



Success

Timely tips to improve student achievement

December 2024

Ohio podcast spotlights special education

A recent **Columbus City Schools'** Teacher Chat podcast emphasized proactive strategies in special education. Experts, like Dr. **Traci Arway**, highlighted the importance of accessible technologies and tailored teacher training to support diverse learning environments. These strategies are vital in ensuring equity and inclusion for students with disabilities. For more, visit <https://osba.link/1224SU1>.

Fortnite physics lab offers hands- on learning

Physics professor **Andrew Vanden Heuvel** turned Fortnite into a tool for science education by creating an immersive physics laboratory. The virtual lab allows students to explore concepts such as speed, acceleration and free fall through interactive experiments, demonstrating the potential of video games as educational simulations. For more, go to <https://osba.link/1224SU2>.

Parents rely more on teacher input than grades

There is a shift in how parents assess their children's academic performance, with communication from teachers now trusted more than grades as indicated by a national survey of 20,000 parents. The survey reflects growing concerns about grade inflation and the increased use of online communication tools by teachers. For more, visit <https://osba.link/1224SU3>.

Subitizing gains traction as math teaching method

Subitizing, the ability to instantly recognize quantities without counting, is gaining popularity in pre-K and some early grades as a way to develop number sense, as studies suggest that students who can subitize often have better math performance and will better understand more complex math concepts. However, empirical evidence is limited. For more, visit <https://osba.link/1224SU4>.

Peer teaching boosts math engagement at Fla. high school

Asking a pair of ninth-grade students to teach a lesson to peers on the absolute value of whole numbers was designed to increase engagement, says teacher **Frank Luke** of Destin High School in Florida. The two students showed others how to solve problems on the class whiteboard, then walked around the room to check students' work and offer additional help. For more, visit <https://osba.link/1224SU5>.

NAEP using new socioeconomic measure in 2024 report

The 2024 Nation's Report Card (NAEP) will introduce a poverty measurement that goes beyond the traditional reliance on free or reduced-price lunch eligibility. This change is part of an effort to provide a more accurate depiction of students' socioeconomic status by incorporating additional factors, such as the number of books in a home and parents' education levels. For more, visit <https://osba.link/1224SU6>.

Student achievement in-depth

Each month, **Success** brings you a research brief or in-depth article to discuss with board members and administrators.

Three barriers to learning algebra in high-poverty middle schools

“Algebra in eighth grade is a gateway to a lot of further opportunities,” said **Dan Goldhaber**, an economist who studies education at the American Institutes for Research. Researchers are trying to understand why so few Black and Hispanic students and students of low-income in all races are making it through this early gate. While 25% of white students passed algebra in eighth grade in 2021, only 13% of Black students did, according to the most recent [U.S. Department of Education data](#).

In 2023 and 2024, RAND surveyed more than 3,000 school principals and almost 1,000 math teachers across the country from a specially constructed national sample, designed to reflect all public schools and the demographics of the U.S. student population. The survey findings suggest three problems at the poorest middle schools, which are disproportionately populated with Black and Hispanic students — many don’t offer algebra at all; their teachers have less training and math expertise; and teachers describe their time spent in the classroom differently than those at wealthier schools.

The poorest 25% of schools had vastly different course offerings and teachers than the wealthiest 25%. Most strikingly, nearly a quarter of the highest-poverty schools didn’t offer algebra to eighth graders, compared to only 6% of the wealthiest schools.

Math teachers at high-poverty schools tended to have weaker professional preparation. They were far more likely to have entered the profession without first earning a traditional education degree at a college or university, instead completing an alternative certification program on the job. They were also less likely to have a graduate degree or hold a mathematics credential.

A third of math teachers at high-poverty schools reported spending more than half of class time teaching topics that were below grade level, managing student behavior and disciplining students. Lecture-style instruction, as opposed to classroom discussion, was far more common at the poorest schools compared to the wealthiest schools.

According to Goldhaber, simply putting more eighth graders into algebra classes isn’t the answer and may leave students worse off. If the material is too challenging, the students fail, or if the course is “algebra” in name only, it doesn’t really cover the content. And without a college preparatory track of advanced math classes to take after algebra, the benefits of taking algebra 1 in eighth grade are unlikely to be realized. Instead, improving math teacher quality at the poorest schools is a critical first step, and the time to intervene is in elementary school to ensure more students have strong basic math skills, according to Goldhaber. “For many students, middle school is too late.”

For more information on this research and the working paper that analyzes survey findings, please visit <https://osba.link/1224SU7>.

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