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PERSPECTIVE

FACULTY PERSPECTIVE



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Serving as the only African-American in the Biology department at Ball State University (BSU) and a consultant on the *Fine Focus – Catalyzing STEM opportunities for undergraduates* Immersive project with University of Detroit-Mercy (UDM) I am tasked with addressing: 1) What does diversity mean today in STEM?; 2) How have scientists changed how diversity is being defined?; 3) What is the importance of Society vs. Science vs. Individual? Webster's dictionary defines diversity as, "the condition of having or being composed of differing elements; variety; especially, the inclusion of different types of people (such as people of different races or cultures) in a group or organization with the goal of programs intended to promote diversity in schools." Informed by this definition, then the goal for STEM should be to make sure it is inclusive of all cultures and genders, so that each group is afforded the same benefits that come out of the research that a commitment to diverse STEM produces. An analogy to describe what true diversity should look like can be depicted with a jigsaw puzzle. The border of the puzzle represents the typical scientist (white males); and the object revealed in the completed puzzle represents the other members of the population, such as white females, males and females from the African diaspora and males and females from other cultures.

DIVERSITY IN STEM

Too often our classrooms in STEM and other disciplines lack inclusive practices with both a focus and a value for diversity. Conversation and collaborations like the *Fine Focus* and UDM project dedicated to promoting social justice play a critical role in improving diversity in education generally and STEM specifically. We (myself and two colleagues) discovered the importance of this diversity when the BSU students trained and immersed the UDM students in the blind review process that a manuscript goes through to be considered for publication in a journal. This experience revealed an array of comments for the article. Two groups evaluated the article with diversity in comments due to the diversity in backgrounds and experiences each student brought with them. The UDM students were selected because of their ethnic diversity and their variations in research in STEM, so their comments did not match the comments of the predominately white students from BSU, who only shared diversity in their socio-economic status. For example, the first day after our first session working with the UDM students, two students approached me and said, "Why did your students say they never thought about our ideas?" I replied, "They did not because their experiences are totally different from yours." For me, these excerpts reaffirmed the importance of diversity in STEM.

SCIENTISTS AND DIVERSITY

From my point of view many scientists, particularly at BSU, believe they have diverse academic environments. Currently several white females have been extended opportunities to participate in research and conversations, not previously accessible to women. The inclusion of female scientists has paved the way for some research that might not have otherwise been addressed by men. However, the voices and perspectives of cultural groups that have been historically marginalized in areas like STEM are still absent. The UDM program is addressing this issue through their Rebuild Detroit initiative. To train and immerse the UDM students in the blind review process that a manuscript goes through to be considered for publication in a journal fortifies each student to perform research on issues that plague their community and/or their personal lives. Because these student's rationale is, "If I do not do the research, who will?" This is true diversity in action that will impact the future ills of our world. The impact of this program hopefully will change the look of STEM eventually, because the partnership between the BSU and UDM students are conscientiously making an effort to make sure their diverse student body has access to authentic research experiences that effect diverse populations.

STEM IN SOCIETY

If science is not addressing the ills of the diverse society then we are not preparing the individuals in society to be scientifically literate. Research from the Washington University Human Genome Center in St. Louis, MO has identified the one million base pairs (bps) that create the human being regardless of your ethnicity. According to this research they discovered that it is less than 10,000 bps distinguish humans from one another. However, these ten thousand bps are crucial when it comes to science. If science only focuses on one group of people in their research or just one gender, white males, then the ills of individuals from other groups will not be addressed. We cannot assume a "one-size fits all" approach when it comes to science and until we diversify our research, science research we will never solve the problems that are destroying our world on a daily basis. As a science educator, I am committed to shaping the mindset of my students in my courses by raising their awareness on how we have to cause a paradigm shift in education. The educational system for historically underserved and marginalized students is currently ineffective, even though their schools are filled with highly qualified predominately white female teachers that are ill prepared to work with the population of students they serve. This flawed system has produced a prison pipeline,

students that are hopeless and teachers that are leaving their classrooms after only ten weeks, due to fear. Conversely, the programs I have designed train the teachers how to teach science using an inquiry approach to underserved and marginalized students and also train the teachers love and respect their students. In return these teachers receive love and respect from their students that can do science and love doing it with qualitative and quantitative evidence. The biggest attribute of this program is the diminishment of the fears that the BSU students held at the beginning of the semester, and the confidence and competency they gained in teaching science, making them change agents in the schools and communities they will inhabit.