

Interrogating Environmental Factors that Negatively Impact African American Student STEM Degree Completion

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Understanding why African American students often leave science, technology, engineering, and mathematics (STEM) degree programs – and working to solve this – is crucial. Dr. Pheather R. Harris at the University of California, Irvine, has demonstrated that intentional mentorship from professors can significantly boost their chances of remaining in the programme and graduating. Her work highlights the urgent need for universities to create inclusive environments where African American students feel supported to achieve success in STEM fields.

Challenges in Postsecondary Education

Dr. Pheather R. Harris at the University of California, Irvine, points us to barriers African American students face in completing science, technology, engineering, and mathematics (STEM) degrees compared to their racial/ethnic counterparts. Despite expressing comparable interest in STEM fields, African American students continue to have lower completion rates, leading to significant disparities in STEM workforce representation. Indeed, increased enrollment of African American students in college has not translated into higher completion rates in STEM programs.

Exploring the Impact of Faculty Mentorship

Dr. Harris is interested in finding out whether meaningful interactions with faculty mentors influence their persistence in STEM programs. There is a clear gap in understanding how faculty engagement may specifically impact the persistence in STEM of African American students. Bridging this gap is crucial for addressing existing disparities and strengthening interventions aimed at achieving degree completion parity. A large part of this discussion is based around environmental challenges that African American students face in completing STEM degrees and emphasizes the importance of interventions to support their success.

Systemic Inequity and Disadvantage

Systemic inequity often places African American students at a disadvantage. In addition, factors such as inadequate support, poor faculty-student interactions, inconsistent course offerings, and varying levels of k-12 academic preparation negatively impact STEM undergraduate degree completion rates. Pre-college characteristics, such as the level of math and science courses taken in high school, also significantly impact STEM persistence.

(Un)Supportive Academic Environments

Dr. Harris further explains that African American students frequently encounter differential treatment from faculty, which can undermine their academic success. Unwelcoming cultures in STEM departments can lead to isolation and withdrawal among students, exacerbated by stereotype threat. As such, the institutional environment plays a significant role.

Understanding the dynamics of faculty mentor engagement, specifically in the context of African American STEM students' persistence, is essential for developing effective interventions to address this disparity.



The Role of Meaningful Interactions Between Students and Faculty

Dr. Harris emphasizes the importance of supportive academic environments. Creating an inclusive atmosphere where African American students feel supported and valued is crucial for their success. A sense of belonging is critical for African American students to persist in STEM, entailing feeling integrated into the academic community and receiving support in overcoming challenges. On this basis, she argues that faculty mentor engagement may play a critical role in encouraging and assisting African American students.

Research Methodology

To test her theory that faculty mentor engagement positively impacts the academic success of African American students in STEM fields, Dr. Harris utilized data from the Higher Education Research Institute at the University of California, Los Angeles, and specifically, data from the Cooperative Institutional Research Program.

The study sample comprised students from diverse institutional backgrounds, with approximately 75.5% undertaking four-year liberal arts colleges and 24.5% being enrolled in research universities. The majority of institutions were private (91%).

In analyzing persistence patterns, Dr. Harris found that the majority of African American students who persisted in STEM majored in Psychology (29.65%), followed by Biology (18.09%), Chemistry, and Computer Science (each 6.03%). However, approximately 24% of African American students did not persist in STEM programs, indicating a notable attrition rate.

Critical Findings

First, Dr. Harris's analyses emphasize a significant gap in STEM degree completion between African American students and their peers. In addition, there was a positive correlation between faculty mentor engagement and STEM persistence among African American students, suggesting that fostering meaningful interactions between faculty and students can enhance academic outcomes.

These findings provide valuable insights for institutions to enhance mentorship programs and for students and faculty to engage effectively. Dr. Harris confidently concluded that providing mentoring opportunities and academic support positively influences STEM persistence among African American students.

Recommendations for STEM Degree Inclusion

Higher education stakeholders can use Dr. Harris's findings to create inclusive campus environments and develop retention efforts that support diversity in STEM fields. Her recommendations for practice include integrating mentoring into STEM curricula and fostering diversity and inclusion leadership within higher education institutions.

Dr. Harris also proposes that institutions should embed mentorship initiatives into STEM curricula to ensure all students have access to supportive faculty relationships. Additionally, institutions should consider how these study findings can inform the development of further inclusive support services for African American students. Of course, within academia, leadership plays a crucial role in creating inclusive environments.



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Filling in the Gaps: Future Studies

While Dr. Harris provides valuable insights into the relationship between faculty mentor engagement and STEM persistence among African American students, her work focused on African American students at predominantly white institutions who were first-time, full-time STEM aspirants. This means that the experiences of African American students who may have started at two-year colleges or transferred between institutions were not investigated. Dr. Harris acknowledges that including such students in future research could provide a more comprehensive understanding of the factors influencing STEM persistence among African American students across different educational pathways.

Additionally, Dr. Harris argues that a better understanding of the demographic characteristics of faculty mentors and their impact on African American students' STEM persistence could offer valuable insights for institutions striving to create more inclusive academic environments.



MEET THE RESEARCHER

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Dr. Pheather R. Harris is a Program Director for the California Alliance for Minority Participation and President-Elect for the National Association of Multicultural Engineering Program Advocates. She has worked in various leadership capacities in postsecondary education for over two decades, starting at Santa Monica College as a Counseling Aide at the Extended Opportunities Programs and Services office. After undertaking the role of Assistant Director of Admissions at the University of Southern California, Dr. Harris moved to Cambridge, MA, to pursue her Master's Degree in Higher Education, with a focus on Risk and Prevention, and began working at Tenacity, a non-profit organization focused on social-emotional learning and literacy development for middle school youth, as a Prevention Specialist. Dr. Harris formally moved to the East Coast when she began her work at the Gates Millennium Scholars Program as a Senior Program Manager, managing the Academic Empowerment Program across multiple partner organizations. Dr. Harris obtained her Doctorate in Higher Education Administration from the George Washington University, and her ongoing research interests include the relationship between faculty mentor engagement and minoritized student STEM persistence.



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FURTHER READING

PR Harris, B Nagle, [Exploring the Relationship Between Faculty Mentor Engagement and African American STEM Persistence](#), *Journal of African American Studies*, 2023, 27, 215–233. DOI: <https://doi.org/10.1007/s12111-023-09629-2>

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