

USING DISTANCE LEARNING TO IMPACT ACCESS OF DIVERSE LEARNERS TO ADVANCED PLACEMENT PROGRAMS

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Distance learning has been used as one method to increase access for students who have otherwise been underrepresented in college preparatory courses like Advanced Placement (AP). This study evaluated the impact of a statewide Virtual Advanced Placement (VAP) program on access to AP courses for students from underrepresented populations. Survey and interview data indicate a heavy focus on recruiting students from diverse racial and ethnic backgrounds. However, English language learners and students with disabilities continued to be underrepresented in VAP programs. A discussion of the findings and implications for research and practice are also provided.

INTRODUCTION

Advanced Placement (AP) programs were established in the mid 20th century in an effort to increase rigor for students who had mastered typical high school curricula. Generally, AP provides high school students access to college level coursework and allows these students to, at the discretion of colleges and universities, receive college credit given successful completion of coursework and accompanying exams (Walker & Pearsall, 2012). Some researchers have suggested that

involvement in advanced or rigorous coursework such as AP during high school can have a significant positive impact on students' academic and social outcomes (Attewell & Domina, 2008; Foust, Hertberg-Davis & Callahan, 2009). Specifically, AP participation has been associated with higher levels of satisfaction with high school experiences, competitive advantages for college admission, higher levels of 4-year college enrollment, higher college grade point averages, and greater long-term financial success (Clinedinst & Hawkins, 2009; Flowers, 2008; Taliaferro & DeCuir-

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Gunby, 2008). Even stronger positive correlations exist on the aforementioned outcomes for those students who both participate in AP curriculum and earn passing scores of three out of five or better on AP exams (Bleske-Rechek, Lubinski, & Benbow, 2004; Warne, Larsen, Anderson, & Odasso, 2015).

There are questions, however, about whether AP courses actually increase college readiness or whether the kinds of students who choose to take AP courses are already highly motivated and likely to attend and succeed in college (Foust et al. 2009; Klopfenstein, 2010). In addition, other factors associated with AP (e.g., smaller class sizes, being exposed to higher quality teachers, or associating with students who are more motivated to learn) confound the ability to make specific claims about the benefits of AP programs. Despite the uncertainty about the full impact of taking AP courses, there is some research to suggest that increased access to AP would result in a reduction in the achievement gap experienced by some populations (e.g., students from low socioeconomic status (SES) backgrounds, students from diverse racial and ethnic backgrounds, and students with diverse academic needs) (Walker & Pearsall, 2012).

Although there is evidence of growth in AP participation among diverse ethnic, social, and academic groups in recent years (Judson & Hobson, 2015), a disparity persists in the number of students from diverse backgrounds represented in college preparatory programs (Barnard-Brak, McGaha-Garnett, & Burley, 2011; Cisneros, Holloway-Libell, Gomez, Corley, & Powers, 2014). Over the last decade, distance education has risen in popularity partly in an effort to increase student access to coursework that may otherwise be unavailable. Distance education can allow schools and districts to combine small numbers of students to create larger numbers who may access coursework online (Barbour & Mulcahy, 2006; Burney & Cross, 2006). Consequently, distance education has the potential to open up access to courses, such as AP, for students who have otherwise been underrepresented.

The purpose of this paper is to outline information gathered through an evaluation of a statewide Virtual Advanced Placement (VAP) program. One of the main purposes of the program was to increase access to AP courses for students who would have otherwise been underrepresented in AP programs. Twenty schools, districts, and school district consortia received grant funding to support implementing the VAP program and were evaluated over the course of 18 months. To begin, we will look at the literature examining access to advanced programs for underrepresented groups. We will also examine the literature on the use of distance learning as a method of providing access to underrepresented groups. Then, we will share the procedures and results surrounding our evaluation of the participating schools and districts. Finally we will discuss the implications for schools and districts that use distance learning to increase AP access to students from underrepresented populations.

UNDERREPRESENTED GROUPS

The literature surrounding underrepresented groups and AP focuses on the following themes: issues of access to AP, AP enrollment, AP exams, students with disabilities and AP, and structural supports needed for AP success. See Table 1 for additional details about each study. Although there is literature that examines gender, findings seem to indicate that underrepresentation related to gender is less clear than with other groups (e.g., minorities, low SES, and students with disabilities). Therefore we will not focus on gender in our presentation of the literature.

Access for Underrepresented Groups

The research surrounding access to AP for underrepresented groups examined the impact of school structures, school characteristics, and schoolwide incentives. Researchers interviewed over 200 English language learners (ELL) and Latino students and their parents to

determine the structures in place that encourage and inhibit AP participation. They found that ELL and Latino students were more likely to take remedial and regular courses than AP courses (Kanno & Kangas, 2014; Walker & Pearsall, 2012). Similarly, researchers examined more than 12,000 students to determine how school characteristics such as SES and proportion of minority students impacted access to AP courses. Researchers found that schools with high populations of minority students and high populations of students from low SES backgrounds participated less in AP courses (Barnard-Brak et al., 2011). When examining the impact of offering to pay for AP exams on school AP course offerings, Klugman (2013) found that offering an incentive did not significantly impact AP course offerings in schools with high minority or low-income populations. These results across studies suggest that the issue of AP access is complicated and often systemic. Researchers across studies have suggested that schools need to examine the following issues related to access: (1) bias in identification and assessment practices, (2) teachers and counselors tending to direct certain populations of students away from AP courses, (3) student fear of failure and alienation, and (4) not being able to afford college tuition costs. These findings suggest that the issue of access is complicated by multiple cultural, sociological, and structural factors. The findings also suggest that both students and staff need training and support to help encourage AP participation among underrepresented groups.

