



# Rethinking High School Math: Creating Pathways for All Students



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The landscape of high school mathematics education is transforming, at least some states are attempting to change traditional pathways through high school math. Oregon, California, Ohio, and Indiana have all put significant effort into rethinking high school math. Other states are also addressing this issue. Traditional pathways have often created barriers, particularly for economically disadvantaged and minority students. Now, states are pioneering innovative approaches to ensure every student has a genuine opportunity to succeed in mathematics and pursue STEM careers.

## *Early Engagement as a Foundation for Success*

Research suggests that early exposure to advanced mathematics can reshape student trajectories. Griffin (2014) documents a powerful shift: states are now encouraging eighth-grade Algebra I enrollment, particularly targeting students who have historically had limited access to advanced coursework. Schools support this transition through flexible curricular pathways and compressed curricula (sometimes called accelerated learning), ensuring students arrive prepared to engage with the material.

Some urban schools are taking this commitment further by establishing specialized STEM academies. These programs create rigorous learning environments while actively addressing systemic inequities. Nasir and Vakil (2017) highlight how these academies navigate the complex intersection of educational opportunity and social justice, working to dismantle barriers that have historically limited access to STEM education.

## *Breaking Down Language and Cultural Barriers*



The transformation that comes from alternative pathways extends beyond curriculum to address fundamental access issues. We know, from decades of National Assessment of Education Progress (NAEP) data, that poor students, students of color, and students with learning differences are often left behind their white, middle-class classmates. Wang and Goldschmidt (1999) demonstrate the impact of placing immigrant and limited-English proficiency students in more demanding, structured mathematics courses. This approach ensures language differences don't become insurmountable barriers to mathematical understanding.

Universities are strengthening these efforts through targeted outreach. Cooper et al. (2002) describe programs that help African American and Latino students navigate the complex pathway from high school mathematics to college success. These initiatives recognize that academic achievement requires a network of support, engaging families, teachers, and peers in student success.

### *Confronting Persistent Challenges*

Despite meaningful progress, significant hurdles for many students remain. Hanselman (2020) identifies how economic disadvantages continue to shape mathematics opportunities, often creating cycles where students fall behind with limited chances to recover. Since mathematics has a disproportionate impact on college and career readiness (National Mathematics Advisory Council, 2008), a lack of mathematics success is important. You (2013) further documents how these early disparities in mathematics coursework continue to influence STEM pathways through college and beyond.

Teacher preparation plays a crucial role in this transformation. Boyd et al. (2005) finds that while alternative certification pathways may initially result in smaller achievement gains, these differences typically diminish as teachers gain experience. This suggests that supporting teacher development, regardless of entry path, is essential for student success. All Learners Network has always embraced the belief that teacher skill is the most critical factor for student success.

### *Moving Forward with Purpose*

This evolution in mathematics education represents more than course changes - it's a fundamental shift toward equity and access. Through early intervention, specialized programs, and comprehensive support for diverse student populations, schools are working to ensure that mathematical opportunity isn't determined by demographic factors.

The path forward requires sustained commitment to monitoring outcomes and adjusting approaches. While current initiatives show promise, achieving true



educational equity in mathematics demands ongoing evaluation and refinement of these strategies. Success will be measured not just in test scores or college admissions, but in creating a generation of students who see themselves as capable mathematicians, regardless of their background or circumstances.

## References

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1. Read our blog “Different Ways to Math in High School” to learn more about how different states are rethinking high school math.
2. Check out the courses on All Learners Online (ALO) to see which ones you might want to take.
3. Bring All Learners Network (ALN) into your school or district for embedded professional development.

