BOARD # 240: First and Final Year of NSF IUSE Funding: The Justice Equity Diversity & Inclusion (JEDI) Ambassador Initiative – A (Terminated) HSI Implementation and Evaluation Project

Mx. Nivedita Kumar, Florida International University

Nivedita (Nivi) Kumar is a doctoral candidate in engineering and computing education at Florida International University (FIU), with a research focus on caste-based inequities in engineering and computing education in the U.S. Their work examines how systems, structures, and cultures perpetuate caste inequities despite an apparent caste-blind environment. They also explore gender diversity in computing education, particularly addressing the leaky pipeline issue affecting women's participation in STEM fields.

Dr. Stephen Secules, Florida International University

Dr. Stephen Secules is an Assistant Professor in the School of Universal Computing, Construction, and Engineering Education at Florida International University. Secules holds a joint appointment in the STEM Transformation Institute and a secondary appointment in the Department of Mechanical and Materials Engineering. He has bachelor degrees in engineering from Dartmouth College, a master's in Architectural Acoustics from Rensselaer Polytechnic Institute, and a PhD in Education (Curriculum and Instruction) from the University of Maryland. Prior to his academic career, Stephen was an acoustical consultant for 5 years in both London, UK and Silicon Valley, CA. His research has focused on culture and equity in engineering education, particularly undergraduate contexts, pedagogy, and student support. Through his work he aims to use critical qualitative, video-based, participatory, and ethnographic methods to look at everyday educational settings in engineering and shift them towards equity and inclusion. He also leads the Equity Research Group where he mentors graduate and undergraduate students in pursuing critical and action-oriented research.

Tekla Nicholas, Florida International University

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Project Rationale

Florida International University (FIU), the largest Hispanic-serving institution (HSI) in the U.S., is a Minority Serving Institution that awards the most engineering and computing bachelor's degrees to Latinx students nationally and ranks 11th for degrees awarded to African American students [1]. However, disparities persist within FIU's College of Engineering & Computing (CEC). Four-year graduation rates for Latinx, Black, and female students in CEC are 14%, 17%, and 17% lower, respectively, than the university average. Pell grant recipients also graduate and are retained at rates 18% lower than FIU averages. With more than two-thirds of CEC students being transfer or non-First-Time-in-College (FTIC) students, these equity gaps may be even larger for non-FTIC populations. Furthermore, institutional data does not capture representation or degree attainment for LGBTQ+ or disabled students, underscoring additional gaps in equity and inclusion [2].

Engineering colleges nationally face similar equity challenges, particularly in retaining historically marginalized groups. Scholars have linked these inequities to systemic marginalization based on race, gender, socioeconomic status, LGBTQ+ identity, and disability [3], [4], [5], [6], [7]. Although HSIs like FIU may better support Latinx and non-traditional students, evidence suggests limited progress for women, Black, and LGBTQ+ students [4], [8]. Cultural norms within FIU's largely straight, male, and international engineering leadership exacerbate these challenges, alongside the physical separation of CEC from diversity resources on FIU's main campus [9]. Existing diversity strategies in STEM, such as undergraduate research experiences (UREs), service learning, and student organizations, can improve retention and graduation rates for marginalized groups [10], [11], [12]. However, these strategies often adopt a "fix the student" approach, unintentionally disempowering students by treating them as passive recipients rather than active change agents.

In contrast, the Justice Equity Diversity Inclusion (JEDI) Ambassador Program prioritizes student agency, a key factor in persistence through marginalization. Agency, or the capacity to exert power, enables students to navigate systemic barriers and advocate for institutional change [13]. The program equips undergraduate students with action research skills and educational design tools to drive Justice, Equity, Diversity, and Inclusion (JEDI)-focused change within CEC. During our pilot in August 2021, the program recruited four students and five additional students in May 2022. Early projects include researching women's and LGBTQ+ experiences at FIU, mentorship for dual-enrollment high school students, and STEM outreach to local K-12 schools. These initiatives addressed gender pronoun awareness, women's rights workshops, and marginalization in graduate programs. These projects empower students to address equity gaps while fostering meaningful institutional change [14].

With the National Science Foundation's (NSF) support, the JEDI Ambassador Program builds on lessons learned during its pilot phase, emphasizing a structured, student-centered model for cultivating agency and advancing equity in engineering education.