Enrollment for Underrepresented Groups

The research surrounding enrollment and underrepresented groups examined differences in enrollment across race/ethnicity in specific states. In addition, some researchers also evaluated open enrollment to determine whether it had a significant impact on enrollments for low SES and minority populations. Several researchers examined data sets from thousands

of public high schools in the state of Texas to determine whether differences exist in AP enrollment across race. Researchers found statistically significant differences among enrollment of African American, Hispanic, and Caucasian students, with Caucasian students experiencing the highest rates of enrollment and African American students experiencing the lowest rates of enrollment (Klopfenstein, 2004; Moore & Slate 2008; Saenz, Slate, & Joyner, 2011). In addition to race, Klopfenstein (2004) also examined the effect of SES on enrollment and found that students from low SES backgrounds participated in AP at significantly lower rates. Researchers who examined the impact of open enrollment (i.e., no recommendation or assessment restrictions) on African American student AP enrollment found that despite open access, African American students enrolled at significantly lower rates than Caucasian students (Corra, Carter, & Carter, 2011; Corra & Lovaglia, 2012). Results suggest that social pressures (e.g., fear of not being “cool” or “acting White”) may cause African American students to opt out of taking AP courses and may impact discrepancies in AP minority enrollment overall. Like the issue of access, results across studies indicate that underrepresentation in AP may also involve cultural and sociological factors.

Exam Scores for Underrepresented Groups

The research surrounding exam scores for underrepresented groups examined changes in AP participation over time, differences in AP exam scores among racial/ethnicity and SES across states, and the impact of incentives on AP exam participation. Researchers who examined how AP exam participation has changed over the last two decades, found an increase in AP exam participation (Judson & Hobson, 2015). However, when Judson and Hobson (2015) evaluated AP exam scores by race, they found that Asian and Caucasian students scored significantly better than African American and Hispanic students. Similar

research conducted with several thousand students in the state of Florida yielded somewhat contrasting results in that Hispanic students experienced the highest passing rates on AP exams (Leonard, Blasik, Dilgen, & Till, 2003). Despite some discrepancies across studies, it appears that students from certain minority groups, especially African American students, have persistently scored lower on AP exams. When African American students' AP exam scores are isolated for further examination across individual states, researchers have found that California had the highest percentage of African American students score a three or higher on AP exams. Furthermore, Texas had the highest percentage of African American students scoring below a three on AP exams (Davis, Joyner, & Slate, 2011; Wilson, Slate, Moore, & Barnes, 2014). Researchers suggested that states with higher graduation rates among minority students experienced higher AP exams scores among minority students. The correlation between graduation rates and AP exam scores supports previous research that suggests the significant impact of structural factors on AP success.

Researchers also evaluated whether providing incentives like open enrollment or paying for the AP exam would impact AP participation. Researchers found that a majority of students from low income and minority backgrounds benefited from incentives and did take the AP exam (Hallett & Vengas, 2011; Jeong, 2009). Unfortunately, these students were passing the AP exams at low rates. These results suggest that, especially for students from low income and minority backgrounds, factors beyond access (e.g., teacher training and explicit instruction) are needed to support AP exam success.

Students With Disabilities

The research surrounding AP participation among students with disabilities focused on rates of participation, issues of interest, and support. When researchers examined rates of AP participation among students with disabili-

ties, they found that these students were significantly underrepresented in AP courses (Klopfenstein, 2004; Moore & Slate, 2008). Hitching, Retish, and Horvath (2005) tried to determine if underrepresentation among this population could be attributed to interest in continuing their education beyond high school. Researchers found that a majority of students with disabilities began high school interested in going to college but by the end of high school that interest had waned. Results suggest that students who remain interested in higher education at the end of high school received high levels of support and encouragement from teachers, counselors, and parents. These findings are supported by Schultz (2012), who examined the factors that impacted students with disabilities' participation in AP. The researchers found that factors such as poor school culture and restrictive admission guidelines negatively impacted students with disabilities. Like Hitching et al. (2005), Schultz (2012) also found that mentoring and teacher support significantly increased the success experienced by this population of students in AP.

DISTANCE LEARNING AND AP

The literature surrounding distance learning and AP focuses on the following two themes: examining the benefits and challenges of distance learning and comparing the efficacy of distance learning with traditional learning environments.

Benefits and Challenges

When researchers examined the benefits and challenges of accessing AP coursework through distance learning environments, they found that a large majority of the students they surveyed expressed satisfaction with their distance-learning environment (Barbour, 2008; Beese, 2014). For those students who dropped their distance-learning course, a majority cited difficulty balancing their schedules and meeting course expectations as a rationale for drop-

ping the course (Beese, 2014; Hannum, Irvin, Banks, & Farmer, 2009). Relatedly, Barbour (2008) suggests that students who are most successful in online learning environments possess good time management skills and are motivated and self-directed learners. Barbour also points out, however, that many students may not already have these skills and may need support in acquiring and developing these skills to be successful in distance learning environments.

