Project: Engaging Libraries in Culturally Responsive STEM Programming

Mentor: Dr. Patricia Garcia

According to the White House Council on Women and Girls (2015), girls of color are disproportionately underrepresented in technology careers. Among many of the potential causes for this “participation gap” is the fact that girls of color navigating high-needs urban and rural settings are less likely to have access to critical resources such as teachers with computer science expertise and meaningful out of school STEM opportunities (Songer, Lee, Kam, 2002). This project recognizes the importance of collective impact and proposes partnering with Ypsilanti District Library, Imperial County Free Library, and Tempe Public Library to develop and implement a culturally responsive and low-resource model for teaching computational thinking that can be feasibly implemented and replicated in libraries. The project is guided by three overarching goals: 1) to build institutional capacity within libraries by ensuring that librarians possess the expertise needed to serve as computer science educators who can effectively deliver a culturally responsive and low-resource model for teaching computational thinking in libraries; 2) to evaluate the feasibility of the model for scalability and sustainability; and 3) to improve cognitive outcomes (computational thinking skills) and non-cognitive outcomes (self efficacy and persistence) among participants.

Student Role:

The student will serve as a research assistant for the project and will assist the team in developing data collection instruments, such as observation and semi-structured interviewing protocols. Additionally, the student will attend weekly collaborative and interdisciplinary (education and information studies) research meetings with the mentor and research team, assist in conduct literature reviews related to the use of culturally responsive pedagogy in computer science education contexts, and practice professional skills such as collaboration, project management, and presentational speaking.

Mentorship Plan:

The student will meet with the mentor weekly during individual meetings. The individual meetings will focus on developing personalized goals for academic, professional, and personal growth. These goals will include identifying research interests, outlining specific skills and/or knowledge they hope to gain through the experience, and determining strategies for reaching their goals. In order to make these goals concrete, the mentor will assign related research activities such as literature reviews and a poster presentation.

In addition to individual meetings, the student will participate in weekly team meetings where they will be exposed to an interdisciplinary and collaborative culture of research. The research team is composed of doctoral and master’s students from the University of Michigan School of Information and School of Education. During the weekly meetings,
students will participate in the development of qualitative research instruments, discussions of relevant literature, brainstorming sessions on avenues for scholarly publications, and discussions on how to properly manage and protect confidential research data.

References
