

# **Amplifying Diverse Voices: Addressing Gender Bias in STEM through Narrative Inquiry and Community Engagement**

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## **Executive Summary**

This white paper documents a year-long narrative inquiry and engagement project led by JEDI Ambassadors at Florida International University. Through the “STEM Unscripted” podcast series and in-person interviews, this project highlights gender-based challenges in Science, Technology, Engineering and Mathematics (STEM) education and careers. It captures the lived experiences of students and professionals in male-dominated disciplines like Mechanical Engineering and Business Analytics. Major findings include persistent gender bias, underrepresentation, and the transformative power of storytelling. We offer recommendations to educators, institutions, and industry stakeholders for fostering more equitable environments. These include boosting mentorship opportunities, embedding bias education into curricula, and promoting representation in leadership and faculty roles.

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## 1. Introduction

Women continue to be underrepresented in STEM, particularly in technical and male-dominated fields. Despite rising enrollment in areas like Biomedical Engineering, disparities remain stark in Mechanical Engineering, Business Analytics, and Computer Science. According to the UK Office for National Statistics (2024), women represent only 12% of engineering professionals and 19% in technology fields. These disparities are exacerbated by social and institutional barriers, including bias, lack of mentorship, and narrow perceptions of who belongs in STEM. Despite growing efforts to promote diversity, equity, and inclusion in STEM, women in historically male dominated fields still face ongoing and often visible gender bias, leading to feelings of isolation, burnout, and higher dropout rates. Existing equity efforts often overlook the impact of personal experience and narrative in fostering empathy and driving change. This white paper seeks to share qualitative insights from our podcast and research initiative to inform inclusive policy development, raise awareness, and inspire systemic change within academia and industry.

## 2. Research Framework

We used a feminist and intersectional lens (Crenshaw, 2013) to explore how identity (gender, race, class) interacts with STEM culture. In particular, we asked the following questions:

- What gender-based challenges do women face in various STEM fields?
- How does underrepresentation impact identity and belonging in STEM?
- What is the role of personal narrative in combating systemic bias?
- How can institutions structurally support gender equity in STEM?
- Are these issues discipline-specific or pervasive across STEM fields?

## 3. Methodology

We broadly grounded our work in an exploratory qualitative method to understand the stories around women in STEM fields. Data was collected through surveys and semi-structured interviews (see Interview Protocol in Appendix B) conducted in-person and via Zoom. Participants were recruited through posters (see Poster in Appendix A), word-of-mouth, and a survey with QR codes distributed in engineering buildings.

### Timeline

**August–October 2024:** We began by developing foundational research skills, learning how to ask meaningful questions, refining our problem statements, and shaping the direction of our projects. This period focused on building a strong understanding of our topics and the systemic issues we aimed to address.

**November–December 2024:** We transitioned into group work within the JEDI Ambassador program, launching our individual projects. During this time, we conducted in-depth research, reviewed relevant literature, and defined clear goals and methods to guide our work moving forward.

**January 2025:** We launched participant recruitment through surveys, using flyers and QR codes distributed throughout the College of Engineering and Computing to reach a diverse group of respondents.

**February–March 2025:** We conducted interviews and recorded podcast episodes both virtually and in person, capturing powerful narratives and perspectives from students and professionals in STEM.

**April–May 2025:** We finalized our research findings and began synthesizing our results into tangible outputs. This included creating our research poster for presentation at conferences and drafting our official white paper to document the impact and significance of our project.

## **Demographics**

- Undergraduate and graduate students from diverse backgrounds in Biomedical, Mechanical, and Software Engineering, as well as Business Analytics
- We had a total of 4 female and one male participant to include a comparative perspective

All podcast episodes were shared via Spotify and promoted through social media, allowing for broader community engagement.

## **4. Key Findings**

We list the podcast episodes produced as part of the *STEM Unscripted* project, which aimed to amplify diverse voices and uncover gender-based challenges in STEM fields through personal storytelling. Each episode is available on Spotify and includes a unique QR code for easy access and sharing.

### **Episode 1: Pilot**

**Date:** February 3, 2025

**Description:** Introduction to the STEM Unscripted podcast by three JEDI Ambassadors from FIU's College of Engineering. The episode outlines the goals of the project and sets the tone for future discussions.