Distance Versus Traditional

Researchers surveyed and interviewed students to determine the impact (e.g., student achievement, performance on AP exams, etc.) of distance learning versus traditional learning environments. They found that students participating in distance learning environments were more likely to take the corresponding AP exam than those enrolled in traditional learning environments (Barbour & Mulcahy, 2006; Johnston & Barbour, 2013). When comparing students enrolled in Florida Virtual School (FLVS) with traditional learning environments in Florida, researchers found that virtual participants scored higher than students enrolled in traditional AP courses across the state (Johnston & Barbour, 2013). The results of this research suggests that enrollment in a distance AP program may not compromise the quality of the content provided to students. In addition, Johnston and Barbour found that Florida Virtual School, partially due to concerted recruitment efforts, attracted a higher population of minority students to AP courses than traditional environments. This suggests that the distance component may help to alleviate some of the cultural, sociological, and structural factors that affect the AP participation of underrepresented groups.

STUDY PURPOSE

One important predictor of postsecondary attendance and success is participation in rigorous college preparation programs such as

AP. Unfortunately, students from minority backgrounds, low-income backgrounds, ELLs, and students with disabilities are least likely to be targeted for involvement in college preparatory courses (Klopfenstein, 2004; Walker & Pearsall, 2012). There is some evidence to support the use of distance learning as a method for increasing access to AP coursework for students from underrepresented groups (Beese, 2014; Johnston & Barbour, 2013).

In the current study we seek to merge the literature surrounding underrepresented groups, distance learning, and AP. We examine how implementing VAP across New York state impacted access to AP programming for underrepresented groups (i.e., students from minority backgrounds, students from low-income backgrounds, and student with disabilities). This study is unique because we use multiple and mixed methods data collection and analysis to examine the impact of a statewide distance-learning program on AP access for underrepresented groups.

The research questions guiding this study include the following: (1) Who have high schools in New York state targeted for increased access to VAP? (2). How does enrollment in the VAP program compare with statewide enrollment across underrepresented groups? (3) What challenges to VAP access have high schools experienced?

METHODS

The data presented in this article is part of a larger evaluation study funded by the U.S. Department of Education's Race to the Top initiative. Other components of the VAP evaluation (not presented here) included examining student motivation, student engagement, student satisfaction, student content course choice, and distance learning structures across funding recipients. Six staff members (three university faculty members, and three doctoral students) located at a university in the state of New York led the evaluation process.

TABLE 1
Summary of Studies

<i>Author/Date</i>	<i>Study Theme and Purpose</i>	<i>Participants and Setting</i>	<i>Methods</i>	<i>Findings</i>
Barbour (2008)	- Distance learning and AP; - Determine the benefits and challenges of virtual schools on the learning process.	38 secondary school students in rural settings; 18 schools in four school districts in Canada.	Surveys conducted with student participants.	68% of students were satisfied with virtual schooling; E-mail was found to be the most useful tool; Technical issues and lack of time found to be a challenge.
Barbour & Mulcahy (2006)	- Distance learning and AP; - Differences in retention rates in AP courses and student achievement on AP exams.	- Secondary school students in urban and rural settings; 66 schools in Canada.	Schools surveyed, number enrolled in June compared with number who took the AP exam.	Significantly higher percentage of students in online courses took AP exam compared to traditional AP.
Barnard-Brak, McGaha-Garnett, & Burley (2011)	- Underrepresented groups; - Examined access to AP courses; % of low-SES and minority students.	12,144 adolescent high school students across the nation.	Data obtained from National Center of Education Statistics.	Percentage of low-SES and minority students in a school correlated with reduced number of AP courses available.
Beese (2014)	- Distance learning and AP; - Benefits and challenges of online learning for AP.	Twelfth-grade students academically at risk (e.g., low income); Urban public high school in Ohio.	Participants were interviewed and surveyed. Student course documents were analyzed.	62% of students dropped their AP course. Students reported difficulty managing their schedule, and meeting course expectations.
Corra, Carter, & Carter (2011)	- Underrepresented groups; - Differences in AP enrollment across race.	Five high schools in a North Carolina public school district with a total enrollment of 5,470 students.	Examined enrollment statistics for 47 core courses across disciplines.	Caucasian students make up the majority of students enrolled in AP. African Americans were choosing to take less challenging courses for social reasons.
Corra & Lovaglia (2012)	Underrepresented groups; Underrepresentation of African Americans in AP courses.	Six high schools in North Carolina with total enrollment of 6,656.	Examined 70 core courses across disciplines.	Caucasian students make up 60–84% of AP enrollment depending on school; African Americans choosing less advanced courses.
Davis, Joyner, & Slate (2011)	- Underrepresented groups; - Differences in AP exam scores for African American students across states.	57,774 African American students from Texas, California, and Georgia.	Archival test scores collected from the College Board website.	African American students in California were most likely to score a 3 and better on the AP exams. Students in Texas had a lower AP participation and level of achievement on AP exams.

