Small changes that make all the difference

By Dr. Dana Murray Patterson
Learning Outcomes

• Participants will understand how a small change could make a big impact in teaching math.

• Participants will learn some techniques for being culturally responsive as a math teacher.

• Participants will discover some techniques for being more inclusive in their class.
A small change with a big impact
We all “count”

• “The problem with teaching mathematics is that the students who take the courses are split into two groups. The ones that enjoy mathematics and take the courses because of their interest and the students that are forced into taking mathematics course to fulfill their major requirements or have to take the courses to graduate like in high school. The problem with this is that you have to find a balance between helping the students that want to continue with mathematics and push them forward in the field, and reaching the students who are only there because they have to be there. The trick is assisting both groups of students within the necessary time limit i.e. the semester or during class itself. I agree completely that the best way to reach the kids who don’t want to be in the class is by varying the problems to reach their interests. It’s absolutely necessary to promote the mathematics process because whether or not the students want to admit it or see it, mathematics models into almost every aspect of life or higher education.” (Koczwarz, 2017)
Why is it difficult to make math inclusive?

• **Language Barriers**: According to the National Center for Education Statistics, almost 10 percent of public school students in 2016 were English language learners. In an English-speaking school, students who aren’t fluent in English may not fully understand class material. In addition, they might be afraid to ask questions and share ideas because they don’t have the English language skills they need to express abstract concepts.

• **Systemic Discrimination**: Many underrepresented students have experienced discrimination in schools, hospitals, libraries, and other public spaces. Authoritarian expectations and punishment in the classroom can trigger these same feelings, making students feel unsafe or unwelcome at school.

• **Lack of Representation**: Many educational materials are unintentionally biased. Books typically feature white protagonists. Movies typically depict predominantly white classrooms. Even standardized test questions are often unknowingly written in a way that favors the experiences of racial and ethnic majorities. Situations like these communicate to students of color that schools and classrooms are not really designed with them in mind.
Six ways Mathematics Instructors Can Support Diversity and Inclusion

1. Use students’ interest in contextualized tasks
2. Expose students to a diverse group of mathematicians
3. Design assessments and assignments with a variety of response types
4. Use systematic grading and participation methods
5. Consider your course logistics
6. Encourage students to embrace a growth mindset

Resource: (Hobson, 2017) Six Ways Mathematics Instructors Can Support Diversity and Inclusion | (ams.org)
Culturally Responsive Teaching

• Culturally responsive teaching (CRT) is a research-based approach to teaching. It connects students’ cultures, languages, and life experiences with what they learn in school. These connections help students access rigorous curriculum and develop higher-level academic skills.

• Our brains are wired to make connections. It’s easier for our brains to learn and store information when we have a hook to hang it on. That hook is background knowledge. Students bring this knowledge to the classroom every day.

If educators are not culturally responsive, some students may develop the belief that math is for 'others,' not for them.

- Dr. Jim Ewing
in Education Week Teacher
5 Culturally Responsive Teaching Strategies for Educators

• 1. Activate students’ prior knowledge.

Students are not blank slates, Childers-McKee says; they enter the classroom with diverse experiences. Teachers should encourage students to draw on their prior knowledge in order to contribute to group discussions, which provides an anchor to learning. Taking a different approach to the literature that’s taught in classrooms is one example of this.

• 2. Make learning contextual.

Tie lessons from the curriculum to the students’ social communities to make it more contextual and relevant, Childers-McKee advises. “If you’re reading a chapter in history class, for example, discuss why it matters today, in your school, or in your community,” she says. “Take the concept you’re learning about and create a project that enables them to draw parallels.”
• **3. Encourage students to leverage their cultural capital.**

• Because not all students come from the same background, it’s important to encourage those who don’t to have a voice. Say, for example, you teach an English class that contains ESL students. It’s important to find ways to activate the experiences they do have—their cultural capital, Childers-McKee says.

• The teacher may choose a book for the class to read in which the ESL students could relate and feel like they could be the expert, for instance. As a teacher, Childers-McKee’s once chose a book that told the story of a child of migrant workers because some of her students came from an agricultural background.

