



## Review of the Literature for AP Academy Prepared by the Department of Research & Performance Management

May 2021

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### Strategy

Launch AP Academy, a centralized virtual delivery method for Advanced Placement (AP) courses so that students at schools with few or no onsite AP offerings can have access to AP courses.

### Key Findings

- Despite AP's dramatic expansion since its inception and despite ongoing efforts to increase AP participation among disadvantaged groups, racial/ethnic and economic participation gaps persist. Intentional expansion of AP offerings in schools that serve disadvantaged populations has not brought about equitable AP participation, as privileged groups have used their resources and status to increase their own AP access and participation, thus maintaining their competitive advantage in college preparation and admissions.
- Most research on AP effectiveness is fatally flawed, in that it cannot establish whether differences in outcomes between AP and non-AP participants are program effects or selection effects. However, one well-designed study indicated a causal link between learning enough in an AP course to pass the AP exam and subsequently scoring higher on the ACT. Merely taking an AP course, however, showed no benefit for ACT performance.
- Two large-scale studies comparing the effectiveness of online versus in-person AP participation yielded opposite results, with one showing that online participants outperformed in-person participants, and the other showing the reverse. The former study contained no control variables, however, while the latter controlled for demographics and prior achievement. (Neither study was designed to establish causation.)

### Introduction

The College Board's AP program has an established reputation for academic rigor, and AP participation in high school can work to students' advantage in college admissions and scholarship decisions and can even count for college credit. Given these factors, educators, education scholars, policymakers, and the College Board itself have turned their attention to democratizing AP access and expanding AP participation to underrepresented groups as a means to bridge persistent racial/ethnic and economic achievement gaps and to increase college readiness, college enrollment, and college persistence among historically marginalized populations.

A school's ability to offer AP coursework depends on a variety of factors. Small schools in particular struggle to offer AP courses, because the student population may not be big enough to support multiple levels of coursework in the same subject within a given grade level (e.g., regular, honors, and AP English). Beyond school size, other factors include having enough teachers trained to teach AP courses and having enough students interested in taking them.

Technology has introduced a way around these dilemmas, enabling students to take AP courses online regardless of whether their school has both the staff and student body to make offering a given AP course onsite feasible. The development of online instruction has opened up the landscape of AP coursework to populations that have not traditionally had access to it. From rural schools to understaffed/underfunded urban schools to small schools of any stripe, expanded access to AP can



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now be achieved without juggling limited resources and making difficult tradeoffs. As policymakers seek to increase AP equity through online course offerings, it would be helpful to consider studies examining the effectiveness of this strategy.

### Overview of the Literature

Unfortunately, the scholarly literature does not contain many high-quality, independent studies focused specifically on the effectiveness of and/or best practices for broad-access online AP courses. For the most part, the literature pertinent to this topic requires surveying scholarship from three areas of inquiry: effectiveness of the AP program, effectiveness of online instruction, and access to AP courses. Some studies may bridge two of the three subject areas, but studies considering all three in tandem are scant. Thus, this literature review considers studies from all three areas, with priority given to studies that treat at least two of the three topics together.

### Tension Between AP Access and Effectiveness

In a recent review<sup>1</sup> of the AP literature entitled “Advanced Placement: The Dual Challenge of Equal Access and Effectiveness” Kolluri (2018) explored the tension between the somewhat competing goals of expanding AP access and maintaining AP’s academic rigor. The author noted that while AP was once the province of elite students at elite schools, participation in AP has grown steadily since its inception. However, the rise in AP participation has been accompanied by a decline in AP exam scores and a weakening of the association between AP participation and success outcomes, leading many scholars to conclude that many students now taking AP are underprepared, and as such, they are not set up to benefit from the instruction.

Kolluri pointed out, however, that of the many quantitative studies included in his literature review, only one<sup>2</sup> employed a quasi-experimental design; the rest were correlational and thus could not establish causation. The extant studies on AP effectiveness thus may not have successfully ruled out the influence of student-level and school-level characteristics that affect both AP participation and outcomes such as AP exam performance and college success.

Indeed, the methodological shortcomings of research on AP effectiveness was a focal point in another review of the literature<sup>3</sup> published around the same time. Warne (2017) noted that earlier studies simply compared AP students to non-AP students while controlling for few or no confounding variables. Later studies have tended to control for many more student- and school-level variables that would affect both AP participation and outcomes, resulting in much weaker associations than had been found in the studies that lacked such controls.

