Empowering Diversity in Informal Science Education:
Urban Explorers Program

Tonya D. Jeffery
University of Houston-Downtown, USA

Lizette Navarrete-Burks
https://orcid.org/0000-0003-0175-1087
University of Houston-Downtown, USA

Sarah Albrecht
https://orcid.org/0000-0002-6949-4825
University of Houston-Downtown, USA

EXECUTIVE SUMMARY

This chapter discusses the opportunities, challenges, and impact of delivering informal STEM learning experiences to minoritized middle school female students (grades 6-8) in urban school districts through the Urban Explorers program. It introduces a framework for establishing equitable school district-university partnerships, highlighting the need for collective expertise in various actions and skills. This approach supersedes traditional equity efforts, shifting from inclusion and access paradigms to more liberatory forms of accessing STEM knowledge. The chapter underscores the importance of equity-oriented watchfulness and introspection among university faculty members, fostering ethical praxis that responds to young people's cultural and intellectual activity. The informal learning framework, centering questions of power and justice, aims to challenge narrow deficits in schooling and STEM disciplines, promoting more liberatory forms of disciplinary learning conducive to the

thriving of youth from minoritized communities.

INTRODUCTION

According to the National Research Council (2015), STEM education beyond the classroom has taken center stage in the opportunities provided by numerous federal, state, local, and nonprofit education entities, and programs. Although the acronym STEM (Science, Technology, Engineering, and Mathematics) is not a new term, it has evolved from an educational slogan into more practical opportunities for reform to include enhancements like the integration of the arts in the term STEAM (Science, Technology, Engineering, Arts, and Mathematics (Burks, 2020). Recent research has continued to confirm the trend of K-12 students losing interest in science and mathematics during their middle school years (Riegle-Crumb et al., 2012). In addition, students from historically marginalized populations often have little opportunity to see their identities reflected in their curriculum or in their teachers at school. "Inequity across race, class, and gender remains the most prevalent and persistent problem in science education" (Morales-Doyle, 2017, p. 1035). Miller et al. (2018) posits that students have associated women with science much more frequently in recent studies than they did in earlier decades, but the stereotype of scientists as males persists and become stronger as students progress through school.

Curriculum can be a powerful mechanism to change these inequities by supporting students to see themselves as transformative and intellectual individuals who explore complex thinking about science and social justice issues and cultivate commitments to their communities (Morales-Doyle, 2017). This type of curriculum moves beyond a simple transmission of STEM knowledge and instead focuses on the development and well-being of the whole child through an equity lens. A commitment to equity and not equality is needed to fully support the development and well-being of the students from our target population. "Equality presumes to give all students the same resources, access, learning opportunities and supports whereas equity promotes giving students what they need to succeed which can look different across individual students, student populations, and learning environments" (McKinney de Royston & Madkins, 2019, p.254).

Providing students with additional learning opportunities outside of the classroom can be one solution to creating more equitable learning solutions. However, Archer et al. (2022) recognized that in the majority of informal science learning environments, individuals often come from socially privileged, White, and affluent backgrounds. Similarly, historically there have not been many positive images of or portrayals of minoritized groups in outdoor settings (Finney, 2014, p. 79). Due to these persistent inequities when engaging minoritized and diverse learners, Durall and