

Knowledge of African-American language and culture benefits teachers in STEM fields

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A new study of K-12 STEM educators demonstrates how adding linguistic information into classroom teaching can help remove barriers to STEM achievement for African-American students. The article, "Balancing the Communication Equation: An Outreach and Engagement Model for Using Sociolinguistics to Enhance Culturally and Linguistically Sustaining K-12 STEM Education," by Christine Mallinson (University of Maryland, Baltimore County) and Anne H. Charity Hudley (University of California, Santa Barbara), will be published in the September, 2018 issue of the scholarly journal *Language*.

Students do not leave their [language](#) patterns at the door when they enter a classroom—including in STEM courses. The words that teachers and students use, their communication strategies, and the intentions and meanings of their discourse are central to classroom interactions and dynamics. Ensuring that students and educators from different backgrounds understand and communicate respectfully with each other can be as important as helping students understand the material in their textbooks. One significant challenge, however, is the fact that comprehensive information about language and culture are not often part of K-12 STEM teacher preparation programs. As a result, though STEM educators may realize that linguistic issues play a role in teaching and learning, they may be unprepared to address them.

This study addressed this gap by holding a series of workshops on language and culture with 60 K-12 STEM educators in Maryland and

Virginia, specifically to reach those who taught in schools that serve predominantly African-American students—a population underserved in STEM fields and careers. Through follow-up surveys, interviews, and focus groups with K-12 STEM educators, the authors investigated how cultural and linguistic diversity relate to STEM teaching and learning, particularly for African-American students.

Evidence from this study suggests that having insight into language and culture benefits STEM teaching. Such knowledge includes which languages and language varieties students are using, why specific linguistic characteristics appear in students' speech and writing, and where potential linguistic biases can occur in teachers' materials and assessments. For example, word problems, questions, texts, and directions can often cause challenges, as STEM disciplines abound with unfamiliar and difficult academic language and content area-specific jargon. In addition, differences in communication practices and interactions can also lead to linguistic inequalities within classrooms and schools. Feedback from educators who participated in this study reveals that it is often in more nuanced interchanges—including microaggressions that educators may not even notice—that miscommunications and linguistic/cultural mismatches can arise. As the authors demonstrate, K-12

STEM educators who are aware of such issues and adept at addressing them are better equipped to support African-American students.

The authors offer specific recommendations for K-12 STEM educators seeking to develop robust cultural and linguistic competencies that include establishing partnerships with local linguists to show how language, culture, and education matter in STEM and using linguistic insight to invite students into the culture and discourse of science learning and exploration. They also offer suggestions to linguists who partner with K-12 educators, emphasizing the need to develop materials

that are informed by teacher insight, pedagogical need, and cultural context.

More information: A pre-print copy is available here:
https://www.linguisticsociety.org/sites/default/files/Lg_09_18_Mallinson_etal.pdf .

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