• “When you have a mixed classroom, you want those in the minority to feel like they are an expert. You want to draw from their experiences,” she says. “I do caution that you don’t want to cross a line and make ‘Johnny’ feel like he needs to speak for all Mexican people by putting them on the spot, for example. That’s a line you need to walk.”
4. Reconsider your classroom setup.

Take inventory of the books in your classroom library: Do they include authors of diverse races? Is the LGBTQ community represented? Do the books include urban families or only suburban families? Beyond your classroom library, consider the posters you display on your walls and your bulletin boards, too. “These are all small changes you can make to your classroom more culturally responsive,” Childers-McKee says.

5. Build relationships.

Not all students want to learn from all teachers because the teachers may not make them feel like they’re valued, Childers-McKee says. Teachers need to work to build relationships with their students to ensure they feel respected, valued, and seen for who they are. Building those relationships helps them build community within the classroom and with each other, which is extremely important, she says.

“When we think about culture and diversity, people often automatically think about black students, but people need to think broader than that, now,” Childers-McKee says. “Some teachers whose students are all white and middle-class struggle with how culturally responsive teaching strategies apply to them. It’s equally important for them to teach students about diversity. These aren’t just teaching strategies for minorities, they’re good teaching strategies for everyone.”

Resource: (Burnham, 2020) https://www.northeastern.edu/graduate/blog/culturally-responsive-teaching-strategies/
At a glance

• Culturally responsive teaching is a rich, intentional approach woven into every aspect of student learning.
• It focuses on the assets students bring to the classroom rather than what students can’t do.
• It raises expectations and makes learning relevant for all students.
The Benefits of Culturally Responsive Teaching

• **It raises expectations for all students.**
  • With CRT, teachers move away from a deficit mindset (focusing on what a student can’t do). Instead, they identify students’ assets and use them to create rigorous, student-centered instruction. This is especially important for students from underserved groups whose skills are often underestimated.

• **2. It helps schools better meet students’ needs.**
  • Underserved students may face implicit bias because of their race, culture, or language. (Implicit bias refers to the unconscious attitudes or stereotypes we all hold.) As a result, these students are often overrepresented in special education. Other times, their needs go undetected. They’re also often underrepresented in gifted education. By using an assets mindset, schools are more likely to better identify and serve all students.

• **3. It builds cultural competence.**
  • An inclusive curriculum helps teachers and students understand different perspectives, appreciate others’ strengths, and build empathy. CRT can also help teachers reflect on how their own identity and experiences impact their attitudes and teaching practices.

• **4. It helps students feel valued and empowered.**
  • When students see themselves represented in the curriculum, they feel like they belong. They’re more likely to develop the trust it takes to build a relationship with a teacher. A sense of belonging makes learning easier and builds students’ self-confidence. Learn more about the brain science behind this.

• **Resource:** [https://www.understood.org/en/articles/what-is-culturally-responsive-teaching?utm_source=google&utm_medium=cpc&utm_term=culturally+responsive+teaching&utm_campaign=EN_GSC_EDU_CRT_NB&gclid=CjwKCAjwx7GYBhB7EiwAod8oe1yiDshE8yh93gahX9Bs_z3hrnP6aOhv5c9ZmsDuyZRro9Jazt2ARoCntcQAoV_D_BwE&gclsrc=aw.ds](https://www.understood.org/en/articles/what-is-culturally-responsive-teaching?utm_source=google&utm_medium=cpc&utm_term=culturally+responsive+teaching&utm_campaign=EN_GSC_EDU_CRT_NB&gclid=CjwKCAjwx7GYBhB7EiwAod8oe1yiDshE8yh93gahX9Bs_z3hrnP6aOhv5c9ZmsDuyZRro9Jazt2ARoCntcQAoV_D_BwE&gclsrc=aw.ds)
Some Resources


• Communicate stories of mathematicians to students while engaging in mathematical contributions the individuals have made.
Four Ways to Create a Positive Ripple

• Acknowledge somebody
• Appreciate somebody
• Advise somebody
• Admire somebody
Questions and Answers
The End