Warne also pointed out that merely controlling for confounding variables does not indicate a causal impact of AP on college success or other desired outcomes, noting that only a randomized control trial could do so conclusively, and that none had ever been implemented for the AP program. Thus, the question remains as to whether the somewhat better college outcomes observed among AP participants is attributable to their AP experience or to other factors such as economic, social, and cultural capital; school quality; or academic preparedness unrelated to AP coursework (to name a few).



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That said, one strong quasi-experimental study<sup>4</sup> examined AP's impact on ACT scores using propensity score analysis with marginal mean weighting to match four groups of students (non-AP students, AP exam nonparticipants, AP exam non-passers, and AP exam passers) on a wide variety of demographic and academic variables. The study found little benefit to merely enrolling in an AP course. However, students who took and passed the AP exam did obtain higher ACT scores than their rigorously matched counterparts, suggesting a causal link between learning enough in an AP course to pass the AP exam and subsequently scoring higher on the ACT.

Moving back to the issue of expanding access to AP, Kolluri's (2018) literature review emphasized that racial, ethnic, and class inequities in AP access and participation still persist, despite the massive growth in AP that has taken place over the decades. Underscoring this point, a large-scale study<sup>5</sup> of AP participation in California found that as the state attempted to expand AP access,

*California's intervention resulted in increased AP subject offerings and enrollments in high schools serving disadvantaged and less advantaged students, but these reductions in deprivation had trivial effects on inequalities, since schools serving advantaged students increased their own AP offerings and enrollments. In addition, high schools serving White and Asian students had larger increases in AP offerings and enrollments than high schools serving Black and Hispanic students (p. 1).*

In a similar vein, Schneider (2009) compiled a history of AP access and participation<sup>6</sup> that highlighted the "difficulty of combating inequality with school reform, particularly in light of continuing moves by privileged groups to gain a measure of distinction" (p. 813). A subsequent study<sup>7</sup> demonstrated this phenomenon, finding that high schools' programmatic and non-programmatic resources influenced college outcomes and mediated the effect of socioeconomic status on college choices. The author concluded that:

*... the fragmented secondary school system in the United States is an avenue for affluent parents to seek relative advantages for their children in terms of reportable marks of distinction (namely AP course-taking and high SAT scores) and also in terms of social influences that lead to successful applications to selective colleges. Inequalities between schools substantially explain inequalities in college destinations based on family socioeconomic status (p. 803).*

A study examining unfulfilled AP potential<sup>8</sup> found that most students demonstrating AP potential did not fulfill it, and this was especially the case for students of color and economically disadvantaged students. Moreover, the study "did not find support for many of the student-centered reasons for forgoing AP, such as lack of motivation and constraints on time due to work or extra-curricular activities" (p. 1).

Another study<sup>9</sup> examined Black-White gaps in AP participation within racially diverse schools and "found that an additional AP course increased the Black-White AP gap in schools by 1.1 percentage points, net of other variables" (p. 642), indicating that expanding AP course offerings alone does not bring about equitable AP participation.



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While access to AP has expanded dramatically over the years, the above overview underscores how persistent AP participation gaps can be, even in response to policies specifically designed to close them. Will the expansion of online AP programs help move the needle in ways that other policies have not?

### Online AP Programs

New York state's Virtual Advanced Placement (VAP) program aimed "to increase access to AP courses for students who would have otherwise been underrepresented in AP programs" (p. 40)<sup>10</sup>. An evaluation<sup>10</sup> of the program found that the percentage of Black students in VAP was very similar to the percentage of Black students in the state, but the proportion of Latinx students in VAP lagged their proportion within the state population. Economically disadvantaged students, English language learners, and students with disabilities all had much lower VAP participation than their respective proportions within the state would indicate. Thus, while the VAP program helped Black students reach parity, it did not do the same for other marginalized groups.

A case-study evaluation<sup>11</sup> of an online pilot program designed to expand AP opportunities at a large urban high school in Ohio revealed an attrition rate of nearly 62%. The evaluator cited the following as being detrimental to the program: insufficient time to plan the pilot rollout; lack of support for students; and poor communication among the virtual vendor representatives, the virtual teacher, the program administrator, the program mentor, and the participating students.

As to the effectiveness of large-scale efforts to expand AP access via online course offerings, a survey of the literature yielded two studies that compared outcomes for students in the online program to those receiving in-person AP instruction. One of these studies<sup>12</sup> looked at Florida Virtual School (FVS), comparing FVS students' AP exam performance to that of non-FVS students (i.e., to students in site-based AP courses). The FVS students outperformed the non-FVS students, but given that no control variables were employed, one cannot conclude that the differences were program effects rather than selection effects.

