

Introduction

Abstract

Black doctoral students are underrepresented in Engineering doctoral programs. According to the Journal of Blacks in Higher Education, out of 4500 engineering doctoral degrees awarded in 2023, only 4.6% of them went to Black students. One article studied how personality traits regarding motivation, rigor in the doctoral curriculum, and university culture could have a part to play in the gap. However, mentorship is not explored as much for Black engineering doctoral students even though competent mentorship has been determined to have a positive impact on matriculation rates for underrepresented students in academic settings. My study explores the relationship between Black doctoral engineering students and their faculty mentors.

Aims of the Research

The aim of my research was to explore Black engineering doctoral students' perceptions of their relationships with their faculty advisor.

Research Questions

R1: How did students describe the characteristics of their faculty mentor and how did those characteristics impact their experiences as doctoral students?

Research Design

This qualitative study involved interviews with Black doctoral engineering students about their experiences within their engineering doctoral programs. Semi-structured interview questions focused on the students' experiences with their faculty mentors and their developing self-efficacy in research. I conducted in person interviews were conducted. Interviews lasted 60 to 90 minutes with students describing their faculty mentor/mentee relationships as well as other relationships that were important for developing their self-efficacy for research, their belongingness in the engineering discipline, and their researcher identity.

Method

Participants

Participants were recruited through an email sent through the official graduate student email communication from the FAMU-FSU College of Engineering. From there, I selected a total of 6 students (2 male, 6 female) to participate in and interview. Interview participants were selected who fit my criteria: students who identified as currently enrolled PhD students, and as African American or Black. Students had to also had to agree to be interviewed after the completion of the survey.

Data Collection and Analysis

While I conducted the interviews in person, they were transcribed using Zoom transcription software. Once the interviews were transcribed, I did open coding to find themes between the participants.

The major theme I found between the transcriptions was the significance of peer relationships within the development of a PhD student's self-efficacy in research, their belongingness in the engineering community, and their engineering identity.

Sub themes include:

- Peer to peer feedback
 - “We take classes together, it's very easy to ask for, ‘Hey, I don't understand this. I need help in my assignments’, um...And I... I, um, expect people to extend the same to me, meaning if my classmates have issues with the assignment, And I realized later, I asked them, Why didn't you tell me? Why didn't you reach out to me? “
- Peer to peer mentorship
- Community building beyond academia.
 - “We are quite, I'd say...more than just lab mates or coworkers, I think we're friends. Um, we hang out on the weekends and stuff like that, and, like, after school..”



Results

Conclusion

At the conclusion of the study, the interviews revealed that mentorship, is a portion of a much larger scope that impacts PhD students' self-efficacy, identity, and belongingness. Peer relationships were found to have an observed impact on the experiences of Black engineering PhD students. In a follow-up to the interviews, I requested the students rate their faculty advisor 1-5 within the context of mentorship competencies modified from a mentor competency assessment created by Fleming, House, et.al;. 4 students rated their mentor 3 or higher on a 5 point Likert scale. 2 students rated their faculty mentors below 3. This conclusion provides a foundation for future research in peer relationships within the engineering community.

Discussion

Based on prior literature, there are significant findings on the success (matriculation through PhD programs) of students who have access to a faculty mentor. However, through my sample study of students, I have found that peer relationships provide another scaffold for PhD engineering development to grow on. These findings could be used to help facilitate or create programs that foster these peer-to-peer relationships earlier in a student's engineering academic career. By fostering those relationships earlier, the engineering community could potentially see a rise in Black undergraduate engineering students pursuing PhDs in engineering.

Key References

REFERENCES: SCAN BELOW

