FYWES- First Year Women Engineering Student Perspectives and Reflections

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Abstract

The United States is experiencing an unprecedented need for engineers. However, the Bureau of Labor Statistics reports that the proportion of women engineering graduates remain stagnant around 20% from 2012 to 2022, although most studies collectively show that women have more multitasking skills, empathy, attention to detail, and bring diverse perspectives and creativity to the workforce. A consensus for this disparity in enrolment is that traditionally, engineering sector is perceived as a male-dominated area. And literature shows that women in engineering feel underrepresented and experience microaggression in the workplace. To understand more about this perception and its associated bias, this study focuses on the first-year women engineering students and attempt to understand their social and academic experiences, challenges they face, and the level of peer and faculty support they receive. Additionally, the study includes historical retention data for the first-year engineering students. The results will consist of survey responses from first-year women engineering students. We believe that this pioneering study will enhance our understanding of factors influencing first-year women engineering students, enabling us to develop targeted strategies that support their academic success, increase retention rates, and ultimately improve graduation outcomes across all engineering majors.

Introduction

The U. S. Bureau of Labor Statistics report (2023), employment in engineering fields is projected to grow faster than the average for other occupations and the current supply of engineering graduates is insufficient to meet the growing demand for engineers. The condition is not different in Europe where the European commission has reported that this shortage of engineering talent could adversely affect technological innovation and competitiveness across the continent. One notable contributing factor for this is the low participation of women in the field [1]. According to the Bureau of Labor Statistics, percentage of graduating women engineers in 2022 was around 20% and there was not much improvement in this over the past decade. Research has identified several factors influencing this underrepresentation of women in engineering, including societal stereotypes portraying engineering as a job suited for only men [2], a lack of visible successful role models [3], microaggressions, gender biases and social isolation from male counterparts [4, Chandler (2017)], work life balance issues and inequitable compensation [1].

Previous studies [5] indicate that women in Science, Technology, Engineering and Mathematics (STEM) education programs often encounter problems such as coping to anxiety caused by negative stereotypes about their group's capability, resulting in higher dropping out rates of women from STEM fields. Women also face a steeper learning curve in first-year courses as they are less likely to have prior exposure to advanced math and physics concepts compared to their male counterparts [6]. Another study that focused on women in computing [7] reported that women students who entered the program because of their strong interest dropped out due to discouragement, insecurity, isolation, intimidation, loss of motivation and confidence and eventually questioned their belonging in sciences and switched to non-engineering and even non-STEM majors. The study also reports that female students in technical disciplines are more

vulnerable to poor teaching, inhospitable teaching environments and unhelpful faculty and are more likely to leave the program during their first year even when their academic performance is comparable with their male counterparts. Studies on female engineering student retention rates reported that irrespective of academic performance women are more likely to leave engineering programs due to lack of community, self-doubt and inadequate support systems [7]. [8] identified that perceptions of STEM from peer support groups, rejection and hostility from male peers are the major reasons for the underrepresentation of women in many STEM fields. Another study [9] found that family plans do not affect female students' attrition from engineering majors. However, the study reported that the lack of professional role confidence in females reduces the chance of persisting in the engineering major and profession.

Despite these challenges, some studies show that appropriate intervention and supportive measures can help to improve retention rates of women students. It can be improved by incorporating several social factors such as warmth, flexibility, more feminine nature of the program and career opportunities to draw more women to engineering [10]. [11], [12] found that fostering a sense of belonging and providing support networks such as women in engineering groups, peer mentoring, female role models and faculty mentors etc. can help with student retention while [4] reported that integrating collaborative and inclusive learning environment can help students address the feelings of isolation. [13] found that women have a higher tendency to endorse communal goals (working with or helping others) than men and consensual stereotypes that STEM careers impede communal goals leads to a disinterest in women towards STEM careers. Therefore, fostering a communal friendly learning and work environment can attract more females to engineering field. [8] discusses about strategies for reducing peer sexism and foster STEM belonging. [13] highlighted the importance of faculty training on addressing implicit bias and promoting inclusive teaching practices, motivation to offer more supportive learning environment for women engineering students.

The literature identifies various reasons for the low female representation in engineering and high dropout rates of female students in this field. Previous research shows that the majority of this student attrition occurs during the first year, making this a critical period for intervention. This paper aims to explore the perspectives and reflections of first-year women engineering students to uncover the gender challenges they face and provide insights to improve women retention and inclusivity in engineering programs along with discussion on how intervention in the first-year engineering program improved student retention rates at University of Arkansas.

