

## Viewing BIPOC Students as S.T.E.A.M. Professionals

### Introduction: An Afterthought

When I share my childhood with others, they often cannot believe that I worked as a civil and mechanical engineer for seven years and went on to become an educator. During my K-12 education, I was never exposed to those careers. As a young child, I was very hyperactive and had a difficult time adhering to classroom rules. Not because I was a deviant child, but because the classroom rules encouraged conformity to traditional, Eurocentric standards of learning methods, and I preferred learning through movement.

The books I read in school such as *Lord of the Flies*, *To Kill a Mockingbird*, or *Fahrenheit 451* did not help explain my reality of taking cold showers or doing my homework by candlelight because our electricity was cut off. No character in those books looked like me other than Uncle Tom. To add insult to injury, I was never taught about my culture beyond slavery and the Civil Rights Movement. Over a four-and-a-half-year span, I attended five high schools in three counties and graduated high school with a 1.978 GPA. Within those nine semesters, not once was I ever encouraged to be an engineer or a teacher. Not once did a teacher ask if I was doing okay.

My instructors, overall, were not trained to serve students who did not share their same cultural markers. Instructors saw me as pathologically inferior or assumed my culture did not value education. For the most part, my teachers were not trained to engage with poverty, dysconscious racism (Brownlee, 2020 & King, 1991), religion, or encouraged to confront their own embedded xenophobia and ethnocentrism that exist because of cultural homogeneity.

### Where Are the Teachers That Look Like Me?

Before the 1960s, Historically Black colleges and universities were breeding grounds for training Black teachers to return to their communities to teach. Yet, between 1954 and 1964, close to 40,000 black educators would lose their jobs (Anderson, 1988 & McCarty, 2018). In the famous words of Thomas Jefferson, a statesman and a slaveholder, "Nothing is more unequal than the equal treatment of unequal people." After the *Brown v. The Board of Education* decision in 1954, the United States sought to treat an oppressed school system equally through integration, but put into motion the genocide of Black school districts and Black teachers.

In 2017-18, 79 out of 100 hundred teachers employed in the U.S. were white, nine were Hispanic, seven were Black, two were Asian, and one was an American Indian/Alaska Native.

Instructor demographics in the United States should reflect student demographics, but they do not. White people make up about 60 percent of the U.S. population, but represent 79 percent of all teachers, meaning they are overrepresented in the teaching profession by almost 20 percentage points. What are we doing at Mesa Community College to change this?

### Full S.T.E.A.M. Ahead: An Attempt to Recruit More Students Into the Teacher Profession and S.T.E.A.M. Careers

Black, Indigenous, People of Color (BIPOC) and women workers remain underrepresented in the science, technology, engineering, arts, and math (S.T.E.A.M.) workforce. However, in the teaching profession, women are overrepresented while BIPOC and men are underrepresented. The ability to increase diversity in the S.T.E.A.M. workforce is dependent on a more diverse education system.

According to Pew Research (2019, 2020), when it comes to BIPOC and women students choosing S.T.E.A.M. as a career, or BIPOC choosing the teaching profession, these students:

- Are less likely to have access to quality education to prepare them for these fields.
- Are not encouraged to pursue these subjects from an early age.
- Are less likely to think they would succeed in these fields.
- Face discrimination while in school and in recruitment, hiring, and promotions processes.
- Lack BIPOC role models in these fields.
- In addition, many BIPOC and women students who are first-generation college students come from families with low incomes and without a college-going tradition. Often these students don't know what their options are regarding higher education, and they may have fears about going to college and misinformation about college and its costs.

To address the issues mentioned above, Mesa Community College's (MCC) Education Studies Department has created the Full S.T.E.A.M. Ahead Initiative in partnership with Mesa Public Schools (MPS). The Full S.T.E.A.M. Ahead Initiative will use interactive S.T.E.A.M. activities that present engaging challenges and encourage students to enjoy subjects like math and science while simultaneously incorporating pre-service teachers from MCC that share the same cultural markers as the students (e.g., race, ethnicity, religion, and class). In this way, students are encouraged to like math and science, to pursue these subjects from an early age, and to have BIPOC role models in the fields of S.T.E.A.M. and the teaching profession.

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In a 50-minute class, the flow of the lesson is as follows:

- 0-10 minutes: Introducing the instructors, which include myself and three pre-service MCC students that reflect the student population.
- 11-30 minutes: The pre-service teachers lead a S.T.E.A.M. activity that involves measuring, physics, communication, and imagination.
- 31-40 minutes: I share a visual presentation that includes men and women of color who have impacted S.T.E.A.M., such as Ellen Ochoa, Jaime Escalante, Mae Jamison, Katherine Johnson, and Grace Hopper.
- 41-50 minutes: I share career options we have at MCC in the fields of interest: Education, Computer and Information Technology, STEM, and Applied Technology.

Our desired outcomes are that MPS students will:

- Be introduced to fun and engaging math and science activities.
- See themselves in the S.T.E.A.M. curriculum.
- Observe pre-service teachers that look like them.
- Be exposed to S.T.E.A.M. careers.
- Consider teaching and/or S.T.E.A.M. as a career

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