**Link:** <https://open.spotify.com/episode/7nuvqaG0Fg2fjeBemRUvb9?si=430afee3440e4db6>

### **Episode 2: FIU Male's Unfiltered Perspective for Equity in STEM**

**Date:** March 23, 2025

**Guest:** Ahmer Siddiqui

**Description:** A candid conversation with an FIU engineering student who shares how he perceives gender bias in his field, offering an honest male perspective on the realities of equity in STEM.

**Link:** <https://open.spotify.com/episode/5vIJ7GDvYr0tiuf4PXiw5w?si=17952206eb1e401a>

### **Episode 3: Pioneering the Future: Women in Biomedical Engineering**

**Date:** March 24, 2025

**Guests:** Sheila Rangel and Emily Idiarte

**Description:** Two Biomedical Engineering students reflect on their experiences navigating bias, imposter syndrome, and identity in a field with increasing but still limited gender representation.

**Link:** <https://open.spotify.com/episode/581GkGAwZjvsjdwjJcVRNw?si=66524488a0964382>

### **Episode 4: Women in Non-Traditional STEM Fields**

**Date:** March 26, 2025

**Guests:** Alisha Pimentel and Michelle Kim Heinze

**Description:** Business Analytics students share what it's like to pursue careers in male-dominated, data-driven industries, and how their identity influences their academic and professional paths.

**Link:** <https://open.spotify.com/episode/1N2ucVHUCIVnkvcpLUjuEW?si=0bf78fc93590412b>

These episodes served as a primary method of data collection and storytelling for our project, helping to uplift voices that are often unheard and make gender equity in STEM more visible, relatable, and real.

## **5. Implications and Actionable Recommendations**

For educators and institutions, we recommend intentionally embedding bias-awareness and equity-focused reflection into required STEM coursework, rather than treating these conversations as optional or peripheral. This includes examining how certain disciplinary norms, classroom practices, and assessment structures may reproduce inequities. We also urge institutions to commit to hiring, retaining, and promoting more women, particularly women from historically marginalized groups into faculty and leadership positions, recognizing representation as a structural intervention rather than a symbolic one. Finally, we emphasize the importance of creating well-resourced, institutionally supported mentorship programs that center underrepresented voices and redistribute access to social and professional capital within STEM environments.

For industry stakeholders, we call for the adoption of more equitable hiring and workplace practices, including the use of diverse hiring panels and accountability-driven inclusion policies. Beyond recruitment, organizations should actively support early-career women through sustained mentorship and sponsorship that opens pathways to leadership, advancement, and visibility. We also encourage industry partners to invest in and fund programs that elevate lived experiences, particularly those that surface systemic barriers and inform more inclusive organizational cultures.

For students and student leaders, we encourage the development of peer-led spaces such as discussion groups, workshops, or informal collectives that foster critical conversations about equity, identity, and belonging in STEM. Students can play a powerful role in knowledge-sharing by circulating accessible resources, including podcasts, readings, and community narratives, within student organizations and networks. Through these grassroots efforts, students can help normalize equity-oriented dialogue and contribute to cultural change from within their institutions.

## **6. Limitations**

Recruitment was limited to FIU students, which may have narrowed the scope and generalizability of our findings. It was also difficult to find participants who felt comfortable sharing their personal experiences, particularly on record. These limitations highlight the importance of trust-building in future research efforts.

## **7. Future Directions**

Moving forward, we recommend expanding the project through cross-institutional collaborations, long-term tracking of participant outcomes, and broader use of multimedia storytelling tools to reach and represent a more diverse range of voices and experiences in STEM.

## **8. Conclusion**

Stories from “STEM Unscripted” reveal that systemic gender bias continues to be a significant barrier to achieving equity in STEM. While many institutions have made strides in acknowledging diversity and promoting inclusion, the lived experiences shared through our podcast and interviews highlight that these efforts often fall short of addressing the deeper, structural challenges women and underrepresented groups continue to face. These include subtle forms of discrimination, lack of representation in leadership, and the emotional toll of constantly needing to prove oneself in male dominated environments.

However, the power of personal storytelling cannot be underestimated. These narratives provide a human lens through which data alone cannot fully capture the complexity and impact of gender bias. Stories help shift cultural perceptions, challenge stereotypes, and connect individuals across disciplines and identities. They offer validation, create solidarity, and serve as both a mirror and a map, reflecting current realities while guiding the way forward.