The First-Year Engineering Program at the University Studied

University of Arkansas is a land grant public university currently serving around 28,860 undergraduate students. The College of Engineering at University of Arkansas currently houses 3318 students of which 23.4% have identified as female. As mentioned before, significant student attrition happens during the first year, which serves as a critical transition stage for the students. To support the retention and graduation goals of the College of Engineering, a First-Year Engineering Program (FEP) was established in 2007. FEP provides academic and proactive support to all new freshmen entering the College of Engineering. During their first two semesters, students receive modern and pedagogically sound instruction in the introduction to engineering courses offered by FEP while at the same time completing two semesters of

mathematics, science courses based on major selection and math progress, composition I and II, and university core electives. The academic goal is to prepare the new freshman engineering students, regardless of their incoming academic background, for the problem-solving requirements associated with second-year College of Engineering coursework. In addition, FEP works closely with the student success resources such as peer mentoring, academic coaching, advising, career connections, study abroad, and honors college. FEP implements these resources in the introduction to engineering course framework as required material to expose all students to these tools that will help with their academic, personal, and career success.

To assess the effect of the student support programs provided through FEP, first year engineering student retention rates before FEP were compared with the most recent ones available. It was very promising to see that the first-year retention rate in the College of Engineering went up from 62.5% in 2006 to 76.7% in 2023. To provide more detail, Table 1 shows the enrollment and first-year retention numbers for the first-year engineering student cohorts that started in fall 2020 semester to fall 2023 semester with emphasis on female students.

Table 1. Enrollment and First-Year Retention Numbers for First-Year Engineering Cohorts with starting fall semesters 2020 to 2023.

Year	Enrollment in FEP (# of Students)			1st Year Retention at College of Engineering (%)			1st Year Retention at University (%)		
	Total	Female	Male	Total	Female	Male	Total	Female	Male
2020	670	152 (22.7%)	518 (77.3%)	70.9	73.0	70.3	84.2	88.8	82.8
2021	733	165 (22.5%)	568 (77.5%)	72.2	80.0	69.9	82.9	89.1	81.2
2022	836	185 (22.1%)	651 (77.9%)	76.2	77.8	75.7	86.6	89.7	85.7
2023	720	169 (23.5%)	551 (76.5)	76.7	76.9	76.6	85.7	91.7	83.8

Blue column provides the cohort information at the time of enrollment in fall semester. Green columns show the percentage of students that were still in College of Engineering at the beginning of their second fall semester. And the pink columns show the percentage of students that were still enrolled at the University although some have left the College of Engineering. Despite any possible challenges, female first-year engineering students consistently have higher retention rates than male first-year engineering students at the College and the University level. When we expanded our analysis to years 2007 to 2023 (not shown on table), we found out that the average of first-year retention in College of Engineering was 70.0% , (with 73.2% female and 69.1% male), which is comparable to the ratios for the years included in Table 1.

In Fall 2024, the College of Engineering expanded its enrollment reporting to include new Data Science freshmen alongside traditional engineering students. The incoming class comprised 779 freshman engineering students in the First-Year Engineering Program (FEP) and 42 new Data Science freshmen, totaling 821 students. Of this cohort, 203 (24.7%) identified as female, 617 as male, and 1 as non-binary/other. As of the first day of classes in Spring 2025, 713 students from

this group were enrolled in general engineering courses offered by FEP, forming the cohort for this study.

Methods and Project Approach

While it is encouraging to observe that the female students are retained at a higher rate than male students at the college of engineering, our study focuses on the students' perspectives on gender influences. To collect feedback from the first-year engineering students on this subject, a survey has been prepared (see Appendix A.) To encourage participation, students were offered a 50-point assignment bonus for completing the survey. Since we offered bonus, we did not limit the survey to only female students but branched some of the questions to make it more gender relevant. Below are the main questions focused in the First-Year Engineering Students' Perspectives on Gender Influences on Education Survey":

Research Questions

1. Academic Experience: Do female students feel confident in their ability to succeed in engineering courses and do they feel comfortable and included in class activities? Have they ever felt that gender affected how they were treated by peers or professors?
2. Perceptions and Stereotypes: Have female students felt like their gender affected how others perceived their abilities? Have they encountered any gender-related biases in the engineering program?
3. Role Model and Representation: Do female students appreciate having same gender professors? Do they receive adequate support and mentorship? Do they have any female role models?
4. Support and Resources: Have they participated in any women in engineering organizations or events? If so, were they helpful?
5. Challenges, Opportunities, and Future Outlook: Any challenges they might have faced so far specific to being a woman? How difficult is it to balance academic responsibilities with other aspects of life? What do they perceive as the biggest challenges for women in engineering? How about any unique opportunities as a women in engineering?

