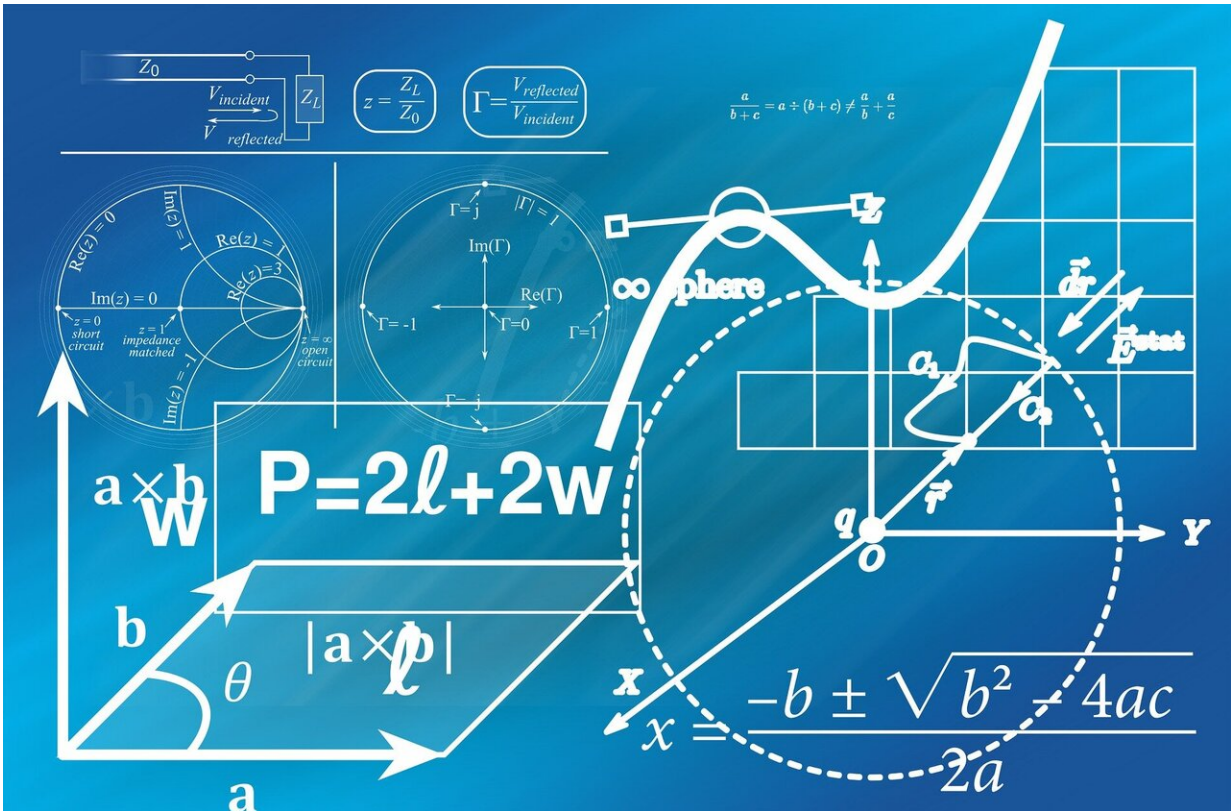


# Making physics instruction more equitable

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More equitable approaches to physics instruction are necessary, because the field has recognized many ways in which traditional approaches to instruction are inadequate for students of color or women. Part of this issue stems from physics teachers often being unsure how to begin making physics more equitable.

In *The Physics Teacher*, researchers from the University of Washington and Florida State University explore the goal of culturally relevant pedagogy, developed by Gloria Ladson-Billings, which is to center students' cultural resources as a bridge to learning.

When they delved into the efforts of one [physics teacher](#) in particular, a Black woman who was successfully using the framework of culturally relevant pedagogy to attract students of color into [physics](#) and helping them thrive, they were in for a surprise.

"While some of her efforts revolved around lesson plans, we also learned culturally relevant pedagogy isn't just about how teachers instruct," said Clausell Mathis, from the University of Washington and a co-author on the study. "It also shapes extra-instructional factors, such as developing relationships with students, encouraging them to succeed, and the willingness to acknowledge and help students make sense of sociopolitical concerns that influence their lives."

Teachers who adopt culturally relevant pedagogy "attempt to bridge students' home and school life, in our case, within the realm of physics," said Mathis. "The framework consists of three pillars: academic excellence, cultural competence, and sociopolitical consciousness. It also calls for teachers to explore their own conceptions of self and others, knowledge, and social relations."

Culturally relevant pedagogy encourages teachers to push their students toward using what they learn within the classroom to challenge injustices in society. For example, teachers introduce sociopolitical topics such as environmental issues, like [global warming](#) and [fossil fuels](#), or mechanical issues, like [energy efficiency](#) or the damaging infrastructure of bridges.

"Our [case study](#) taught us that even physics teachers must be willing to address issues such as racism, classism, sexism, and other issues to

support their students," said Mathis. "We ultimately want teachers to help students use what is learned within the classroom as a tool for creating positive change in society."

Mathis and Sherry Southerland, from Florida State University and another co-author, said students bring a wealth of resources into classrooms that can be fruitful for teachers to use toward helping them achieve productive learning.

"Culturally relevant pedagogy in physics draws and influences far more than simply the activities or topics teachers select for instruction," said Mathis. "It also requires teachers to develop relationships with their students, get to know them as people—not just physics learners—and be willing to step outside of physics at times to help them navigate vexing events in their lives."

These investments in students can be invaluable in turning classrooms into places where students recognize their worth.

"Hopefully, our research will be useful for teachers interested in making their physics classrooms and teaching more equitable—where all students, particularly students of color, are supported in learning physics," said Mathis. "And also show how classrooms can really empower students to use physics to understand their community and societal issues, and then go work to make the world more equitable and just."

**More information:** Clausell Mathis et al, Our Shifting Understandings of Culturally Relevant Pedagogy in Physics, *The Physics Teacher* (2022). [DOI: 10.1119/5.0027583](https://doi.org/10.1119/5.0027583)

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