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Board 222: Broadening Participation in Computing and Artificial Intelligence at a Hispanic-Serving Community College

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Broadening Participation in Computing & Artificial Intelligence at a Hispanic-serving Community College

The rapid pace with which advances in computing are being made in recent years has resulted in an increasing need for a competent computing workforce. Yet, the rate at which postsecondary students are choosing to pursue computing disciplines is lagging, creating a deficit of computing professionals. This project, funded by the NSF DUE/HSI Program, is focused on developing artificial intelligence (AI) courses and an interdisciplinary certificate that will expose all college students to AI while building capacity for the development of a four-year degree in applied AI. The project aims to serve the national interest by increasing community colleges' (CC) capacity to attract and train students in AI.

About The Project

The four-year grant has been implemented at Miami Dade College in collaboration with University of Florida's Department of Engineering Education, Virginia Tech's Department of Engineering Education and AI4ALL. The project is also supported by subject matter experts from companies like IBM, AWS, and Microsoft.

This four-year project takes place at one of the nation's most diverse and largest institutions of higher education and brings together a local university partner, a non-profit organization, industry partners, and social scientists to more fully understand how to implement, assess, and expand computing pathways, particularly in the CC space and for a diverse student population. Key objectives for the project have included developing and implementing a 9 credit interdisciplinary AI certificate at the CC level, creating initial entry points to AI (e.g. bootcamps, workshops), and coordinating mentoring and other support activities to build engagement. Grant staff are also making significant progress related to the AS and BS degrees, as one of the objectives of the grant is to secure and provide a basis to establish the AS and BS.

As part of this National Science Foundation (NSF) grant, the institution is working on the following areas:

1. Provide industry-based professional development for MDC faculty to develop and pilot AI courses, and to integrate AI into existing courses.
2. Adapt previously developed and tested AI courses from University of Florida for use in a credit-granting AI program at MDC.
3. Create interdisciplinary courses that make an AI certificate available and relevant to all MDC students.
4. Establish multiple student entry points into AI for traditional students and existing professionals. The project seeks to meet students where they "are": geographically, economically, and academically.
5. Provide support mechanisms that engage and encourage underrepresented minorities students to study AI.

Findings from the Project's Evaluation and Research Teams

The project's evaluation team found that faculty and staff reported positively on their engagements. Overall, faculty reported that the curriculum development process went smoothly with grant staff's intentionality about including key stakeholders in the process of curriculum development. Faculty reported being satisfied with the professional development and believed it had applicable information to share with their students. Students reported that they learned a lot in the course and found it relevant to their education. Students appreciated the integration of the non-profit's workshops with the CC course and reported that they would participate in a similar collaborative course in the future as well as recommend other students participate.

The project's research team, focused on understanding computing identity development at a Hispanic-serving community college, found that students sought a more refined computing identity, based upon how they understood computing concepts and their own professional goals. Students who had prior computing experiences found it easier to recognize their computing identity. A range of computing pathways inspired multiple forms of community cultural wealth and funds of identity. Students drew on early community cultural wealth and funds of identity from their families and communities while other participants derived their wealth and identity from professional journeys that led them to computing. Students acknowledged the role of the outside world in shaping their computing identity experiences, including the growing needs and challenges regarding computing and artificial intelligence. These market needs influenced how CC students defined their computing interests, relative competence, and need to perform certain tasks to be recognized as computing people.

Lessons Learned

- CC faculty developed and were approved to offer a 9-credit interdisciplinary AI awareness (college credit certificate) CCC to support students from a diverse set of majors (with no previous experience in coding). Courses include: AI Thinking, AI and Ethics, and AI and Business (the first of the AI interdisciplinary classes). Considerations are being made about the best timing and ways of facilitating these classes, including addressing the need for coding in the AI thinking class to support students as they transition into AI-related work. These conversations require communication between all educational stakeholders related to the grant.
- The grant team collaborated across a series of programming related to professional development for CC faculty, summer opportunities for high school students, and partnerships with industry for college students. In the future, the team wants to continue refining recruitment and implementation for the wide range of activities being completed within the objectives of the grant.
- Within implementation of the activities, the grant team will be considering ways to make those activities more aligned with Hispanic-servingness and building an environment that supports and centers Latinx students and their identities (among all who are served by these activities)