If institutions commit to listening deeply, taking actionable steps, and embedding equity into their structures, not just their statements, real change becomes possible. Coupled with student advocacy and grassroots efforts like the JEDI Ambassador Program, we have the opportunity to build a STEM community that is not only diverse in numbers but inclusive in culture. One where

mentorship is accessible, leadership is representative, and all individuals feel seen, valued, and empowered. This project is just the beginning. The work must continue, led by the voices it seeks to uplift.

## 9. References

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## Appendix A: Participant Recruitment Flyer



The flyer shown above was created and distributed as part of our outreach strategy to recruit participants for the “STEM Unscripted” podcast project. Designed in alignment with the JEDI Ambassador Program’s visual identity, the flyer aimed to encourage students within the College of Engineering and Computing (CEC) at Florida International University to share their personal experiences related to gender equity in STEM.

The flyer features an inviting and inclusive design, with an illustrated podcast setting to visually represent the storytelling format. It includes clear messaging such as “Podcast About Gender Equity in CEC” and “Sharing Experiences Related to Gender in STEM” to highlight the purpose of the project. A QR code was embedded to provide easy access to the participant interest form and additional information.

This flyer was distributed in common student areas, academic buildings, and shared on digital platforms including Instagram and WhatsApp group chats to reach a broader audience. While visually engaging and accessible, recruitment remained a challenge, with some students hesitant to participate or share personal stories, highlighting the sensitivity of the topic. Nonetheless, this flyer played a crucial role in initiating conversations and guiding participants into the podcast series.

## **Appendix B: Interview Protocol Gender Bias and Women in STEM at FIU CEC**

### **Introduction:**

- Greet the interviewee warmly, introduce yourself, and explain the purpose of the interview.
- Let them know their participation is voluntary and they can skip any questions they're not comfortable answering.
- Ensure confidentiality and explain how the data will be used for raising awareness in your research.

### **Opening Questions:**

#### **1. Basic Background:**

- a. Can you tell me a bit about your background? What inspired you to pursue a STEM degree at FIU?
- b. What major are you in, and what year are you currently in?
- c. What has been your favorite part about being in the College of Engineering and Computing so far?

#### **2. General STEM Experience:**

- a. How has your experience been as a woman in STEM at FIU? Have you felt supported academically and socially?
- b. Are there specific resources or programs at FIU that have helped you navigate your academic journey?

### **Transitioning to Gender Bias:**

#### **3. Introduction to Gender Bias:**

- a. Have you ever felt that your gender has impacted your experience in the College of Engineering and Computing? If so, how?
- b. Do you think that being a woman in STEM comes with specific challenges at FIU? If so, could you describe them?

#### **4. Classroom Dynamics:**

- a. Can you recall a time where you felt outnumbered or different because of your gender in a class setting?
- b. How would you describe the dynamic between male and female students in your courses? Do you feel that gender plays a role in group projects or classroom discussions?

### **Deeper Exploration:**

**5. Bias from Faculty/Peers:**

- a. Have you ever experienced bias from faculty members or peers, whether intentional or unintentional? Could you share an example if you're comfortable?
- b. Do you feel that male and female students are treated differently by faculty or in academic settings? How so?

**6. Impact on Academic Performance/Well-being:**

- a. Do you feel that gender bias or challenges related to being a woman in STEM have affected your academic performance or well-being?
- b. How do you cope with or address situations where you feel underestimated or overlooked?

**7. Social and Professional Impacts:**

- a. Have you felt any differences in how you're perceived in professional settings, like internships or networking events, compared to your male counterparts?
- b. Do you feel that gender bias might impact your career trajectory after graduation?

**Looking Forward:**

**8. Solutions and Support:**

- a. What changes would you like to see at FIU to better support women in STEM?
- b. Do you think initiatives like the JEDI program, or others at FIU, are effective in addressing gender bias? How could they improve?
- c. What advice would you give to future women entering STEM fields at FIU?

**9. Personal Reflections:**

- a. How do you stay motivated and continue to push forward, despite any gender-related challenges you've faced?
- b. What's your vision for the future of women in STEM at FIU and beyond?

**Closing:**

- Thank the interviewee for their time and insights.
- Offer them the opportunity to share any final thoughts or questions about your research or the interview process.

**Some more follow-up/ extra questions**

- What does change mean to you?
- What measures need to be put in place for the change related to your project to take place?
- Follow up: If the change that you expect does not happen, would you deem your project unsuccessful?
- What are your short term and long-term expectations relating to the change you intend to see for this project?