Project Approach

JEDI Ambassadors as an Emergent Institutional Change Initiative

We conceive of the JEDI Ambassadors as a student-led institutional change initiative. To remain student-centered and responsive to emergent needs, we will not target one specific focus for the action research projects. We cannot prescribe or predict the outcomes a priori. However, as an emergent JEDI-focused institutional change effort [14], we can map onto key institutional concerns that can improve the lives and educational experience of FIU CEC students. To help demonstrate this potential impact, we have mapped current example projects within a logic model that speaks to potential tangible impacts on retention, recruitment, graduation, and/or quality of education. We anticipate that our evaluator will help map future JEDI projects to demonstrate the emergent impact of their identified change projects. Since the final outcomes may be hard to measure in the time scale of individual JEDI cohort years, the JEDIs, PIs, and evaluators can collaboratively map the goals and activities to impacts at FIU CEC and develop intermediate metrics that indicate a direction towards the desired outcome. For example, we can evaluate the increased awareness of FIU applicants on financial aid as an intermediate metric for increased lower-income and Latinx recruitment and access to undergraduate STEM education.

Methodology: Action Research towards Inclusive Undergraduate Engineering Education

Action research has been noted as a promising but underutilized methodology for engineering education research, which aims to "foster change in social practices in the social situations in which they take place" [15]. Thus, action research is similar to methodologies such as ethnography and autoethnography, which are highly embedded in social situations, but it is more oriented towards change. Similar frameworks such as Participatory Action Research (PAR) and students-as-partners (SaP) have been frequently used with undergraduate STEM students engaging in issues that directly impact them to work together to create change [12], [16], [17]. Within the JEDI Ambassador program, the action research projects students define will explicitly focus on equity and inclusion in local university settings so that students will be empowered to be change agents for institutional transformation. Consistent with action research, we will blend the concept of research knowledge generation with action and impact, and seek pragmatic and local findings that can directly impact the local settings students find themselves in. Thus, each formal research project that a JEDI ambassador conducts will not be solely research, but we will also ask who the stakeholders are who are most affected by the research project and incorporate their perspective into the research design. Conversely, each educational design or leadership project can be thought of as an activity that requires background knowledge, planning, testing of outcomes, and evaluation or improvement.

JEDI Cohort Year and Implementation Timeline

The JEDI Ambassador Program spans four years, following an annual cycle of summer recruitment and training, fall and spring project work, and a spring end-of-year showcase. We anticipate that each cohort will comprise five JEDI Ambassadors, mentored through education research and organizing projects. A formative evaluation approach includes surveys after training, exit interviews at year-end, and ongoing feedback from the evaluator to refine program processes and outcomes. We have outlined our recruitment, training, and project timelines through various publications, such as conference proceedings and research briefs [18], [19].

Year 1 of the NSF Funded JEDI Program

In the last academic year, 2023-2024, marking the first year of NSF funding, the program recruited six students as JEDI Ambassadors. Following the initial training sessions, five ambassadors actively participated in the program. These ambassadors undertook impactful

projects addressing various equity-related challenges. For instance, one team piloted a peer mentoring program for engineering students, where three pairs of mentor-mentees met regularly and shared their experiences and knowledge of navigating the undergraduate engineering programs. Another project focused on the experiences of neurodivergent students within FIU. The third team analyzed the importance of Alumni experiences and hosted an alumni panel to share the knowledge and experiences of post-graduation life for engineering students. The outcomes of these projects were presented at institutional events such as the Undergraduate Research Fair and JEDI Showcase, and separate stakeholder meetings were set up to share the findings with the undergraduate advisors, faculty, and CEC leadership team, amplifying their impact and creating pathways for further dialogue and action.

Building on the successes and lessons learned from the first year, the current academic year saw a strategic expansion and refinement of the program. This year, we have recruited 11 ambassadors, two continuing from the previous cohort, organized into collaborative teams, each tackling a unique equity challenge within the College of Engineering. Current projects include creating gender equity awareness through podcasts, examining the peer support networks available to international/ immigrant student groups in engineering, understanding the mental health experiences of engineering students and the support available, and creating safe spaces for student communities within CEC. The expanded cohort allows for a broader scope of action research within FIU.