Since the survey focuses on the perspectives and reflections of first-year engineering students, we administered and collected data during the first week of April, as the students were closer towards the end of the first-year program. Also, based on the feedback from the FEP, conducting a survey towards the end of the program ensures more participation compared to the beginning of the semester.

Results and Discussion

The survey was made available to 705 students enrolled in Introduction to Engineering I and Introduction to Engineering II courses. Of the353 students participated in the survey, 99 participants (28%) identified as woman, 246 participants (70%) identified as man, 5 participants (1%) identified as non-binary, and 3 participants (1%) preferred not to answer. Our results focus

on the responses from the 99 participants that identified as woman. Figure 1 summarizes some other demographic information about the participants.

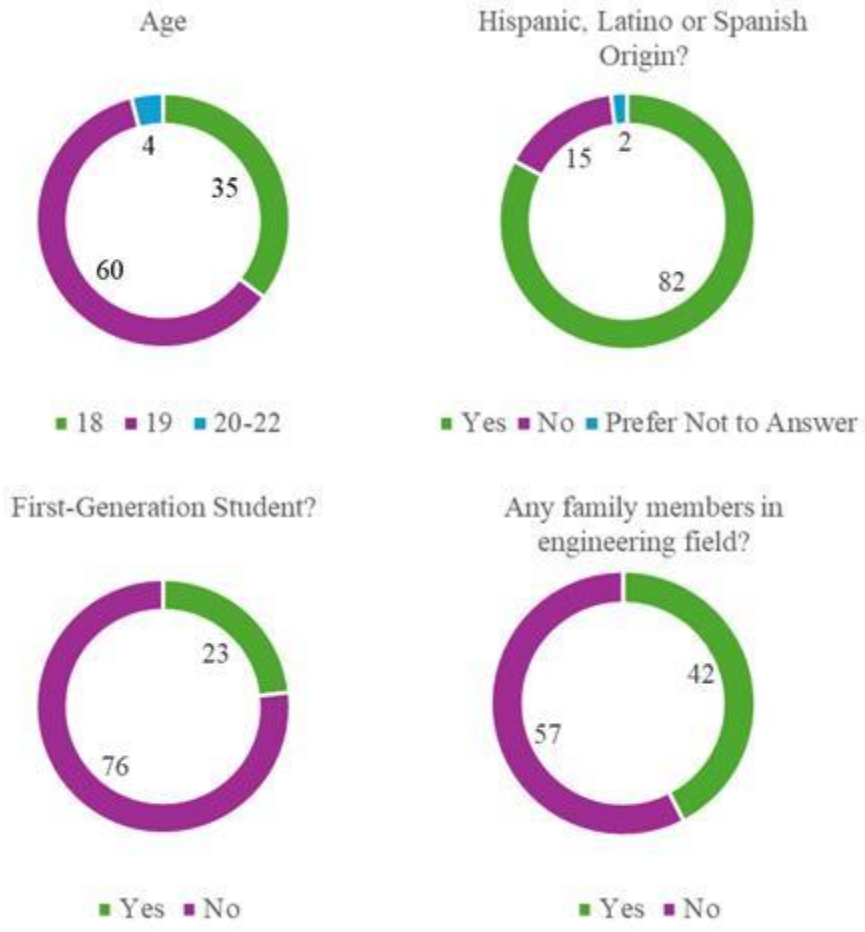

Figure 1. Demographic information of first year engineering women participants in the survey

Perceptions and Stereotypes

To gain insights on perspectives of our 99 first-year engineering women students related to perceptions and stereotypes, we asked them the following questions:

1. Have you encountered any gender-related stereotypes or biases in your engineering program?
2. Do you feel that your gender influences how your peers or instructors perceive your abilities?
3. Have you observed or been subject to comments or behaviors that undermine your abilities or contributions based on your gender?
4. Do you feel that there are equal opportunities for men and women in the engineering program?