Hallett & Venegas (2011)	• Underrepresented groups; • Examined connection between increased access to AP, AP participation, and AP exam success.	• 48 students from minority and low income backgrounds; • 15 different high schools in Los Angeles.	• Interviews and analysis of participants' course taking patterns.	• Participants enrolled in AP courses at high rates, however, scored low on AP exams (46% of participants scored 3 or above).
Hannum, Irvin, Banks, & Farmer (2009)	• Distance learning and AP; • Benefits and challenges of distance learning AP programs.	• 417 rural school districts with at least 20% low SES backgrounds.	• Surveys and interviews conducted with school district administrators.	• 92.1% of participants reported being satisfied with distance learning; time or scheduling and funding difficulties reported as barriers.
Hitching, Retish, & Horvath (2005)	• Underrepresented groups; • Examined the prevalence of students with disabilities in AP programs.	• 110 high school students with disabilities at two high schools in western Illinois.	• Individual education plans, transition plans, and final transcripts analyzed.	• Most students who started on college prep track dropped college prep courses by 11th grade; switched to vocational track.
Jeong (2009)	• Underrepresented groups; • Impact of paying for AP exam on AP participation among underrepresented groups.	• 750 public and private 10th-grade schools across the country.	• Students, teachers, and schools were surveyed; Transcript records, students' courses, and academic achievement also analyzed.	• AP exam incentive significantly correlated with AP exam participation; Minorities and students from low SES backgrounds less likely to achieve passing score on AP exam.
Johnston & Barbour (2013)	• Distance learning and AP; • Compared performance on AP exam for students enrolled in virtual versus traditional AP.	• 189 students enrolled in Florida Virtual School (FLVS) and traditional high schools in the state of Florida.	• Students surveyed and interviewed; AP exam scores analyzed.	• FLVS students scored 5% higher than traditional students on AP exam; FLVS had increased minority participation in AP.
Judson & Hobson (2015)	• Underrepresented groups; • Trends in growth and achievement in AP programs among minority groups.	• High school AP students across the country.	• AP data (enrollment and exam participation) collected from the College Board database from 1996 to 2012 across ethnic groups.	• Increase in number of minority students taking AP exam; African American and Hispanic students pass AP exam at decreased rates.
Kanno & Kangas (2014)	• Underrepresented groups; • Examined factors that support and inhibit ELL participation in AP.	• 8 ELLs in a low-income high school in Pennsylvania; ELL teachers, ELL coordinator, school principal, and guidance counselors.	• Participants interviewed over time; participants observed in class.	• Participants tracked and enrolled in ELL courses and remedial courses; Teachers and counselors recommend students not take advance courses.

(Table continues on next page.)

TABLE 1
(Continued)

<i>Author/Date</i>	<i>Study Theme and Purpose</i>	<i>Participants and Setting</i>	<i>Methods</i>	<i>Findings</i>
Klopfenstein (2004)	- Underrepresented groups; - Examined rates of minority enrollment in AP.	Hundreds of high schools in Texas; Low income Caucasian, Hispanic, and African American students.	Analysis of AP course taking behavior across students by race.	Caucasian students participate at the highest rates; Students from low SES backgrounds experienced reduced AP participation by 40%.
Klugman (2013)	- Underrepresented groups; - Impact of incentive programs (pay for AP exams) on access to AP for students from low-income backgrounds.	Thousands of students in over 400 school districts in California.	Data collected from the California Basic Educational Data System; Semi-structured interviews with school districts.	Students from wealthy backgrounds more likely to increase participation due to incentive; Results impacted by emphasis on college admission in wealthy school districts.
Kyburg, Herberg-Davis, & Callahan (2007)	- Underrepresented groups; - Examined factors that support and inhibit participation in AP by minority students.	3 urban high schools in two mid-Atlantic states; Majority number of minority students; free and reduced numbers higher than state average.	Focus groups, individual interviews, and observations conducted with teachers, students, counselors, administrators, and coordinators.	Supportive student networks and mentoring result in more success with AP programs among minority students.
Leonard, Blasik, Dilgen, & Till (2003)	- Underrepresented groups; - Examined AP exam rates by race/ethnicity.	Thousands of high school students in the state of Florida.	Data collected from the College Board from 1999–2002.	Hispanic and Asian students enrolled in AP and passed AP exam at the highest rates. African Americans enrolled and passed at the lowest rates.
Moore & Slate (2008)	- Underrepresented groups; - Percentage of students enrolled in AP courses broken down by ethnicity.	1789 high school across the state of Texas.	Data downloaded from Texas Education website for the 2004–2006 school years.	Percent of Caucasian students in AP was statistically significantly higher than African American students; African American students least likely to score 3 or above.
Saenz, Slate, & Joyner (2011)	- Underrepresented groups; - Differences in enrollment in AP courses by race/ethnicity.	All public high schools in Texas.	Data collected from 2006–2008 from Academic Excellence Indicator System at the Texas Education Agency website.	Significantly more Caucasian students enrolled in AP courses than African American and Hispanic students.

