# PARTNERSHIPS BETWEEN HIGHER EDUCATION AND INDUSTRY: EXPERIENTIAL LEARNING TO BUILD A DIVERSE STEM WORKFORCE

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## Abstract

In order to address the complex scientific needs that continue to emerge, it is important to have a workforce that is capable of generating innovative solutions that are derived from multiple perspectives, experiences, and transfer of knowledge and skills. This will mean that in addition to addressing education and training needs the workforce will need to have the representational diversity of its citizens reflected in all levels of the workforce, including leadership positions. The motivation for this study was to examine the outcomes of the Underrepresented Minority Internships (UMI) in STEM Program using a mixed methods approach. The UMI in STEM Program is designed to build a diverse workforce in supply-challenged STEM fields such as chemistry and other related physical science fields, by focusing on connecting underrepresented minority (e.g., African American, Hispanic American/Latino, and Native American) graduate engineering degree earners to leadership positions in United States industries through hands-on experiential learning opportunities. The participants are selected for the UMI in STEM Program through an application process. Following a panel review and approval the participants receive financial support for attending graduate school and a paid summer internship at an industry related to their career and academic goals. The summer internships are intended to allow for hands-on application of skills and knowledge while also providing mentoring so that participants are competitive for future leadership positions in industry settings. This mixed methods study examined the experiences of 72 participants in the UMI in STEM Program. Surveys and interviews of the graduate student participants (n=72) and internship mentors (n=20) measured the impact of the UMI in STEM Program on participants' motivation, confidence, career goals, and knowledge and skills acquisition and on employers' workplace culture and ability to recruit diverse talent. Results from survey analysis and transcript coding indicate that internship experiences and embedded mentoring in the UMI in STEM Program led to increased motivation among participants to attain a graduate degree and positively influenced career goals, encouraging many participants to seek employment within STEM industries that they were connected to. Findings also reveal that employers benefitted from the UMI in STEM Program as it allowed them to develop and recruit diverse talent that facilitated new and innovative ideas being brought into their companies. Higher education administrators and faculty can use these findings to understand how to partner with industry in order to develop a comprehensive model to advance diversity in the STEM workforce.

***Keywords:*** *Experiential learning, workforce training, diversity, industry partnerships.*