

A stack of books is shown. The top book is 'Calculus of a Single Variable' with a blue cover and gold lettering. Below it is a white book titled 'CHEMISTRY' with authors 'BROWN LEMAY BURSTEN' and '3rd EDITION' visible on the spine. The background is a grid pattern.

Calculus

of a  
Single  
Variable

BROWN  
LEMAY  
BURSTEN



3rd EDITION

CHEMISTRY

# Advanced Placement Programs

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## Introduction

The Advanced Placement (AP) program started in the 1950s by the College Board as a way to help students earn college credit while still in high school [1]. To earn this credit, students take end-of-year standardized exams that assess college-level content knowledge. Students that score high enough on the exam have the potential to waive introductory-level courses in college. Completion of an AP course is not required to sit for the exam, but many high schools offer them to help students prepare.

In the early years of AP, only a few elite high schools offered courses. Since then, participation has nearly doubled every decade [2] with statistics in Michigan paralleling those seen across the nation [3]. **This dramatic increase in participation, coupled with ongoing government support [4], [5], has prompted researchers to investigate the benefits and challenges of AP programming to determine whether or not it merits the resources allocated to it.** This research summary highlights the main findings.

## Key Findings

### Benefits

Proponents of the AP program advertise its academic, social, and financial benefits. Students that take AP classes gain exposure to an advanced curriculum, boosting the rigor of their high school experience [6], [7]. These students are more likely to be accepted to a selective university [8], complete a bachelor's degree, enroll in graduate school [9], and double major. Students who take an AP exam are also more likely to major in that subject [10], [11]. In some subject areas, such as chemistry, AP participation is associated with better grades in college [12], [1], [13].

AP classes are typically smaller in size and have more experienced teachers [14]. There are generally fewer behavior problems in AP classes, and students say they enjoy being with more academically-minded peers [15], [16].

One of the most compelling aspects of the AP program is the potential to earn college credit while still in high school, potentially saving money in later tuition costs [1]. Advanced credits allow student to bypass several general education requirements and access classes



required for their major sooner. This frees students to select majors that require a greater number of credits to complete, such as those in STEM (Science, Technology, Engineering, and Mathematics) fields [6].

### Challenges

While advocates of AP (many of whom are affiliated with College Board) make broad claims about its benefits, other researchers disagree. They argue that many of the positive correlations described previously, such as better grades and increased likelihood of earning a college degree, disappear when controlling for variables such as academic background, family income, and personal work habits [17], [18], [7], [19].

Good grades in AP courses are associated with increased acceptance into more selective universities, but AP credits rarely reduce the time it takes to complete a degree [20]. To graduate early from college, students must earn at least a full semester’s worth of credit, which is rare.

While AP participation is growing, pass rates have declined, and the percentage of students earning 1s (the lowest possible score) has increased [21]. For example, from 1999 to 2019, participation grew by over 2.1 million students, but pass rates dropped from 63.8% to 60.6%, and the rate of students earning a “1” increased from 12.2% to 17.5% [22], [23].

While a declining pass rate is expected with increased participation, this cannot be used as an excuse for schools. Taking and passing the AP exam, not the course, is correlated with positive outcomes, so students who do not pass the exam experience almost no benefit [7]. It has been argued that taking a course that emphasizes college-readiness skills (as opposed to college-level content) would be a better use of time for these students [24].

Additionally, taking advanced courses is associated with higher levels of stress [25] and increased usage of lecture as an instructional strategy [26]. AP does not require lecture, but teachers report feeling compelled to lecture because of the substantial amount of content they must cover. This comes at a sacrifice to experiences that foster creativity and critical thinking.

Equity has been a major focus of AP research, with several researchers concluding that the AP program is still not equitable despite ongoing efforts. Family income is still the largest predictor of AP enrollment [24], and the participation and subsequent pass rates of racial minorities are disquieting [27], [4], [28]. In 2019, only 4.2% of Michigan AP test-takers identified as Black despite the fact African American students represent approximately 17% of Michigan’s high school population [3], [29]. The College Board does not provide an overall score summary by race, but it does disaggregate individual assessments. Disparities in average scores for the four most popular AP assessments are highlighted in Table 1.

**Table 1.**

*2019 Average AP Test Scores by Race*

AP Test Name	Black	Asian	White
English Language	2.0	3.4	2.9
English Literature	1.8	2.9	2.8
U.S. History	2.1	3.4	2.9
Calculus A/B	2.2	3.3	3.1

In line with equity is the research regarding tracking. Tracking is defined as skill-grouping students for instruction [30]. Given that honors and AP courses are a form of tracking, it is

important to consider the impact of this practice when looking to gain a well-rounded perspective of AP programming.

Tracking originated as a well-intentioned management strategy designed to allow for more individualized instruction, but research shows that tracking fails to improve the academic performance of all but the highest achieving students, usually at the expense of their lower-achieving peers [31]. Furthermore, students from lower-income families, students whose parents have lower levels of education, and students of color are less likely to enroll in higher-track classes [32], a pattern mimicked in AP participation previously discussed [33].

One of the most unfortunate realities of tracking is how difficult it can be for students to move from one track to another. To be eligible for the most advanced high school courses, students often begin taking prerequisites in middle school. Missing advanced courses in seventh or eighth grade, especially in math, can make it nearly impossible for a student to register for AP courses in high school, contributing to the opportunity gap [34], [31].

Researchers have proposed several strategies to solve this dilemma. These include embedding honors/AP courses into general classes [35], adopting more culturally relevant practices/curricula [24], and clearly communicating placement classifications and processes to families [36].

## Conclusion

On a global scale, the proclaimed benefits of AP programming are weak. On a finer scale, however, some individual subject areas show promise, making the effectiveness of AP nuanced. For this reason, there are many factors schools should consider when evaluating and possibly expanding their AP programs.

### What does this mean for schools?

- Ensure all classes (advanced or otherwise) emphasize complex problem solving and creativity, elevating rigor.
- As mentioned earlier, access to and success in AP is largely determined by prerequisite coursework, so focus on improving the sequence of courses that lead to AP before expanding AP course offerings. (That is, look at the progression of courses students must complete in middle school and early high school in order to have the skill set needed to master advanced content later.)
- Examine the current performance of students on AP exams. If few students are passing the exam at a high level, identify underlying causes and implement a plan of action. If ongoing efforts do not improve scores, consider reallocating those resources.
- There is almost no research that examines the relationship between the number of students that pass AP classes versus the number of students that pass AP exams, but at the local level, comparing these statistics could help align and improve AP instruction.
- Research shows that many capable students do not see themselves as “advanced,” perpetuating gaps in access. Consider using the College Board’s free AP Potential Tool to inform placement decisions [37], [38].
- Stay informed about the research on tracking, and bolster efforts to improve inclusive differentiation.
- Do not neglect other ways students can earn college credit, such as dual enrollment. In the past, some districts put out bids to bring college professors to local high schools which both drove down costs and guaranteed the students credit upon passing the course.

## Resources

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