Schultz (2012)	• Underrepresented groups; • Perceptions of parents and staff about AP participation of students with disabilities.	• 36 participants from five public schools in upstate New York; 12 parents, 12 teachers, 6 guidance counselors.	• Interviewed participants and reviewed high school policies.	• Counselors and parents often advised students with disabilities not to enroll in AP; Adult mentoring important for AP success among this population.
Solorzano & Ornelas (2004)	• Underrepresented groups; • School structures that affect students from diverse racial and ethnic backgrounds access to AP.	• California school district with a large population of Latino and African American students.	• Data collected from the California Department of Education from 2000-2001.	• Latino students disproportionately underrepresented in AP; Schools with large minority populations have low AP enrollment.
Taliaferro, & DeCuir-Gundy (2008)	• Underrepresented groups; • Impact of structured support program on minority enrollment in AP.	• 70 urban schools in North Carolina; 11 African American women who were advisors of the local American Excellence Association chapter.	• Interviews conducted with advisors of AEA (a support group for academic achievement for students of color).	• AEA created and promoted a culture of acceptance and belonging for African American students.
Walker & Pearsall (2012)	• Underrepresented groups; • Policy structures that support and inhibit Latino participation in AP.	• 4 high schools students and their parents or guardians.	• Focus groups conducted with students and parents.	• Identification and assessment systems contribute to Latino underrepresentation in AP; Participants cited college course work a waste of time due to tuition cost and residency requirements.
Wilson, Slate, Moore, & Barnes (2014)	• Underrepresented groups; • Performance of African American male students on AP exams across states.	• African American male high school students in Connecticut, Florida, Maryland, Massachusetts, and Texas.	• Data collected from information published on the College Board website.	• Texas—lowest % of participants scoring 3 or above; Connecticut—highest % of participants with AP exam scores eligible for college credit.

Participants

Initially, there were 17 grant recipients for the VAP program implementation during the 2013–2014 academic year. These 17 recipients also received a no-cost extension for the 2014–2015 academic year. An additional three recipients received funding to provide VAP programs in 2014–2015. The 20 grant recipients (who will be referred to as grantees) consisted of nine individual school districts, eight Board of Cooperative Educational Services (BOCES), and three BOCES consortia. Grantees represented the southern, central, eastern, and western geographic regions of the state and included the following: school districts and BOCES of about 125,000 to over 1 million students, small cities, rural towns, and individual schools. To qualify for funding, grantees were required to demonstrate that at least 25% of their total student population was from high-poverty backgrounds. In an effort to answer the research questions for this study, our focus will be on data surrounding administrators, teachers, and students that participated in each grantee's VAP program.

Over 200 teachers, 20 administrators, and 3,264 students participated in the VAP program across grantees. Caucasian Americans represented the majority (54.7%) of students. Although significantly lower, African Americans represented the next largest proportion of participating students (19.1%). Students from Hispanic, Asian, and Other backgrounds made up the smallest proportion of the participating VAP population, with 1.3%, .9%, and .6% respectively. We use the term *Other* to refer to Native Americans, Pacific Islanders, Caribbean Islanders, Middle Eastern/Arab, and Multiethnic students. In addition, 57% of students participating in the VAP program were female and 43% were male. Finally, approximately 29% of participating students qualified for free or reduced lunch.

Measures

Several quantitative and qualitative measures were used to answer each of the three study research questions. First, previously existing statewide enrollment data were collected from the New York State Education Department (NYSED) website. This allowed for demographic comparisons between statewide enrollment and VAP enrollment. In addition, in early fall (2014), and again in late spring (2015), surveys developed by the six staff members working on the evaluation project were distributed to program directors overseeing each grantee's VAP program. The survey asked grantees to report nonduplicated student enrollment according to the following demographic information: Students who qualify for an Individual Education Plan (IEP) or 504; Students who qualify for free or reduced lunch; and students who are English language learners. Additionally, the survey asked for the numbers of students who, as indicated in school records, were African American, Asian (or Asian/Pacific Islander), Hispanic, Caucasian, and Other. The survey also asked about the methods used to recruit students for VAP courses as well as which students from underrepresented groups were being targeted for recruitment. Finally, interview protocols were used in the data collection process. Staff members working on the evaluation project developed separate protocols targeting a variety of participants. The focus of the data presented here is on interviews conducted with school administrators, teachers, and students. One example of a question posed to administrators in the project is "how did you recruit students for the VAP program?" One example of a question posed to teachers in the project is "how do you support students with diverse learning needs in your course(s)?" One example of a question posed to students in the project is "how did you become eligible to participate in the VAP program?"

Data Collection Procedures

Archival, public-use data from NYSED (NY State Public School Enrollment (2014–2015), were retrieved from [<https://data.nysed.gov/enrollment.php?year=2015&state=yes>] and were used to calculate state-level numbers of students in each of the ethnic categories for Grades 9 through 12. These numbers were also specifically collected for students attending school districts affiliated with the VAP project.

Also, surveys were uploaded online via Qualtrics, a software program used to collect both qualitative and quantitative survey data, and the 20 VAP program directors affiliated with the project were asked to collect and complete the survey. Although program directors were provided with up to three reminders via e-mail and/or phone, seven of the grantees submitted no responses to the surveys. The survey data presented and discussed in this study is based on submissions from 13 of the grantees that submitted information in spring 2015.