The other study<sup>13</sup> considered AP courses offered through Virginia Virtual (VVA). Here is a summary of the findings:

*After controlling for demographic and prior achievement differences, students in face-to-face courses were more likely to score higher and demonstrate proficiency on SOL [state-administered achievement tests] and AP exams than students taking the same courses through VVA across most subject areas. Because the study design was correlational, additional research is needed to determine whether the difference in performance is due to the characteristics of the students in online courses, aspects of the VVA program itself, or some other factor such as students' reasons for enrolling in the course or the supports available in their local schools (p. 1).*

As for research focusing on the implementation of online AP, one study<sup>14</sup> examined the role of the facilitator in the teacher-facilitator model of online instruction. In this model, an online teacher delivers instruction virtually while a facilitator is onsite to help troubleshoot technical problems, proctor exams, monitor student progress, and provide a supportive learning environment for



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students. One emergent theme from this qualitative study was the perception among facilitators that teacher-student interactions could be improved. Another theme was the inadvertent overlap that can develop between the roles of the online AP teacher and the onsite facilitator, such that facilitators sometimes find themselves delivering direct AP instruction, which is beyond their purview and their training.

Another qualitative study<sup>15</sup> probed teachers' and students' perceptions about online interactions within a statewide Virtual Advanced Placement program. The study found that while teachers had a generally positive appraisal of the online interactions within their courses, students' perceptions were more mixed.

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<sup>1</sup> Kolluri, S. (2018). Advanced Placement: The dual challenge of equal access and effectiveness. *Review of Educational Research*, 88(5), 671–711.

<sup>2</sup> Parker, W., Mosborg, S., Bransford, J., Vye, N., Wilkerson, J., & Abbott, R. (2011). Rethinking advanced high school coursework: Tackling the depth/breadth tension in the AP U.S. government and politics course. *Journal of Curriculum Studies*, 43, 533–559.

<sup>3</sup> Warne, R. T. (2017). Research on the academic benefits of the Advanced Placement program: Taking stock and looking forward. *SAGE Open*, 7(1), 2158244016682996.

<sup>4</sup> Warne, R. T., Larsen, R., Anderson, B., & Odasso, A. J. (2015). The impact of participation in the Advanced Placement program on students' college admissions test scores. *The Journal of Educational Research*, 108(5), 400–416.

<sup>5</sup> Klugman, J. (2013). The Advanced Placement arms race and the reproduction of educational inequality. *Teachers College Record*, 115(5), 1–34.

<sup>6</sup> Schneider, J. (2009). Privilege, equity, and the Advanced Placement program: Tug of war. *Journal of Curriculum Studies*, 41(6), 813–831.

<sup>7</sup> Klugman, J. (2012). How resource inequalities among high schools reproduce class advantages in college destinations. *Research in Higher Education*, 53(8), 803–830.

<sup>8</sup> Rodriguez, A., & Hernandez-Hamed, E. (2020). Understanding unfulfilled AP potential across the participation pipeline by race and income. *Teachers College Record*, 122(9).

<sup>9</sup> Rodriguez, A., & McGuire, K. M. (2019). More classes, more access? Understanding the effects of course offerings on Black-White gaps in Advanced Placement course-taking. *The Review of Higher Education*, 42(2), 641–679.

<sup>10</sup> Fenty, N. S., & Allio, A. (2017). Using distance learning to impact access of diverse learners to Advanced Placement programs. *Quarterly Review of Distance Education*, 18(2).

<sup>11</sup> Beese, J. (2014). Expanding learning opportunities for high school students with distance learning. *American Journal of Distance Education*, 28(4), 292–306.

<sup>12</sup> Johnston, S., & Barbour, M. K. (2013). Measuring success: Examining achievement and perceptions of online advanced placement students. *American Journal of Distance Education*, 27(1), 16–28.



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<sup>13</sup> Mislevy, J., Schmidt, R., Puma, M., Ezekoye, A., & Saucedo, D. (2020). *Comparing the achievement of students in Virtual Virginia and face-to-face courses*. SRI International.

<sup>14</sup> Hendrix, N., & Degner, K. (2016). Supporting online AP students: The rural facilitator and considerations for training. *American Journal of Distance Education*, 30(3), 133–144.

<sup>15</sup> Blaine, A. M. (2019). Interaction and presence in the virtual classroom: An analysis of the perceptions of students and teachers in online and blended Advanced Placement courses. *Computers & Education*, 132, 31–43.