Study of Expansions and Restrictions of Agency

We conducted a year-end evaluation of the JEDI Ambassador Program through a framework of qualitative program evaluation research. Data sources included exit interviews with JEDI Ambassadors, program artifacts, and mentor reflections. This methodology was guided by Youth Participatory Action Research (YPAR) principles [13], emphasizing power dynamics, mentorship, and the development of student agency in action research. A non-mentor researcher, Nicholas, conducted exit interviews to ensure participants felt free to provide honest and unfiltered feedback. The research team collaboratively developed the interview protocol to capture dimensions of student agency and experiences within the program. Transcriptions of the interviews were anonymized and shared among the research team to ensure participant confidentiality. The analysis process involved iterative coding to explore expansions and restrictions of the agency. Open coding identified initial themes, which were synthesized into axial codes aligned with theoretical constructs of agency drawn from Holland [20] and hooks [21]. Codes were further refined through a review of transcript excerpts to highlight dimensions of agency specific to the JEDI context. Additional data included program artifacts such as project deliverables and mentor reflections on challenges and successes. These artifacts provided supplementary insights into how participants navigated their roles and expanded their capacities as change agents. Our findings reveal seven dimensions of agency experienced by JEDI Ambassadors, five of which expanded agency and two of which restricted it. These dimensions, grounded in critical and anthropological theories of agency, provide a nuanced understanding of the student experience.

1. Expansions of Agency

Realizing Perspectives Matter: Many students expressed newfound value in their lived experiences and perspectives, which they had previously felt were overlooked in engineering

education. The program fostered a sense of belonging and camaraderie, helping students understand that their experiences were shared and meaningful.

Communicating with University Leadership: Students reported increased confidence in engaging with faculty and administrative leaders. Structured interactions with allies and mentors empowered students to communicate effectively and advocate for equity-driven initiatives.

Capacity for Creating Change: The program enabled students to realize their potential to effect cultural and institutional transformation. Participants highlighted research as a tool to address community-specific issues, underscoring the program's role in equipping them with practical skills for advocacy and change-making.

2. Restrictions of Agency

Political Climate and Safety Concerns: Operating in a state with anti-DEI legislation, students faced heightened fears about their safety and the security of the program. One participant noted how the political environment limited their sense of safety on campus and their willingness to participate in protests or public actions.

Institutional Constraints: The broader sociopolitical and institutional structures, such as the defunding of DEI offices, often constrained students' ability to fully exercise their agency, reflecting the complex interplay between advocacy and the systemic forces that resist change.

Lessons Learned

While the program has made significant strides, challenges persist. Here, we list lessons learned and programmatic changes from year 1.

Fostering Agency Requires Structured Support: The program's structured approach, including targeted mentorship and scaffolded training, was instrumental in helping students navigate power dynamics and build confidence. A balance of individual and group support ensures that students feel empowered while working on ambitious equity projects.

*Navigating Political and Institutional Contexts**:*** The program's operation in a conservative political climate in Florida, with diversity and inclusion offices being defunded, underscores the importance of preparing students to navigate these challenges. Open discussions about these realities, paired with strategies for advocacy, will equip students to face systemic barriers while maintaining safety and agency.

Expanding and Refining Mentorship: The value of mentorship is evident in students' increased ability to communicate with leaders and advocate for change. We have refined the mentorship model with the graduate student being the primary mentor, particularly with lesser institutional support from the diversity office this year, to provide more personalized support and address the specific needs of students from underrepresented backgrounds. Though it is a challenge to operate the program with less support, we hope that more programs like this are being funded to value students' agency in pursuing social justice research.

Conclusion

The first year of the NSF-funded JEDI Ambassador Program demonstrated the transformative potential of equity-focused action research in engineering education. By fostering agency, resilience, and advocacy skills, the program has created a foundation for long-term impact. However, addressing structural challenges such as anti-DEI legislation and navigating political constraints remains a crucial area for growth as the program evolves. Despite its success, the

program is no longer funded, reflecting a shift in the NSF's stated priorities away from explicitly justice-oriented initiatives. As a team deeply committed to equity and systemic change, we disagree with this shift and remain steadfast in our belief in the necessity of programs like JEDI.

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