



CALIFORNIA STEM EDUCATION: BY THE NUMBERS



The Education Trust–West

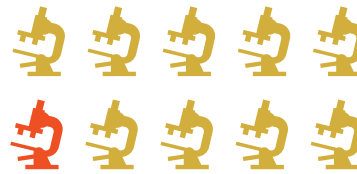
California's students, particularly Black, Latino, and low-income students, face opportunity and achievement gaps in math and science.

IN ELEMENTARY SCHOOL...

Most California students have limited exposure to science education.



4 in 10 elementary teachers in California say they spend less than one hour per week on science.¹

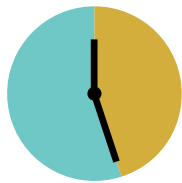


10% of elementary students

regularly engage in "practices of science" (hands-on instruction and labs, data analysis, writing).³



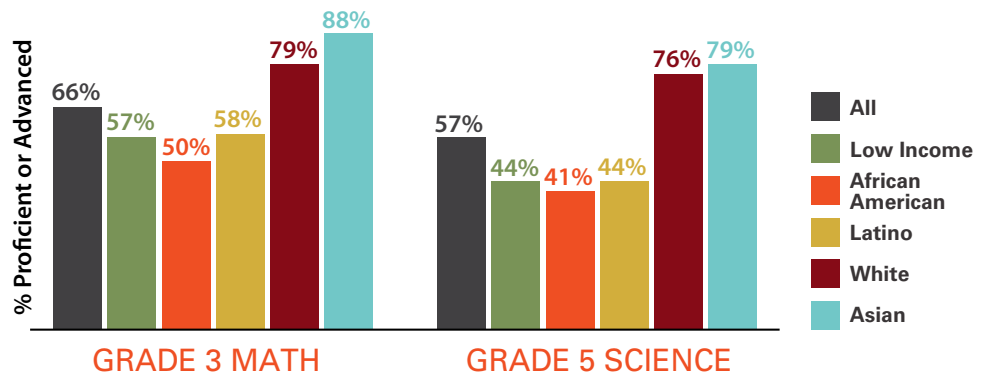
1/3 of elementary teachers in high-poverty schools say facilities are a challenge to science instruction, compared with 13 percent of teachers in low-poverty schools. And, principals in more affluent schools are twice as likely to say they have launched science initiatives in their schools.⁴



On average, California's fourth graders get just **27 minutes** per day of science instruction.²

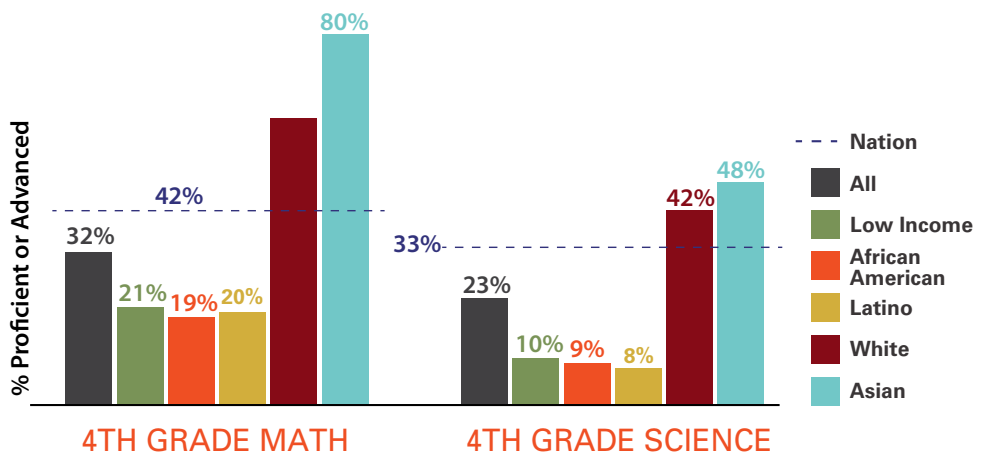
STEM ACHIEVEMENT GAPS ARE ALREADY EVIDENT IN ELEMENTARY SCHOOL.