5. How do you think being a woman affects your future career prospects in engineering?

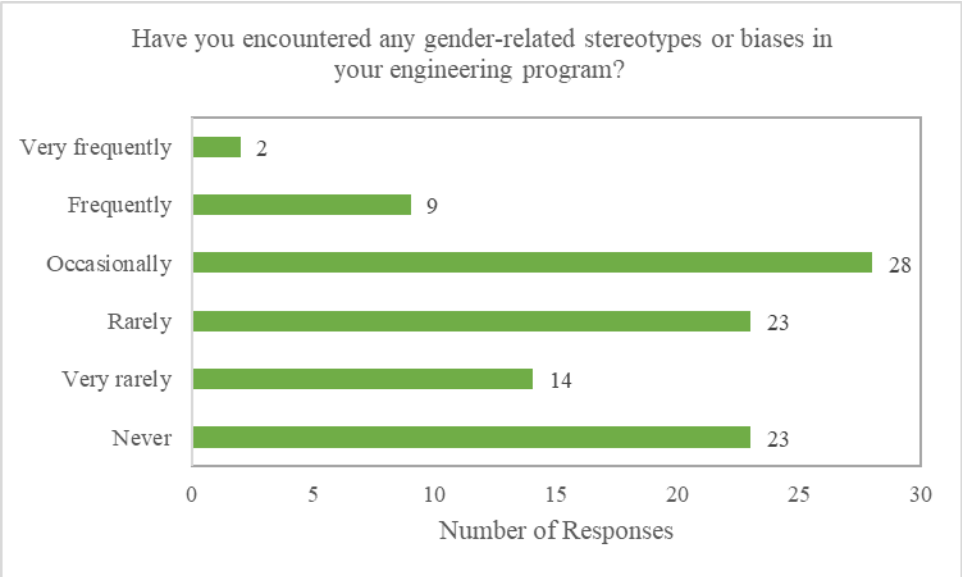

Figure 2. The responses from 99 students to question 1 about encountering gender-related stereotypes or biases in the engineering program.

Figure 2 summarizes the responses for question 1. The survey results indicate that gender-related stereotypes and biases remain a significant issue within engineering programs. Notably, 39% of women engineering students reported encountering such biases at least occasionally. This suggests that a substantial proportion of female students are still facing challenges related to gender perceptions in their academic environment. In contrast, 23% of respondents reported never experiencing gender-related biases, highlighting that while progress may have been made, the problem has not been eliminated.

Related to question 1, later in the survey, we asked the following open-ended question: “Have you encountered any challenges specific to being a woman in the engineering field during your first year of studies? If yes, please explain.” Most students did not report significant gender-specific challenges in their first year. The majority of answers were "No," "Not yet," or similar responses indicating the absence of notable difficulties related to gender. However, a minority of students did mention specific issues, such as feeling underestimated in group projects, experiencing unwanted male attention, being stereotyped, or encountering biased behavior from peers or instructors. Some respondents also noted challenges like having their ideas dismissed or not being taken as seriously as male classmates. This suggests that, while noticeable barriers may not be widespread in the first year, there are still instances of bias and exclusion that warrant attention and continued efforts to create a more inclusive environment.