Finally, for focus group interviews, the team formed three pairs, with one faculty member and one graduate student in each pair. Likewise, the grantees were divided into three groups, with six or seven grantees in each group. Each faculty member/graduate student pair conducted focus group interviews with a distinct group of six or seven grantees. The interviews were conducted primarily in person and involved interviewing distinct groups of administrators, teachers, and students. Evaluators asked each grantee's program coordinator to organize and schedule the focus groups. Interviews with each group took approximately 60 minutes to complete. Evaluators typically spent 1 day engaging in interviews with all groups (i.e., administrators, teachers, and students) from a particular grantee. A few of the interviews, often due to weather, were conducted using the videoconferencing hardware Cisco TelePresence supported by the videoconferencing software WebEx. At the beginning of each interview participants were

asked to assign themselves a pseudonym and were instructed to use that pseudonym when responding to questions throughout the interview.

Data Analysis

Descriptive statistics were calculated to determine the most common methods used to recruit students and to determine which students were targeted for recruitment. Also, the chi-square goodness of fit test was used to compare the demographic breakdown of students who participated in the VAP programs to the demographic breakdown of students attending Grades 9 through 12 statewide in 2015. The chi-square goodness of fit test is used to determine if the numbers of students affiliated with the grantee school districts in each of the ethnic categories was notably different compared to expected numbers based on overall statewide percentages for 2014/2015. The chi-square goodness of fit test was also used to compare the differences in the percentages of students who participated in the VAP program per socioeconomic status, for English Language Learners, and for students who qualified for IEPs or 504s. Significant results suggest that the groups being compared are dissimilar.

Finally, semistructured focus group interviews were conducted, recorded, and uploaded into NVivo, a qualitative software program, for analysis. The evaluation team engaged in open and axial coding of the interview data (Creswell, 1998) to achieve a rigorous data analysis process. Data credibility and trustworthiness were considered early in the process by having interviews transcribed by a professional transcription service that signed an affidavit of confidentiality. Researchers then read, coded, and memoed the data independently to reduce persuasion or bias. Each researcher employed an inductive approach, using open coding, reading each of the interviews, and documenting themes.

RESULTS

Results are presented according to the three research questions provided earlier. The results incorporate archival data collected from the NYSED website, researcher-created survey data, and focus group interview data.

Who Have High Schools in New York State Targeted for Increased Access to VAP?

Grantees reported using multiple methods to recruit students. Descriptive statistics indicate that recommendations from school counselors (11 grantees) and teachers (eight grantees) comprised the majority of the tools used to recruit students into the VAP program. Parent (two grantees) and student (three grantees) application were the tools least likely used by grantees. Grantees were most likely to focus on students from low-income households (12 grantees) and traditionally underrepresented racial and ethnic groups (eight grantees). Grantees were least likely to focus their recruitment efforts on students with disabilities (three grantees).

Across grantees, the majority of focus group interviews conducted with administrators, teachers, and students revealed that grantees actually focused on academically able students when targeting access to the VAP program. One administrator stated, "We used a formula provided by the AP College Board to find out who has the potential to score a 3, 4, or 5 on the AP exam and we used that to generate student rosters." Another administrator stated, "We wanted to tap into a diverse group of students so we also tapped into the current honors program." One student stated, "In order to take the [VAP] class you had to maintain high averages in previous sciences." Another student stated, "In order to get a teacher recommendation you had to meet a certain standard." This is consistent with the survey data, since academically able students were most likely to be recommended by guidance counselors and teachers.

A few stakeholders reported a focus on students who are economically disadvantaged.

One teacher stated, "The program opened up access to students who wouldn't be able to afford the AP exam." Still another teacher stated, "It opened up access to technology for students who normally would not be able to afford an iPad." Some stakeholders reported focusing on race or ethnicity when targeting students. One administrator revealed, "We had a goal to enroll a certain percentage of minority students, we didn't meet our goal but we enrolled a large number of students overall." Another administrator stated, "We identified students we thought would be appropriate based on certain factors such as race." This is also consistent with the survey data, which suggests heavy recruitment efforts with low income and minority populations of students.

Surprisingly, some stakeholders were unsure about the types of students that were in their respective VAP programs. One teacher stated, "I'm not given any information about student disability or ELLs." Another teacher stated, "I personally don't know of any students from low SES backgrounds. It doesn't matter to us as teachers." One administrator stated, "I don't know how many students with IEPs are in VAP, but I know we have a few." Another administrator stated, "The districts had to be a high-needs districts to participate, but the students that actually signed up to take the courses you know I don't have their specific backgrounds."

How Does Student Enrollment in the VAP Program Compare With Statewide Enrollment Across Underrepresented Groups?

Enrollment data for students who participated in VAP programs was compared with enrollment data for students in grades 9 through 12 statewide (see Table 2). Based on a chi-square goodness of fit test, the number and percentage of African American students participating in VAP programs ($N = 623$, 19.1%) was comparable to the percentage of African American students enrolled in districts statewide ($\chi^2 (1) = 0.28$, $.90 > p > .75$). Additionally, the number and percentage of Asian/

TABLE 2
Number and Percentages of VAP Student Participants
per Ethnicity and Students in Each Ethnic Category in New York State (2014–2015)

	<i>Grantee Observed*</i>	<i>Grantee Percentage</i>	<i>Grantee Expected**</i>	<i>State Number</i>	<i>State Percentage</i>
African American	623	19.1	117	137,267	18.7
Asian/Pacific Islander	322	9.8	307	68,681	9.4
Hispanic	337	10.3	800	179,385	24.5
Caucasian	1,787	54.8	1,508	338,465	46.2
Other/Multiethnic***	195	6.0	39	8,928	1.2

Note: * = numbers reported by grantees. ** = grantee number expected based on state percentages. *** = Other represents Native American, Caribbean Islander, and Middle Eastern students.

