge, MA: Harvard Education Press.

Sathre, C. O., & Blanco, C. D. (2006, June). *Moving the needle on access and success: A study of state and institutional policies and practices.* Boulder, CO: Western Interstate Commission for Higher Education.

Schlosser, L. (2015, April). Transition by design: The power of vertical teams—Multilevel collaboration helps students succeed at all academic levels. *AMLE Magazine*. Retrieved from https://www.amle.org/BrowsebyTopic/WhatsNew/WNDet/TabId/270/ArtMID/888/ArticleID/501/Transition-by-Design-The-Power-of-Vertical-Teams.aspx

Shavelson, R. J. (1996). *Statistical reasoning for the behavioral sciences* (3rd ed.). Boston, MA: Allyn and Bacon.

Simpson, K. (2011, May 8). Advanced Placement courses test Colorado schools' path to success. *The Denver Post.* Retrieved from http://www.denverpost.com/news/ci_18018524

Solorzano, D.G., & Ornelas, A. (2002). A critical analysis of advanced placement classes: A case of educational equality. *Journal of Latinos and Education*, 1, 215-229. doi:10.1207/S1532771XJLE0104_2

Thorndike, R. L. (1982). *Applied psychometrics*. New York, NY: Houghton Mifflin Company.

Thurstone, L. L. (1925). A method of scaling psychological and educational tests. *Journal of Educational Psychology*, 16, 433-441.

U.S. Department of Education. (2000). *A forum to expand advanced placement opportunities: Increasing access and improving preparation in high schools*. (ED 448 519) 15. Retrieved https://eric.ed.gov/?id=ED448522

U.S. Department of Education. (2006). *A test of leadership: Charting the future of U.S. higher education*. Retrieved from https://www2.ed.gov/about/bdscomm/list/hiedfuture/reports/pre-pub-report.pdf

U.S. Department of Education. (2007). Improving accessibility, affordability, and accountability in higher education. Retrieved from https://www2.ed.gov/about/offices/list/ovae/pi/cclo/ccvirtualsummitsummary.pdf

Van Reusen, K., Shoho, A.R., & Barker, K.S. (2001). High school teacher attitudes toward inclusion. *The High School Journal, 84*(2), 7-20

Wakelyn, D. (2009). *Raising rigor, getting results. Lessons learned from AP expansion.* Retrieved from National Governors Association website: http://www.nga.org/files/live/sites/NGA/files/pdf/0908APREPORT.PDF

Wood, S. (2010). *Student access to Advanced Placement (AP) coursework: Principals' beliefs and practices.* Loyola University Chicago, Chicago, IL

Yin, R. K. (2003). *Case study research: Design and methods (3rd ed.*). Thousand Oaks, CA: Sage.