In **3RD GRADE MATH AND 5TH GRADE SCIENCE**, White and Asian students are much more likely to score Proficient or Advanced on the 2013 California Standards Tests (CST) than their Black and Latino peers.



Source: California Department of Education, 2013.

California's students perform below the national average in **4TH GRADE MATH AND SCIENCE**, as measured by the National Assessment of Educational Progress (NAEP). And, proficiency rates for Black, Latino, and low-income students are 3-6 times lower than they are for White and Asian students.



Source: NAEP Data Explorer, NCES, 2013. Math results from 2013; science results from 2009.

IN MIDDLE SCHOOL...

Limited access to science opportunities continues to be an obstacle to STEM learning.



More than **70%** of teachers report that limited funds for equipment and supplies are a major or moderate challenge to science instruction.⁵

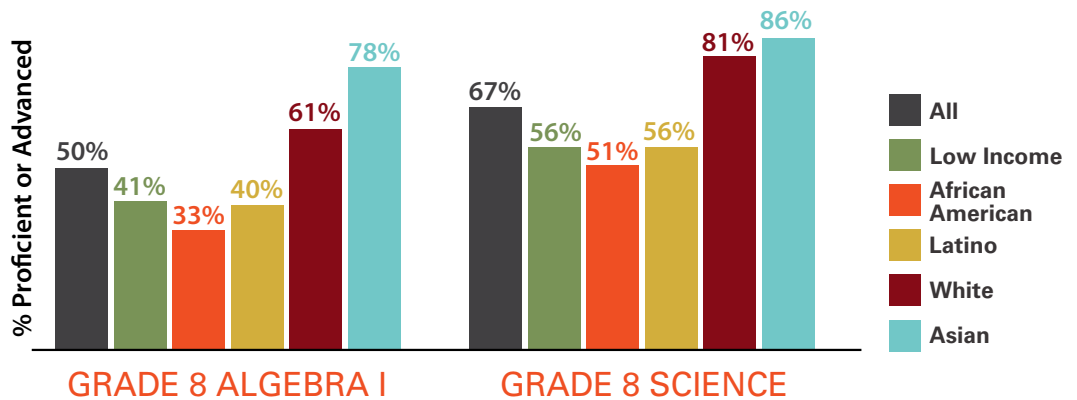


14% of middle schoolers regularly engage in "practices of science."⁶



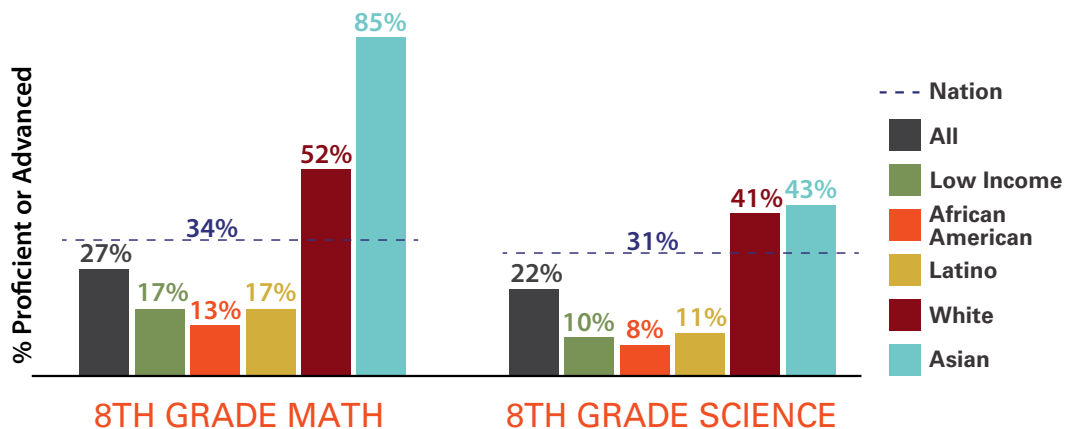
GAPS IN ACHIEVEMENT CONTINUE INTO MIDDLE SCHOOL.