TABLE 3
Number and Percentages of AP Student Participants per Economic Status,
Disability Services, and ELLs Grantees Compared to Percentages for New York State (2014–2015)

	<i>Grantee Reported*</i>	<i>Grantee Percentage</i>	<i>Grantee Expected**</i>	<i>State Percentage***</i>
Free/reduced lunch	1,398	42.8	1,763	54.0
English language learners	15	0.5	261	8.0
IEP/504	59	1.8	555	17.0

Note: * = numbers reported by grantees; ** = grantee number expected based on state percentages; *** = Percentages based on K–12 student data.

Pacific Islander students participating in VAP programs ($N = 322$, 9.8%) was comparable to the percentage of Asian/Pacific Islander students enrolled in districts statewide ($\chi^2 (1) = 0.73$, $.5 > p > .25$). However, the number and percentages of Hispanic ($N = 337$, 10.3%), Caucasian ($N = 1,787$, 54.7%), and Other/Multiethnic ($N = 195$, 6.0%) students participating in VAP programs was not comparable to the percentages of Hispanic (24.5%), Caucasian (46.2%), and Other/Multiethnic (1.2%) statewide. When all ethnic groups are combined, the overall differences result in populations that are dissimilar ($\chi^2 (9) = 944.61$, $p < .01$).

Based on numbers reported by VAP program directors from 13 grantees, 42.8% of students participating in VAP programs were economically disadvantaged, 0.5% were ELL, and 1.8% qualified for IEPs/504s (see Table 3). These percentages are all lower than

expected based on percentages reported for students in grades K–12 by NYSED. For example, the number of students participating in VAP programs who qualified for IEPs/504s ($N = 59$) was not comparable to the expected number of 555 based on the statewide percentage of 17% ($\chi^2 (1) = 443.3$, $p < .01$). Likewise, the number of VAP students identified as ELL and economically disadvantaged were also not comparable to the numbers expected based on statewide percentages ($\chi^2 (1) = 261$, $p < .01$, and $\chi^2 (1) = 75.6$, $p < .01$, respectively).

What Challenges to VAP Access Have High Schools Experienced?

Data surrounding challenges to access revealed two themes—challenges related to students from economically disadvantaged backgrounds and challenges related to students

who are academically disadvantaged. Some stakeholders focused their concerns on students who are economically disadvantaged. One administrator revealed, "The initial vision was to target students who are historically underrepresented. That is easier said than done." Another administrator stated, "Trying to bring more low income students who may not be necessarily thinking about taking an AP course is sometimes a challenge. Students may inherently not be prepared to take AP courses. The rigor they're experiencing is more than what they're used to." Some stakeholders cited the program being challenging for students who are academically disadvantaged. One administrator stated, "Self directed learning is challenging and for some students they said it was too much." One teacher stated, "I don't have any students with disabilities (SWDs). I think I had an ELL but he could not contend with this type of program. It was just way too difficult. I don't know that the program provided any additional support."

DISCUSSION

Researchers who have examined traditional AP enrollment found that, across states, African American and Hispanic students were most likely to be underrepresented in AP programs (Klopfenstein, 2004; Moore & Slate, 2008; Saenz et al., 2011). The ethnic, social, and academic disparities that continue to exist in AP participation and completion can be attributed to a variety of reasons. This population of students often experience reduced access to AP coursework at both the school and individual student levels. At the school level, schools with high minority and low-income populations either offer fewer AP courses or offer fewer types of AP courses (Adelman, 2006; Whiting & Ford, 2009). At the individual student level, researchers have identified bias in the referral and identification process and a lack of early support for students who are at risk (Cisneros et al., 2014). According to Walker and Pearsall (2012), factors such

as race and SES are not in themselves predictors of what students are capable of learning; however, these factors are often associated with school policies, procedures, and programming that impact participation outcomes.

In an effort to combat these issues, Johnston and Barbour (2013) found that when distance learning was used to deliver AP programs, it attracted a higher population of minority students to AP courses than traditional environments. Moreover, researchers have found that student achievement in distance learning environments is comparable to outcomes in traditional environments (Bernard-Brak et al., 2004). However, researchers have also found that, in general, students need peer and adult support to ensure successful completion of online AP coursework (Barbour & Mulcahy, 2006).

The grantees in our study reported that African American students participated in VAP programs at rates proportional to statewide averages. However, Hispanic students participated in VAP at rates lower than they are represented statewide. The positive representation of African American students could be attributed to grantees' heavy focus on recruitment of students from diverse backgrounds and the fact that many grantees offered to pay for the AP exam. A few issues suggested by Walker and Pearsall (2012) may explain the underrepresentation of Hispanic students in this study. In their study, the researchers found that ELL and Latino students and their parents were unlikely to enroll in AP courses because of concerns related to the cost of attending college and the necessary residency requirements for attending and receiving financial aid for college.

