

Qualified Math Teachers Elusive for Struggling Students, Studies Find

Struggling students face longest odds

By [Sarah D. Sparks](#), Source link:

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In many schools in the United States, students struggling the most in mathematics at the start of high school have the worst odds of getting a qualified teacher in the subject, new research finds.

Succeeding in freshman-level mathematics is critical for students to stay on track to high school graduation, with students who make poor grades in math in 8th and 9th grades more likely to leave school entirely.

Yet two new studies presented at the Association for Education Finance and Policy meeting here last month suggest that students who enter high school performing below average in math have a lower chance of getting a teacher who is well-qualified to teach math than do higher-achieving students. The problem, the research concludes, exacerbates gaps in teacher access between schools with different performance and wealth levels.

In [one study](#) , Cara Jackson, a research assistant at the University of Maryland College Park, analyzed the math course taking and achievement of 12,900 9th graders at 730 high schools nationwide who were linked with their high school math teachers as part of the federal High School Longitudinal Study of 2009.

Ms. Jackson calculated the odds of different students' learning math in 9th grade from a "qualified" teacher, defined as one who: had earned at least a bachelor's degree, with seven or more different courses taken in mathematics; was certified by the state to teach high school math; and had been teaching at least five years.

Assignment Priorities

Ms. Jackson found big differences in how high- and low-performing schools allocate teachers.

"Within schools, a student's access to qualified teachers wasn't related to gender or race or socioeconomic status, or whether the student is an English-language learner," she said. "It is related to whether the student is enrolled in special education or a low-level math class."

Ms. Jackson found that in schools considered high-performing on the basis of state math and language arts test scores, students in special education and those enrolled in low-level math classes are slightly more likely to get a qualified teacher than students in higher-level math classes. By contrast, in average and low-performing schools, it is the reverse. In low-achieving schools, special education students and those in low-level math classes are a third less likely to have a qualified math teacher than their higher-achieving peers.

In 9th grade, Ms. Jackson found, high-performing math students in average or low-performing schools had about 10 percent "higher odds of getting a qualified math teacher, even after controlling for the level of math they are taking," she said.

"We might be seeing optimal matching here. If you have limited resources, you might put your teachers with the strongest content knowledge with the students in the highest-level math classes," Ms. Jackson said, adding, "or it might just be a way to reward your best teachers. But that certainly makes it harder for low-achieving students to catch up to their peers."

The opposite may be true in high-achieving schools, with administrators directing their best teachers to serve the most struggling students, but Ms. Jackson said it isn't clear whether that is because those schools have more qualified math teachers or simply make assignments differently.

Attending a wealthier or higher-performing school can boost a freshman's odds of getting a qualified teacher, too.

In the wealthiest fifth of schools, according to Ms. Jackson's analysis, 54 percent of 9th grade students had access to qualified math teachers, while only 46 percent of students in the poorest 20 percent of schools did. For every standard deviation decrease in a school's poverty level, its students are nearly 50 percent less likely to get a qualified math teacher.

School Differences

Similarly, in a [separate report](#), researchers from the American Institutes of Research's Center for Analysis of Longitudinal Data in Education Research, or CALDER, probed the differences in the value, as measured by assessment results, that teachers added at high-poverty and wealthy schools in Florida and North Carolina from 2000 to 2005.

At schools with more than 70 percent of their students in poverty, the researchers found, teachers were, on average, less effective than those at schools with less concentrated poverty. Specifically, while highly effective teachers performed at about the same level in both high- and low-poverty schools, there was a much greater range of effectiveness among lower-performing teachers in high-poverty schools than in richer ones. Teachers in high-poverty schools were also generally less likely to have a graduate degree, or to be certified by the National Board for Professional Teaching Standards.

"These differences are apparent even among new teachers," said Philip M. Gleason, a senior fellow with Mathematica Policy Research who was not associated with either study. "This isn't just a story of high-poverty schools having lots of turnover so more students have inexperienced teachers; that isn't explaining what they are finding."

Rather, teachers at low-income schools did not improve professionally over their years of experience as much as their colleagues at wealthier schools, according to study co-author Zeyu Xu, a CALDER senior research associate. "Why is the bottom of the teacher distribution lower in high-poverty schools?" Mr. Xu said. "It could be teachers are learning less in high-poverty schools, or that better teachers are likely to move out of high-poverty schools."

At the same time, Ms. Jackson's research also found that, among schools with lower overall student achievement, those with good student behavior and principals with high expectations were more likely to give students of all stripes access to qualified teachers in math. In higher-achieving schools, student behavior was not linked to teacher availability.

"This idea that there seems to be a stronger relationship between working conditions and access to qualified teachers in schools where overall academic achievement starts out low is pretty interesting," Mr. Gleason said.