



Making math more accessible and engaging through culturally responsive teaching

Authors: Barbara Harris, Walter Herring, and Riley Stone

As elementary and secondary classrooms in the United States become more ethnically, linguistically, and culturally diverse, math teaching should be more responsive to students' identities and experiences. Culturally responsive teaching helps meet the needs, interests, and strengths of increasingly diverse students and provides opportunities to make math more interesting and joyful for both students and teachers. ***We provide tips for teachers to enhance lessons from any math curriculum and address classroom dynamics to make math more culturally responsive and engaging for students.***

Most teachers use the curriculum their district or school selects. That curriculum heavily influences the content covered and the pedagogical approach that teachers use during math instruction,¹ but teachers ultimately decide how they implement the curriculum in their classroom to meet their students' needs. Integrating culturally responsive teaching practices can bring new energy into the classroom while engaging students in high quality math content. We suggest the following approaches teachers can use to integrate culturally responsive teaching practices with any math curriculum.

Culturally responsive math instruction should



Build on students' cultural and community funds of knowledge. Students bring different ways of thinking about numbers based on their backgrounds and experiences engaging in math activities. Make instruction more relatable and meaningful to students by doing the following:

- / Draw on students' backgrounds and experiences during math lessons.
- / Ask students to reflect on times they might have seen a math concept in their own life, then encourage them to share their experience and adapt it into a problem for the class.
- / Reference students' community and home knowledge, culture, or experiences.



Promote rehumanization. Rehumanizing is a specific effort to honor diverse cultures. Rehumanizing makes clear that all students can be good at math by showing them that strong mathematicians are found in cultures around the world. In addition, rehumanizing acknowledges that math is a human activity that involves both thinking and feeling. Rehumanize math with the following actions:

- / Affirm positive math identities for all races, genders, and ethnicities: use math problems that honor students' cultures.
- / Represent the diversity of mathematicians to highlight Black, Indigenous, Latinx, and other mathematicians by using literature and websites such as www.lathisms.org or www.mathematicallygiftedandblack.com.
- / Expand students' views of math. Highlight that math is more than memorizing; math involves problem solving and reasoning that draw upon students' empathy, senses, and feelings.
- / Avoid terms like "misconceptions," "abilities," and "achievement gaps" when talking about students.

These four aspects of culturally responsive math instruction do not cover all aspects of culturally responsive teaching, nor must every lesson attend to all four. We recommend teachers incorporate them into math lessons where possible. ▲



Disrupt status and power. Teachers should address typical power imbalances in the classroom to ensure all students are empowered participants, regardless of their background. Help disrupt traditional power structures in these ways:

- / Confront stereotypes and use inclusive talk that builds up students and encourages multiple approaches to math.
- / Implement classroom norms to ensure each student participates during a lesson. Students should feel free to speak up without fear of making a mistake or getting criticized for solving problems differently.



Analyze and act. Math instruction is most powerful when it presents students with meaningful problems that are relevant to their lives. Support student learning and engage them in relatable issues:

- / Assign math tasks that involve analyzing, critiquing, or addressing a school or community issue students will strongly connect with.
- / Assign math problems related to current or historical issues of injustice or social justice, such as calculating the cost of buying bottled water when lead is discovered in the water system or estimating different ways to distribute donations among families at a local food bank.

Background. These four aspects of culturally responsive math instruction are based on a tool developed by Maria del Rosario Zavala and Julia Maria Aguirre.² Their research shows these to be important practices used by effective teachers. As part of the *Analysis of Middle School Math Systems Study*, Mathematica researchers used an adapted version of Zavala's and Aguirre's tool to examine six middle school math curricula. We found that curricula provide little attention to the aspects of culturally responsive instruction described in this document, meaning that teachers should think about enhancing their instruction with these strategies while implementing their curriculum.▲

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References

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