In addition to recruiting students from diverse racial and ethnic backgrounds, the VAP program also focused on increasing the number of students from high poverty backgrounds participating in AP programs. However, we found a lower than expected number of students from low-income backgrounds participating in VAP programs. This finding is comparable to the finding from Klugman

(2013), who found that issues such as bias in identification and assessment and student fear of failure and alienation played a negative role in increasing AP participation among students from low income backgrounds.

Our study also found a lower than expected number of students with or at risk for disabilities participating in VAP programs. This finding is comparable to findings from Klopfenstein (2004) and Moore and Slate (2008), who also found that students with disabilities were significantly underrepresented in AP courses. Assumptions by some school stakeholders about the academic abilities of this population of students could explain some of this. During the focus group interviews in our study, both teachers and administrators suggested that students with disabilities might not be able to handle the rigor of the AP curriculum. Similarly Hitching et al. (2005) found that factors such as admission guidelines and lack of academic and social supports led to a steady decline in the number of students participating in advanced courses from freshman through senior year of high school.

Finally, we examined some of the challenges grantees experienced in implementing the VAP program. Teachers and administrators interviewed for this study frequently stated that the target recruitment population for the VAP program (i.e., students from economically and academically disadvantage backgrounds) often possessed poor time management skills and were not self-directed learners. Although Barbour (2008) agrees that success in online learning environments requires good time management skills and self-directed learning, the researcher goes on to state that many high school students lack these skills. Furthermore, lacking these skills should not exclude students from distance learning AP programs and skills that promote better time management and self-directed learning should be explicitly taught (Barbour, 2008).

Limitations

The results of this study suggest there is potential in using distance learning to increase access to AP programs for underrepresented groups; however, there were several limitations. First, the survey used to collect enrollment data was completed by only 13 of the 20 grantees. If a larger number of the grantees had completed the survey, this would have provided a more precise understanding of how VAP enrollments compared to statewide enrollments. In addition, evaluators were unable to collect AP exam data for the participating students in the VAP program. This prevented evaluators from gathering exam participation and exam score data specifically related to the VAP program. This would have helped to make comparisons between VAP and traditional AP programs. Although Johnston and Barbour (2013) found positive, significant differences between distance and traditional AP in AP exam participation and exam scores, our study was unable to bolster understanding in this area. Finally, U.S. Department of Education's Race to the Top funds were cut after the second year of the project. Many grantees expressed an interest in longer term funding to help determine the benefits of the program. Several of the grantees stated that the first year or two of program implementation were focused on getting the program up and running and that they needed more time to test the efficacy of recruitment, retention, professional development, and instructional strategies.

Implications for Practice

The results of this study point to implications for how best to implement distance learning AP programs. First, professional development is needed to support stakeholders who are involved in identifying, recruiting, and retaining students from underrepresented backgrounds. Previous studies and the current study suggest that stakeholders struggle with reducing bias in the process of recruiting stu-

dents to AP programs. Professional development is also needed for teachers who work directly with students from underrepresented groups. Teachers need specific ideas about how to differentiate instruction for diverse groups of learners.

Also, social supports in the form of peer- and adult mentoring is also needed to promote recruitment and retention of students from diverse backgrounds. Research has suggested that cultural, sociological, and structural factors can all have a significant impact on AP participation and success of underrepresented groups. When researchers examined school environments and structures that were beneficial and supported success among underrepresented groups, they found that success could be attributed to consistent mentoring supports, a willingness to provide differentiated support, and encouragement (Kyburg et al., 2007; Solorzano & Ornelas, 2004; Taliaferro & Decuir-Gunby, 2008). It is important to note that mentoring for certain populations (e.g., ELL and Latino populations) may be somewhat unique in that there may be an added layer of concern surrounding being able to legally attend colleges and universities.

Implications for Research

Based on the results, limitations, and implications for practice of this study there are several possible areas for future research. First, future research should evaluate the best ways to measure students' time management skills, motivation, and ability to engage in self-directed learning. There is research to support the importance of these skills in successfully navigating distance learning environments, and so it is important that these skills are identified in students early in the recruitment process. The purpose of assessing these skills should not be to exclude students but to determine which students are in need of additional supports to be successful. Along with these measures, researchers need to devise the best methods to support students who display a need in one or more of these areas.

In addition, more research is needed concerning at what rate students enrolled in distance learning AP programs participate in AP exams and student scores on those exams. This will allow us to determine the efficacy of distance learning AP programs. Specifically, if studies consistently show that students enrolled in distance learning AP programs are participating in AP exams at the same or at greater rates than those students participating in traditional AP programs then this may provide a rationale for incorporating more distance learning AP programs. A similar argument can be made if students enrolled in online AP programs are also scoring as well or better on AP exams than those enrolled in traditional AP programs.

Finally, more research is needed to determine the best ways to support students who are academically at risk and working in distance learning environments. Often these students will need some additional help to be successful in the distance learning environment. AP teachers may expect a certain kind of student to take their AP courses and may not be prepared to provide these supports. Research is needed that examines the impact of providing teachers with strategies to support a diverse population of students in online learning environments.

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