In **8TH GRADE ALGEBRA I**, just 33% of Black students are proficient compared to 78% of Asian students, as measured by the 2013 California Standards Tests (CST). Disparities also exist in **8TH GRADE SCIENCE**, with low-income, Black, and Latino proficiency rates about 30% lower than those of White and Asian students.



Source: California Department of Education, 2013.

On national tests, California's 8th graders perform below the national average in **8TH GRADE MATH AND SCIENCE**, with large achievement gaps separating low-income, Black, and Latino students from their White and Asian peers.



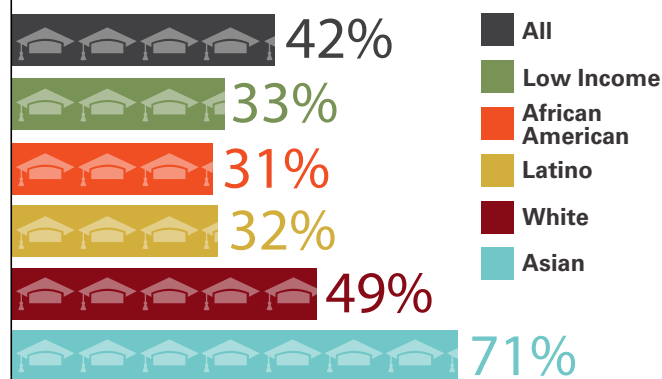
Source: NAEP Data Explorer, NCES, 2013. Math results from 2013; science results from 2011.

IN HIGH SCHOOL...

Access to rigorous college preparatory STEM coursework varies dramatically across student subgroups.

Fewer than half of California's 12th graders completed (with a "C" or better) the **15 A-G COURSES** required for admission into the UC/CSU college systems.

PERCENTAGE OF 12TH GRADERS COMPLETING A-G SEQUENCE



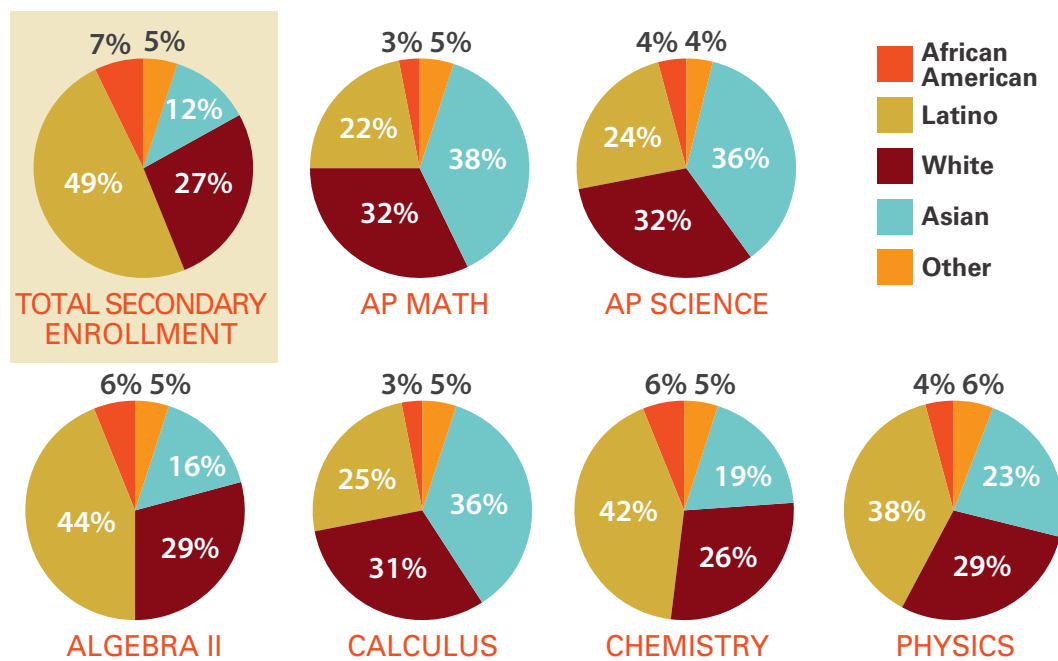
Source: California Department of Education, 2014.



