

WHO GETS TO BE A MATHEMATICIAN? CURRICULUM REPRESENTATION AND ITS INFLUENCE ON DIVERSE LEARNERS



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Math That Mirrors Us

This inquiry examines how including diverse mathematicians in math curriculum can boost motivation and engagement for marginalized students. Traditional math education often centers Western, white, male figures, leaving many students feeling excluded. Drawing on culturally relevant pedagogy and ethnomathematics, this project argues that representation fosters belonging and supports achievement. Grounded in research and personal experience as a first-generation Hispanic student, it shows how inclusive curricula can humanize math and challenge systemic inequities. By using historical context and culturally responsive strategies, educators can help all students, especially those underrepresented, see themselves as capable mathematicians. Featuring mathematicians from a range of cultures, time periods, and identities not only enriches content, but also affirms the diverse intellectual contributions that have shaped the field. Inclusive curricula can deepen student understanding while countering harmful narratives about who math is “for.” This work supports educational equity by addressing barriers like math anxiety and lack of engagement, aiming to build inclusive, high-expectation classrooms where every student feels seen, valued, and empowered to succeed both in mathematics and beyond.

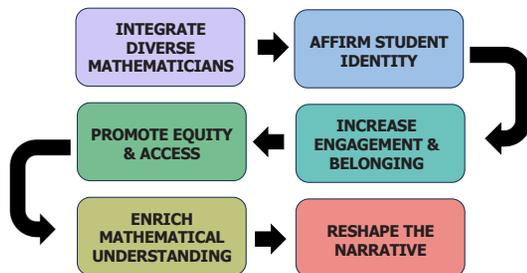
TPEP Alignment

Criterion 3: Recognizing individual student learning needs and developing strategies to address those needs.

Descriptor: The teacher acquires and uses specific knowledge about students' cultural, individual, intellectual and social development and uses that knowledge to adjust their practice by employing strategies that advance student learning.

INQUIRY QUESTIONS

- How does diverse representation within the mathematics curriculum impact the motivation and engagement of marginalized students?
- In what ways do students react to learning about mathematicians who share their racial or cultural backgrounds?
- What are the most effective strategies for incorporating diverse mathematicians into existing algebra curricula?



Flow Chart by Y. Sanchez

What Happens When We Diversify Math? Insights from Research and Practice

Research confirms that integrating the contributions of diverse mathematicians into math instruction has measurable benefits for marginalized students. These include **increased motivation**, **improved self-identity** in mathematics, and **deeper engagement** with mathematical concepts.

Increased Motivation and Identity Development

- Bütüner & Baki (2020) conducted an action research study with Turkish 8th-grade students, integrating the history of Islamic mathematicians like Al-Khwarizmi (the “father of algebra”) into math lessons. The result: students' attitudes toward mathematics improved significantly, particularly among those who previously felt disconnected. Many reported greater confidence and reduced anxiety as they began to view math as relevant to their heritage.
- Boaler & Sengupta-Irving (2016) studied equity-based teaching in classrooms serving primarily Black and Latinx students. When math lessons were tied to students' cultural contexts—such as African-American history or Latinx community issues—students showed stronger engagement and a renewed sense of belonging in mathematics.

Support from Key Theoretical Frameworks

- Culturally Relevant Pedagogy (Ladson-Billings, 1995) asserts that instruction should affirm students' cultural identities and promote academic success. When students see themselves reflected in the curriculum, they are more likely to persist and achieve in challenging subjects like math.
- Ethnomathematics (D'Ambrosio, 1985; Witherspoon, 2024) highlights how all cultures have shaped mathematics. They describe ethnomathematics as “the intersection of mathematics and culture,” showing how it bridges lived experience with academic content—making math more human, inclusive, and dynamic.

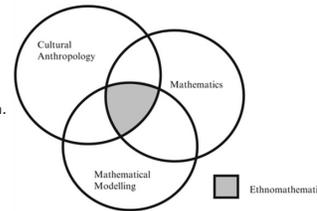


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Ongoing Barriers to Implementation

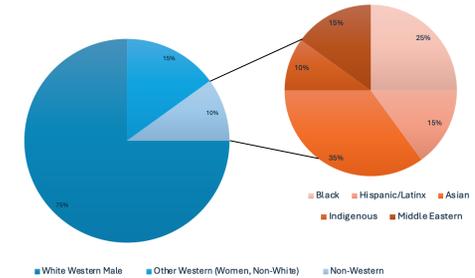
- Limited access to inclusive resources: Most textbooks continue to highlight only white, Western mathematicians, making it difficult for teachers to find diverse materials (Bråting & Pejläre, 2015).
- Time constraints: Rigid pacing guides and pressure to cover content for standardized tests often leave little room for integrating diverse mathematicians or historical context.
- Institutional resistance: Some educators dismiss the inclusion of diverse mathematicians as unrelated to math rigor. However, Fauvel (1991) and others argue that historical and cultural context deepens understanding and increases student success.



Photo Credit: <https://www.ams.org/about-us/edi-community>

“When students see mathematicians who look like them, they begin to see math not just as a subject, but as a space where they belong—a possibility. Belonging begins with visibility, and diverse mathematicians show that brilliance has no single face. By honoring these stories, we reveal the truth: mathematics is, and always has been, a human story. When the curriculum reflects every student, the classroom becomes a mirror, not a wall.”

Told and Untold Narratives in Math Curriculum



Data Source: Boaler & Sengupta-Irving, 2016 | Pie Chart by Y. Sanchez

Steps Towards Equitable Representation

To promote equity in math education, teachers can embed diverse mathematicians into instruction through:



- **Mathematician of the Week/Day:** Highlight a mathematician from an underrepresented background with brief bios, quotes, and classroom connections.
- **Content-Aligned Integration:** Pair figures like Al-Khwarizmi, Ramanujan, or Maryam Mirzakhani with relevant topics (e.g., algebra, number theory, geometry).
- **Student Research Projects:** Have students explore mathematicians from their own heritage and present how their contributions relate to course content.
- **Reflective Activities:** Use journal prompts or class discussions to explore identity, representation, and students' evolving views on math.
- **Collaborative Planning:** Schools can support inclusive teaching by sharing resources, creating lesson banks, and offering professional learning on culturally responsive math practice.

Closing the Equation

Inclusive math teaching isn't about checking a box—it's about transforming who students believe math is for. When done with purpose, this work empowers every student to see themselves as a mathematician and a contributor to the discipline's future. This approach offers key benefits:

Fosters belonging and motivation by affirming students' identities and connecting them to math's global roots.

Promotes equity and access by helping all students see themselves reflected in the curriculum.

Deepens understanding by making abstract concepts more relevant through historical and cultural context.

For Essay and References

