

Understanding STEM Microaggressions

Identifying pedagogical microaggressions is the first step in working to reduce them.

Pedagogical Microaggressions

Sometimes words or phrases, or even ways of thinking can contribute to students being excluded or marginalized in the classroom. Look at these examples to notice where teaching methodologies can be improved in your classroom.

“Just”

Using the word “just,” as in “The rest is just algebra.” Unintended message: You’re not cut out for math if you can’t do algebra. (Beware especially how this message gets conveyed in Lagrange multiplier problems, where the nastiest part of the solution is the algebra!)

Better: Remove the word “just” and explain the difference between calculation and insight.

“There’s a trick for doing this.”

Unintended message: There's a secret list of things that only insiders know.

Better: “There's a technique for doing this.”

Invitation to Office Hours

Saying in office hours: “See me again if you have questions.” Unintended message (that could be reinforced by tone of voice and body language): IF you have some silly questions, you’ll be a nuisance; I’d rather not be bothered.

Better: “I hope you’ll visit again! Questions are part of the normal process of learning this stuff.”

Pathologizing variation.

How instructors talk about variation in biology matters for students. An approach that classifies one way of expressing a trait as normal and another way as pathologized can have implications for student identities. We urge an alternative approach that counters the idea that there are only one or two “normal” forms of a trait. Use terms like “common” rather than “normal” or “typical,” because the latter terms imply that anything else is abnormal or wrong. For example, there are human traits that manifest from less common outcomes of meiosis. Naming these outcomes as “abnormal” or as “mistakes” applies these labels to people whose bodies followed these pathways, including some intersex students.

[1] Su, F. E. (2015). Mathematical Microaggressions. *MAA FOCUS*, 36-37.

[2] Casper, Sarah L. Eddy, Aramati. (2022). “Creating Cell Biology Courses That Are Inclusive for People Who Are Intersex and/or Have Queer Genders.” *Career Navigator*.

Understanding STEM Microaffirmations

Pedagogical microaffirmations are a powerful tool in countering the negative impacts of microaggressions on students' academic experiences.

Pedagogical Microaffirmations

In the classroom, microaffirmations are small acts that make students feel more welcome, visible, and capable of success. Consider integrating a practice from the list below to continue fostering a supportive learning environment for students in your courses.

Engaging in Relational Practices

Make your physical classroom environment and syllabus demonstrate your support of different abilities and needs in the academic space. Both explicit communication and subtle cues can signal the safe space to students.

Using Environmental Cues

Display visual cues (like posters) around the classroom that recognize and celebrate diverse, underrepresented, and marginalized groups.

Free posters celebrating women in STEM:
<https://www.amightygirl.com/blog?p=23086>

Encouraging Metacognitive Practices

Strong metacognition is critical for improving student learning and performance. Instructors can foster students' metacognition by supporting positive student learning strategies (i.e, utilizing resources, participating in study groups, attending office hours) and encouraging students' positive self-talk.

Inviting Students into the Field

Encourage students to pursue a major in your discipline by inviting them to participate in research and suggesting future coursework.

Calling Students Scholars in the Field

Some people see these labels as reserved for white men from centuries past, but addressing your students as mathematicians, chemists, or microbiologists goes a long way to support students' feelings of belonging.

Learning about Students as People

Knowing (and using) students' names, especially to credit them during class is an important way to acknowledge students as individuals. Additionally, asking about (and remembering) their lives outside of your classroom recognizes that we all have dimensionality. Finding ways to share your own STEM story or mathematical autobiography validates bringing our whole lives to our STEM practice.

[1] Powell, C., Demetriou, C., & Fisher, A. (2013). Micro-affirmations in academic advising: Small acts, big impact. *The Mentor: An Academic Advising Journal*. Retrieved from <https://dus.psu.edu/mentor/2013/10/839/>

[2] Cawely, A., and Robin Wilson (2023). Mathematical Microaffirmations. *MAA FOCUS*, 26-29.