Just **27%** of schools serving the highest concentration of students of color offer **COMPUTER SCIENCE CLASSES** compared to **45%** of schools with the lowest concentration of these students.⁷

ENROLLMENT IN STEM COURSES BY SUBGROUP

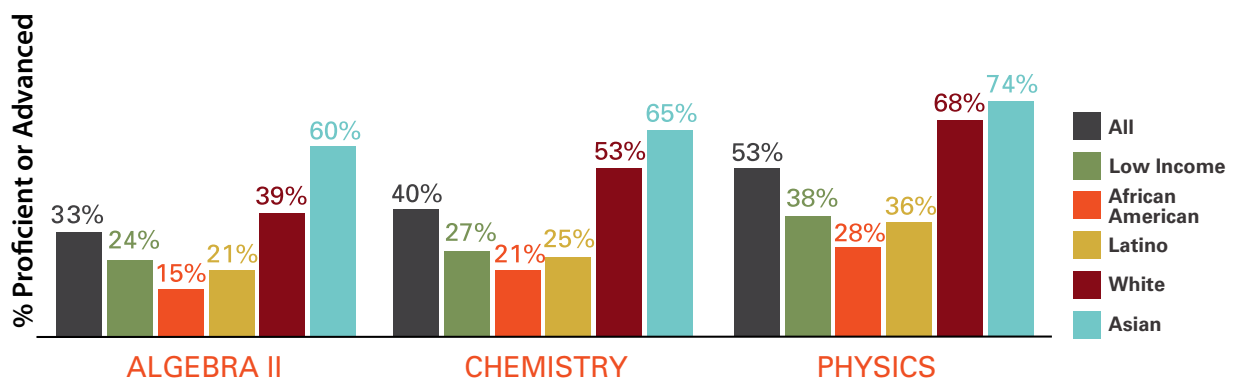
Latino and African American students are underrepresented in **ADVANCED PLACEMENT** and other rigorous **STEM COURSES**.



Source: Education Trust-West analysis of Office for Civil Rights Data, 2011.

ACHIEVEMENT GAPS ARE PERSISTENT IN HIGH SCHOOL.

Few African American, Latino, and low-income students are proficient in **HIGH SCHOOL STEM COURSES**.



Source: California Department of Education, 2013. Proficiency rates are for end-of-course exams.



END NOTES

- ¹ Rena Dorph et al., “High hopes—few opportunities: The status of elementary science education in California,” (San Francisco, Calif.: The Center for the Future of Teaching and Learning at WestEd, 2011). <http://www.wested.org/resources/high-hopes-mdash-few-opportunities-full-report-the-status-of-elementaryscience-education-in-california/>
- ² Rolf Blank, “What is the Impact of Decline in Science Instructional Time in Elementary School?” (Los Altos, Calif: Noyce Foundation, 2012). <http://www.csss-science.org/downloads/NAEPElemScienceData.pdf>.
- ³ Rena Dorph et al., “High hopes—few opportunities.”
- ⁴ Ibid.
- ⁵ Ardice Hartry et al., “Untapped Potential: The status of middle school science education in California,” (San Francisco, Calif.: The Center for the Future of Teaching and Learning at WestEd, 2012). http://www.lawrencehallofscience.org/sites/lawrencehallofscience.org/files/user-jnoe/Middle_School_Science_Ed_%20Study.pdf.
- ⁶ Ibid.
- ⁷ Alexis Martin, Frieda McAlear & Allison Scott, “Path Not Found: Disparities in Access to Computer Science Courses in California High Schools,” (Oakland, Calif.: Level Playing Field Institute, May 2015). http://www.lpfi.org/wp-content/uploads/2015/05/lpfi_path_not_found_report.pdf.

OUR MISSION

The Education Trust–West works for the high academic achievement of all students at all levels, pre-k through college. We expose opportunity and achievement gaps that separate students of color and low-income students from other youth, and we identify and advocate for the strategies that will forever close those gaps.



The Education Trust–West

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