Education Session

Equity and Inclusion

EDUCATION SESSION

The Systematic Design Process Of Virtual Peer Mentoring Training For Women In Engineering

Date: Wednesday, April 19th

Time: 3:45 PM to 4:30 PM

Conference Session: Concurrent Session 3

Session Modality: Onsite

Lead Presenter: Amanda Rockinson-Szapkiw (University of Memphis)

Co-Presenter: Laura Armstrong (University of Memphis), Lucinda Spaulding (University of Lynchburg)

Track: Student Support and Success

Location: Jackson A

Session Duration: 45min

Brief Abstract:

This presentation aims to demonstrate a how virtual STEM peer mentoring training was designed, and in turn, promotes the STEM self-efficacy of White and Black, Indigenous and People of Color (BIPOC) women undergraduate engineering students at an institution serving a minority population. The design process and learning experience design study (inclusive of remote synchronous usability test and interviews) results will be presented and discussed. Participants will have the opportunity to interact with the content and provide recommendations.

EXTENDED ABSTRACT

Overview

Following the design of a virtual STEM peer mentoring training using a systematic deign approach, a learning experience design study was conducted to examine how virtual STEM peer mentoring

training promoted the STEM self-efficacy of White and Black, Indigenous and People of Color (BIPOC) women undergraduate engineering students at an institution serving a minority population. The authors conducted a remote synchronous usability test and follow up interviews. Following multi-grounded theory (Goldkuhl & Cronholm, 2010; 2018), data were analyzed inductively and deductively. In addition to discussing the design process and study results, recommendations for design and improving the user experience will be provided by participants as they interact with the virtual peer mentoring training.

Relevance

A disparity exists in science, technology, engineering, and mathematics (STEM) fields among gender and racial and ethnic populations (National Science Foundation [NSF], 2019); and mentoring is becoming an intervention to promote both women's and Black, Indigenous, and People of Colors' (BIPOC) STEM engagement, matriculation, and persistence (Carlone & Johnson, 2007; Hill et al., 2010; National Academies of Sciences, Engineering, and Medicine [NASEM], 2019; Rockinson-Szapkiw et al., 2021a; Rockinson-Szapkiw & Wendt, 2021). Lack of representation of White and minority women in STEM degrees and careers has been attributed to myriad reasons; however, research supports that a so-called "confidence gap", or poor self-efficacy is primary(Hill, et al., 2010). Consequently, growing interest in improving self-efficacy of women to broaden participation have emerged, and engagement in mentoring relationships have been identified as central to the development of self-efficacy and, ultimately, persistence (Carlone & Johnson, 2007;).

The research documenting the benefits of STEM mentoring for women and BIPOCs has primarily focused on face-to-face programs and within the context of research labs (Dawson et al., 2015; NASEM, 2019). However, researchers are beginning to recognize that virtual peer mentoring may be more conducive to these underrepresented populations' needs. Virtual peer mentoring enables women and BIPOCs access

to mentors who match their demographic characteristics when otherwise inaccessible due to locations. The virtual environment also provides the flexibility and convenience these populations often need to access such programs (Zambrana et al., 2015; Rockinson-Szpakiw et al., 2021a), for women and BIPOC students are often unable to participate in traditional face-to-face mentoring programs due to their roles and responsibilities. The hours and locations in which programs are offered do not account, for example, for these populations' caregiving responsibilities and work schedules (NASEM, 2019).

Virtual peer mentoring programs are significantly different from face-to-face ones, particularly the user interface and learner experience. Learners interact in peer mentoring programs on various smartphones or other web-connected devices; therefore, it is commonly considered a best practice to perform a usability or learner experience design (LXD) study before launching a virtual program. This type of study assesses the learning environments' use, usefulness, ease of use, and ability to support intended learning outcomes (Gray et al., 2020; Mayer & Moreno, 2003). LXD studies specifically seek to understand how the learner interacts with the interface to facilitate meaningful learning (Tawfik et al., 2021).

Examining learner experiences is an important step in designing and developing each virtual peer mentoring program element. Elements of these programs may include training and peer-mentoring experiences. Training is essential for an effective peer mentoring relationship (Butz et al., 2018; Gregg et al., 2017; Subotinik et al., 2019; Rockinson-Szapkiw, & Wendt, 2021). Therefore, the present presentation demonstrates the design process and explains the results of an LXD study that examined how content and user experience (UX) supported virtual peer mentoring training outcomes, namely STEM self-efficacy. The training is intended to be part of a virtual peer mentoring program for women, both White and BIPOC women, in an engineering programs at Minority Serving Institution (MSI) .This

study also seeks to engage in the conversation about developing culturally and gender-relevant constructs for LXD studies, which is in a neophyte stage at this point.

Engagement

After providing an overview of the design process and study results, we will distribute a link to the virtual peer mentoring training. Participants will work in groups to generate strategies for supporting the candidate based on individual characteristics for design and improving the user experience.

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