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Governance Brief

Math Misplacement

A Joint Publication of CSBA and Silicon Valley Community Foundation

Many successful students in California's K-12 schools are unnecessarily held back in mathematics despite earning good grades and test scores. This disturbing practice, known as math misplacement, occurs when a student is placed in a mathematics course that he or she has already completed with a grade of B or better and/or when the student has met or exceeded proficiency on California standardized assessment tests, rather than being advanced in the next recommended mathematics course. Placing ninth-grade students in mathematics classes that are below their demonstrated proficiency sets off a chain reaction that has devastating consequences for both the student and our future workforce.

Overreliance on subjective factors to make placement decisions is the root cause of this problem. When districts make placement decisions without multiple, objective academic measures to help guide the decision-making, math misplacement is more likely to occur. A lack of clarity or inconsistency in criteria used in the transition from eighth grade to ninth grade, can also increase the likelihood that math misplacement will occur.

Who is affected by math misplacement?

Research shows that math misplacement disproportionately affects students of color. A 2010 report by the Noyce Foundation, Pathways Study: Dead Ends and Wrong Turns on the Path Through Algebra, studied nine school districts in the San Francisco Bay Area. The report found that only about one third of African American and Latino students who took Algebra I in eighth grade and achieved a B grade or better and/or performed well on state standardized tests, were promoted to Geometry in ninth grade. These groups of students advanced to the next mathematics course at dramatically lower rates than their White or Asian peers. Mastery of the subject matter was not a reason for this lack of advancement.

Why is math misplacement a problem?

When a ninth-grade student is unfairly held back in mathematics, it affects that student's confidence, knowledge of mathematical concepts and interest in pursuing mathematics.

Often, students are bumped off their college trajectory when they cannot earn enough advanced mathematics credits to be eligible for a four-year college or university — especially with a major in science, technology, engineering or mathematics (STEM). College entrants are commonly judged in the college admissions process by both the number of advanced mathematics courses completed in high school and the rigor of those courses. Research on 24,000 students in 24 unified school districts throughout California found that Black and Latino students were less likely to have taken Calculus in high school than their White peers.[1]

Math misplacement affects the student's eligibility, competitiveness, and pursuit of higher education. Math misplacement also impacts California's economy by creating a leak in the STEM pipeline.

A critical juncture

Placement in appropriate mathematics courses is important for a student during his or her middle and high school years. However, ninth-grade mathematics placement is critically important for a student because high school coursework starts a clear path toward college and workforce preparedness and mathematics placement

often determines placement in other core subjects, such as science. Districts need to be thoughtful and deliberate about their systems and protocols for placing students.

Students and parents should have access to the criteria used for mathematics placement and have clear recourse if they believe they have been placed in the wrong course. Individual student mathematics placement should be reviewed within the first month of the school year to check for accurate placement.

This process could be less complex for unified districts. However high school districts that receive students from other districts should develop relationships and open communication channels with their feeder districts. This will ensure that there is a clear understanding of the proficiency of incoming students and common criteria for how mathematics placement will be determined.

A leak in the STEM pipeline

Trends indicate that this leak in the STEM pipeline is likely to have an impact on future STEM workforce development. Students of color now make up 58% of California's children, yet they are also the most likely to experience math misplacement. With statewide STEM jobs expected to grow by 22% over the next five years, we should not be hindering these students' advancement in mathematics.

In an op-ed piece published in the San Jose Mercury News, Dr. Emmett Carson, President and CEO of the Silicon Valley Community Foundation and Vernon Billy, CEO & Executive Director of the California School Boards Association, warned that math misplacement is a key reason why more people of color are absent from Silicon Valley's technology workforce. Earlier this year, Silicon Valley's largest technology companies reported that only about 3-4% percent of their workforce is African American or Latino. While many of these tech companies have acknowledged the problem and are taking actions to diversify their workforce, Carson and Billy state that, "Tech's diversity problem does not start within the industry. It begins much earlier in the workforce development timeline with the artificial, and oftentimes unintentional, barriers students face within the K-12 education system."[2]

Disparate impact doctrine

Math misplacement poses risks for school districts. Even if misplacement is often unintentional, there is a possibility that districts might still be held liable for harming students. According to the 2013 Held Back report by the Lawyers' Committee for Civil Rights of the San Francisco Bay Area, "Civil rights laws recognize that in many contexts, it is the impact that matters. No matter what the underlying motivation, if minority students are being systematically disadvantaged with no adequate justification, the law provides a remedy."[3] This means that districts may incur legal liability for misplaced students, if the misplacements are challenged in court. School boards should consider reviewing an annual report of aggregate mathematics placements by race, ethnicity, gender, and socio-economic background.

The solution for fixing math misplacement

Overreliance on subjective placement protocols and only measuring student proficiency based on a single data point are root causes of the math misplacement problem. When districts make placement determinations without multiple objective measures to help guide decisions, there is an increased likelihood that math misplacement will occur.

For this reason, it is important for districts to develop, adopt, and implement a fair, objective and transparent mathematics placement policy. See CSBA Sample Policy BP 6152.1 – Placement in Mathematics Courses.

In fact, at least 22 districts in California have already taken steps to adopt mathematics placement policies. They report that adopting a policy has helped them:

» Eliminate the potential for bias in mathematics placement decisions.

» Increase the transparency of methods used to make student placement decisions.

» Ensure fairness and accuracy throughout the mathematics placement process.

The California State Legislature is now considering Senate Bill 359, the Mathematics Placement Act of 2014, authored by Sen. Holly Mitchell. If passed by the Legislature and signed into law by the Governor, SB 359 would call on all school districts in the state to develop

and adopt a fair and transparent, mathematics placement policy that relies on multiple objective, academic measures. The bill is supported by a broad and diverse coalition that includes the California School Boards Association, the Association of California School Administrators, the California State PTA, and other leaders and organizations representing the education, tech, business and social equity communities.

Questions for boards to consider

1. What is our policy for placing students in mathematics courses?
2. What does our data show? How many of our students show proficiency in algebra after the eighth grade? How many of our students are on a college track in high school? Are there patterns of placement based on student demographics including race, ethnicity, gender, or socio-economic background?
3. How do we provide opportunities for students to advance to college-level coursework, even if this is not where they start in the ninth-grade?
4. In what other courses are placement decisions based on placement in mathematics, e.g., is placement in science based on mathematics placement?
5. What professional development do our teachers and staff receive to raise awareness about math placement and misplacement?
6. How can the district promote effective communication across grade levels?
7. (If not a unified district) How can we promote effective communication with feeder districts?
8. Do we have enough qualified STEM teachers? How can we recruit STEM teachers?
9. How transparent are our mathematics placement practices? How are students and parents informed of the mathematics placement practices in our district? What should they do if they find themselves in the wrong course?

Resources

» Silicon Valley Community Foundation: www.siliconvalleycf.org/mathmisplacement

» The Lawyers' Committee for Civil Rights of the San Francisco Bay Area's *Held Back Report: Addressing Misplacement of ninth Grade Students in Bay Area School Mathematics Classes:* http://bit.ly/1hOJ1OO

Endnotes

1 Finkelstein, N., Fong, A., Tiffany-Morales, J., Shields, P., and Huang, M. (2012). College bound in middle school & high school? How math course sequences matter. Center for the Future of Teaching and Learning at WestEd.

2 Carson, E. and Billy, V. (May 8, 2015). Math misplacement: Tech should support legislation to stop it. San Jose Mercury News.

3 Lawyers Committee for Civil Rights of the San Francisco Bay Area (2013). Held back: Addressing misplacement of 9th grade students in Bay Area school math classes.