2023 Annual Conference & Exposition
Baltimore Convention Center, MD | June 25 - 28, 2023
The Harbor of Engineering Education for 130 Years
ASEE
Paper ID #38363

Board 364: Promoviendo el Éxito Estudiantil a través de un Sistema de Apoyo (PromESA): Promoting Student Success through a Holistic Support System in Engineering Education

Dr. Cole Hatfield Joslyn, Northern Arizona University

Cole Joslyn is an Assistant Professor in the Department of Mechanical Engineering at Northern Arizona University and director of THE Education Lab: To Humanize Engineering Education which emphasizes promoting student growth/development in multiple dimensions, integrating inclusive and emancipatory pedagogy/teaching practices, and reconciling the social and technical nature of engineering. His current research includes exploring a) how integrating holistic, socio-culturally responsive practices and Hispanic/Latine cultural assets and values into educational success strategies influences Hispanic/Latine students' sense of belonging in engineering and b) how Hispanics/Latines experience values conflicts in engineering and then navigate/reconcile those conflicts, as students or professionals.

Promoviendo el Éxito Estudiantil a través de un Sistema de Apoyo (PromESA): Promoting Student Success through a Social, Academic, and Institutional Support System in Engineering Education

Abstract—Women and minortized groups share a common sense of belonging or, more accurately, lack of a sense of belonging in STEM, which exacerbates their underrepresentation in STEM education and careers. Furthermore, an abundance of literature demonstrates that this shared lack of belonging negatively influences their academic performance and persistence. In engineering education specifically, research indicates that a lack of belonging contributes to undergraduate student attrition regardless of gender and race/ethnicity.

Therefore, we proposed a project entitled "Promoviendo el Éxito Estudiantil a través de un Sistema de Apoyo (PromESA): Promoting Student Success through a Social, Academic, and Institutional Support System in Engineering Education." This initiative implements a holistic, socio-culturally responsive peer-mentoring program by adapting the Promotores de Educación Program (PED) and its evidence-based practices developed at California State University at Long Beach. Literature indicates that peer-mentoring is particularly beneficial for helping Hispanic/LatinX/XicanX students develop a sense of belonging. Moreover, formal mentoring programs effectively and positively impact student satisfaction within their program, academic performance, motivation to persist in a program, and completion of degree. Although some research exists in STEM education that affirms the benefits of such programs, little research explores the impact of these programs on historically minoritized/marginalized students, particularly in engineering education.

The project offers educational and personal support for students by providing assistance such as tutoring, advising, and linking to available university services and, equally important, emotional support through building friendship, confirmation, and affirmation to improve students' sense of belonging, particularly for Hispanic/LatinX/XicanX students inclusive of their intersectionalities (e.g., gender, nationality, first-generation college). As such, the purpose of this project is to enhance "servingness" for historically minoritized/marginalized students in engineering education at HSIs by developing a sustainable model for an academic, institutional, and social support system (i.e., formal peer-mentoring program) for first-year engineering students.

Project Summary

Women and minortized groups share a common sense of belonging or, more accurately, lack of a sense of belonging in STEM, which exacerbates their underrepresentation in STEM education and careers. Furthermore, an abundance of literature demonstrates that this shared lack of belonging negatively influences their academic performance and persistence. In engineering education specifically, research indicates that a lack of belonging contributes to undergraduate student attrition regardless of gender and race/ethnicity.

Therefore, in direct response to the Track 2: Implementation and Evaluation Projects (IEP) priority to enhance the quality of undergraduate STEM education, an interdisciplinary team of scholars comprised of engineering and education faculty members proposed this project entitled "Promoviendo el Éxito Estudiantil a través de un Sistema de Apoyo (PromESA): Promoting

Student Success through a Social, Academic, and Institutional Support System in Engineering Education." This multidimensional initiative implements a holistic, socio-culturally responsive peer-mentoring program by adapting the Promotores de Educación Program (PED) and its evidence-based practices developed at California State University at Long Beach (CSULB) [16]. Literature indicates that peer-mentoring is particularly beneficial for helping Hispanic/LatinX/ XicanX students develop a sense of belonging [17]–[19]. Moreover, formal mentoring programs, such as PED, effectively and positively impact student satisfaction within their program, academic performance, motivation to persist in a program, and completion of degree [16], [20]–[23]. Although some research exists in STEM education that affirms the benefits of such programs [24]–[29], still little research explores the impact of these programs on historically minoritized/marginalized students and their intersectionalities, particularly in engineering education (e.g., [28], [29]).

The peer-mentoring model offers educational and personal support for students by providing mentees with assistance such as tutoring, advising, and linking to available university services and, equally important, emotional support through building friendship, confirmation, and affirmation to improve students' sense of belonging, particularly for Hispanic/LatinX/ XicanX students, inclusive of their intersectionalities (e.g., gender, nationality, first-generation college) [16]–[19]. As such, the purpose of this project is to enhance "servingness" [30] for historically minoritized/marginalized students, inclusive of their intersectionalities, in engineering education at Hispanic Serving Institutions (HSI) by developing a sustainable model for an academic, institutional, and social support system (i.e., formal peer-mentoring program) for first-year engineering students. More specifically, PromESA seeks to:

> Objective 1: Increase students' sense of belonging by (1.a) Incorporating holistic, socio-culturally responsive practices into training and professional development for faculty and staff (e.g., peer-mentors) and (1.b) Intentionally integrating Hispanic/LatinX/XicanX cultural assets (i.e., Community Cultural Wealth) and values into the organizational culture of the piloting department.
>
> Objective 2: Increase students' retention and persistence by retaining 65% of entering students beyond year two.
>
> Objective 3: Increase students' academic performance so that 85% of participants maintain a GPA above 2.5.
>
> Objective 4: Establish departmental structures and policies to institutionalize and sustain PromESA beyond this project's four years.

Accordingly, this project's intended outcome is to increase students' sense of belonging and, by extension, the number of students that persist in and graduate from a piloting department in The University of Texas at El Paso's (UTEP) College of Engineering (CoEng), particularly for Hispanic/LatinX/XicanX students inclusive of their intersectionalities.