A Model to Explain the Institutional and Student Characteristics Related to STEM Baccalaureate Graduates from Historically Black Colleges and Universities Who Earn Doctoral Degrees

The Quality Education for Minorities (QEM) Network, in collaboration with the American Institutes for Research (AIR), is studying a model aligned with the successful graduation of undergraduate STEM students at Historically Black Colleges and Universities (HBCUs) who go on to earn doctoral degrees. The primary objective of this research is to advance understanding about the characteristics of HBCUs that enable STEM undergraduate students to thrive and prepare them to subsequently pursue and obtain doctoral degrees. It is also important to understand which student subsets, such as those who are historically underrepresented minorities (URM), succeed in HBCUs at the highest rates. As the nation addresses a STEM achievement gap between URM and non-URM undergraduate and graduate students, the number of students who are URMs and receiving undergraduate and advanced degrees in STEM is, by all accounts, disproportionately low. This is also true of students who are educated at our nation's HBCUs, with a select group of students that are successfully completing STEM undergraduate and doctoral degrees. In order to engage all U.S. citizens in our nation's effort to advance STEM education and the scientific enterprise, we must also understand what variables are enhancing the pathways for student success. This research project is helping to advance knowledge about these key mechanisms for STEM degree production. The research will be conducted using data from the U.S.'s Integrated Postsecondary Education Data System (IPEDS); student survey; and student, faculty and administrator interviews.

The researchers are working with an evaluator, who is implementing formative and summative evaluations. The project's advisory board includes experts who have knowledge about HBCU scholarship and who are familiar with current and relevant theory, methods and research. The board is providing feedback to the researchers and suggesting adjustments to the project's management, research implementation, and interpretation of the results and findings. For dissemination purposes, the QEM/AIR team is using a web site, publishing in peer-reviewed journals, and presenting at national professional research conferences.

This research is supported by the Directorate for Education and Human Resources' (EHR) Core Research (ECR) program. The ECR program emphasizes fundamental STEM education research that generates foundational knowledge in the field. Investments are made in critical areas that are essential, broad and enduring: STEM learning and STEM learning environments, broadening participation in STEM, and STEM workforce development. The program supports the accumulation of robust evidence to inform efforts to understand, build theory to explain, and suggest intervention and innovations to address persistent challenges in STEM interest, education, learning and participation. Additional support is provided by EHR's Historically Black Colleges and Universities - Undergraduate Program (HBCU-UP), which enhances STEM education and research at HBCUs.

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