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Engagement of Men of Color in Introductory Artificial Intelligence Computing Courses at a Hispanic Serving Community College

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■ In today's world where AI and computing are essential to daily life, the computing workforce continues to face shortages and struggles to diversify. This struggle can partially be attributed to the computing field being dominated by exclusionary white male culture (Chang, 2018). It may seem intuitive that all men would have an easier time joining this male-dominated space, but this ignores the complexity of their experiences and assumes that men of color (MOC) hold enough privilege to simplify their experiences to the privileged majority (Johnson, 2018; Hurtado & Sinha, 2008; Wong & McCullough, 2021).

While significant scholarship has centered the experiences of MOC in community colleges (Abrica et al., 2020; García-Louis et al., 2023; Hutchings et al., 2024), AI and computing education continues to lack a significant intersectional approach (Rodriguez & Lehman, 2017). MOC are more likely to access higher education through community colleges than other types of institutions (Postsecondary National Policy Institute, 2022), and Hispanic-serving community colleges (HSCCs) act as a key access point for MOC (Harris & Wood, 2022).

Together, this results in AI and computing education scholarship that has widely ignored the presence of MOC in HSCCs and may be missing key opportunities to serve these men in their computing pathways. We do not fully understand the relationship between MOC and their HSCC AI & computing environments, and larger societal factors. Without this knowledge, HSCCs cannot intentionally support MOC coming to their full potential (Felix & Gonzalez, 2022). As such, this study was framed by this research question:

How do men of color engage with different socio-ecological domains in their introductory AI computing courses at HSCCs?

METHODOLOGY

This phenomenological study is a part of a larger research initiative to create computing pathways for students at an HSCC, starting with a certificate program and progressing to a bachelor's and master's degree in artificial intelligence. This study utilized Harris and Wood's (2016) Socio-ecological Outcomes Model, which was created with MOC and their environments in mind. This study had 10 MOC participants from a range of racial/ethnic backgrounds and were interviewed in a semi-structured 60-90 minute interview about their experiences. Moustakas' 4-step phenomenological process was engaged to highlight how MOC engage with the different socioecological domains through their experiences in introductory AI courses at a HSCC.

In addition, we created memos, reviewed the transcripts, talked amongst our team, reviewed literature, and explored our positionalities to ensure trustworthiness. Rodriguez is a cis-gendered Latina Associate Professor who attended a community college and now researches computing. Kaur is a South Asian cis-gender female engineer, former community college student and has taken introductory computing courses. Bigby is an African American cis-gender man with a background in engineering. As equity-minded scholars who all engage in computing education research through this project, we leveraged our backgrounds and ways of knowing to build rapport with participants and arrive at better interpretations of the data collected.

FINDINGS

Our study found that MOC at the HSCC utilize AI computing knowledge and skills as a way to control their futures. In addition, MOC leveraged HSCC

introductory computing faculty member interactions as a means for success and to make connections inside and outside of HSCC AI computing courses.

MOC at the HSCC Utilize AI Computing Knowledge and Skills as a Way to Control Future

MOC had general intrinsic interests in AI and computing but especially recognized the degree utility of their introductory AI computing coursework, had the self-efficacy to believe they could succeed in this field, and exercised a locus of control to take charge of their computing careers.

Participants saw the utility of their AI coursework in terms of enhancing their job prospects in an ever-growing digital age. Some discussed the relationship between utility and self-efficacy by expressing that they now had the ability to understand how AI was used in their field and could take concrete steps to enhance their future success. Influenced by the increased use of technology during the previous COVID-19 pandemic and their own intrinsic interests, MOC often demonstrated a locus of control over their educational, economic, and social situations by changing their majors based on better anticipated job prospects in the computing field. Our study also found that MOC, many of whom were lower income, post-traditionally aged, and/or worked full-time or had care-giving responsibilities sought a locus of control by striving to get "ahead of the curve," or to put themselves in demand by future employers through gaining valuable computing skills. When asked, MOC did not believe that their intersectional identities (e.g., race, ethnic, gender, spiritual) influenced their introductory computing experiences, nor did they mention specific instances that might be linked to these identities.

MOC Leverage HSCC Introductory AI Computing Faculty Member Interactions for Success

Within the academic domain, MOC highlighted the importance of faculty-student interactions which increased their academic service use and commitment to an AI and computing course of study.

MOC discussed how introductory AI computing course faculty members took time to assist them with coding and other technical skills, stayed after class to answer questions, and made them aware of co- and extracurricular activities that would help them establish a connection to the computing field. The professors also provided in-class time for students to engage their peers in discussions about these subjects. Students discussed how faculty members encouraged them to utilize academic services, including helping them enroll in courses and informing them about computing course availability.

Even though MOC demonstrated intrinsic interest in AI and computing, some men were hesitant to start their computing coursework and use academic services. However, they became more engaged and committed to computing after their faculty-student interactions within the introductory course.

MOC Make Connections Inside and Outside of HSCC Introductory AI Computing Courses

Within the campus-ethos domain, we found that MOC made connections with faculty, administrators, and peers (almost all of whom in each case were men) both inside and outside of HSCC introductory computing courses. Computing faculty engaged with MOC, to mentor them, help them feel connected and validated, and take steps towards their future careers.

Faculty members created environments that allowed MOC to speak up, feel heard, and participate in class. To extend the supportive environment that faculty

members created, MOC self-organized technical support groups which helped them achieve academic computing success. Students also discussed how HSCC administrators informally engaged with them outside of class (e.g., pick-up basketball games) about opportunities to pursue their computing interests and the availability of campus support systems.

Many of the campus resources that MOC chose to access were the result of their connections with administrators, exemplifying connections between their academic service use (nongenerative domain) and feelings of sense of belonging, connectedness, and utilization of campus resources (campus ethos domain). This breaking down of hierarchical barriers enhanced these men's ability to connect with the HSCC (and other men on campus) as well as build a sense of connection to the institution and the AI computing field.

IMPLICATIONS

Creating Space for Discussing AI Computing Futures

We found that MOC utilized AI computing knowledge as a way to feel a sense of control about their futures. Practitioners might consider creating cohorts and spaces for MOC students that encourage a sense of belonging and support the sharing of information about future careers in AI computing across students at all academic levels. These spaces can give MOC the opportunity to share hopes, concerns, and questions they have regarding how AI computing opportunities are secured and what steps they need to take in order to successfully transition to the workforce or transfer on to a university setting to continue their education.

Enhancing the In-Class Introductory AI Computing Faculty-Student Experience

We also found that MOC leveraged faculty member interactions for success. Faculty members might consider integrating practices seen in this study (e.g., sharing information about services, opportunities)

within class time to ensure MOC (particularly post-traditional students balancing outside responsibilities) are aware of them and can engage with someone who they trust.

Creating Connections Outside the AI Computing Classroom

Finally, this study emphasized the importance of MOC making connections not just within the AI computing courses, but also outside of the confines of the classroom. Practitioners might consider creative ways to leverage assignments within introductory AI computing courses to encourage MOC to connect with the campus environment, including resources, support programs, and key contacts.

AUTHOR BIOS

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