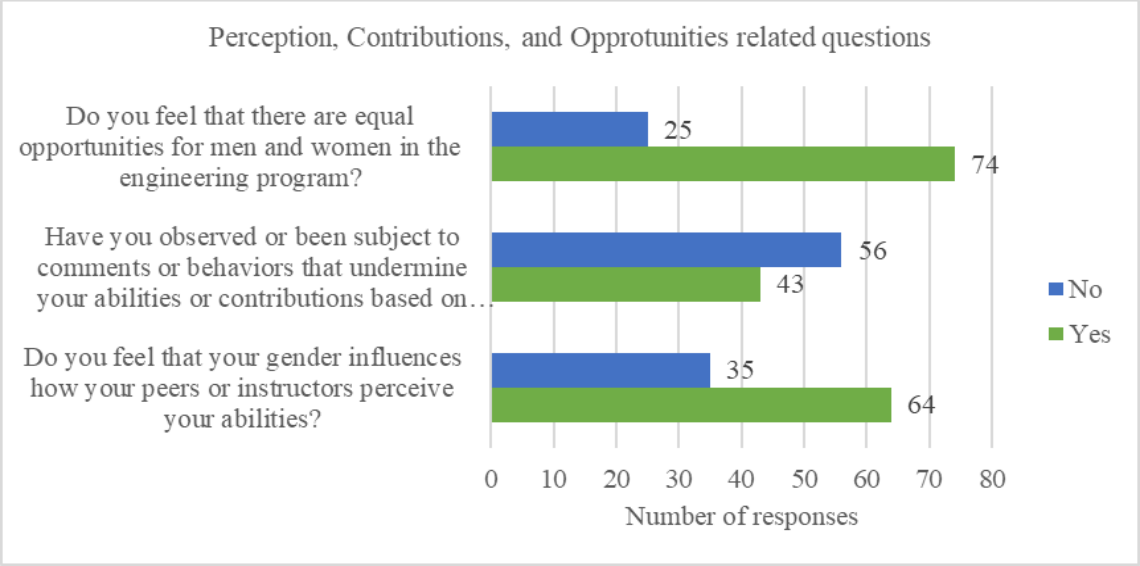

Figure 3. The responses from 99 students to questions 2, 3 and 4.

Figure 3 summarizes the results for questions 2 to 4. A majority of respondents (64 out of 99) feel that their gender influences how their peers or instructors perceive their abilities. This suggests that many women in engineering believe gender plays a role in shaping others' perceptions of their competence, which may impact their confidence and participation in academic settings.

A smaller, but still significant, portion (43 out of 99) reported observing or being subject to comments or behaviors that undermine their abilities or contributions based on gender. While this is less than half, it indicates that gender-based undermining is a persistent issue for a notable minority of students.

Despite the above challenges, a substantial majority (74 out of 99) feel that there are equal opportunities for men and women in their engineering program. This suggests that, overall, most respondents perceive formal structures or policies as equitable, even though many still experience or perceive gender-based biases in day-to-day interactions. Our student perceptions and reflections survey included several open-ended questions to gather more detailed insights from students, rather than limiting them to pre-fixed set of options. Due to the wide range of responses, we used thematic analysis to systematically identify, analyze, and interpret patterns within the data. The results of thematic analysis for the question “How do you think being a woman affects your future career prospects in engineering?” identified the following key recurring themes. The results of the thematic analyses highlighting the ideas reported with high and moderate frequencies are included in Tables 2, 3 and 4.

- Gender bias and discrimination
- Underrepresentation and exclusion
- Unequal treatment or expectations
- Microaggressions and stereotypes
- Positive impact due to diversity initiatives
- Perceived neutrality or no impact

- Duality (both positive and negative aspects)
- Concerns about being hired for gender rather than merit.
- Emotional/psychological impact (e.g., self-doubt, pressure)

Table 2. Thematic analysis of "How do you think being a woman affects your future career prospects in engineering?"

Theme	Description	Frequency
Gender bias/discrimination	Treated unfairly or underestimated due to gender	High
Exclusion/lack of representation	Feeling isolated or excluded from groups/projects	High
Unequal treatment/workload	Feeling the need to over-perform to be taken seriously	High
Diversity opportunities	More job opportunities due to inclusivity efforts	Moderate
Mixed/nuanced perspectives	Both advantages and challenges of being a woman in engineering	Moderate
Emotional/psychological effects	Feelings of self-doubt, pressure, discouragement	Moderate

Table 3. Thematic analysis of "What do you perceive as the biggest challenges for women in engineering?"

Theme	Some Example Phrases/key words	Frequency
Gender Stereotypes & Bias	Being viewed as inadequate	Very High
	Proving you're as capable.	
	Stereotypes in STEM	
Lack of Respect / Being Heard	Not being taken seriously	High
	Being ignored	
	Speaking up in male-dominated groups	
Exclusion / Isolation	Feeling outnumbered	High
	Excluded from group projects	
	Finding each other	
Unequal Opportunities / Pay	Wage gap	Medium-High
	Unequal job opportunities	
	Discriminatory hiring processes	
	Gaining self-esteem	Medium

Confidence & Self-Esteem	Comments impacting confidence	
	People thinking you are not smart enough.	
Harassment & Discrimination	Sexual harassment	Medium
	Discrimination	
	Creepy encounters with mentors	
Support & Belonging	Finding friends	Medium
	Supportive peers	
	Sense of community	
Balancing Expectations	Balancing school and societal roles	Low-Medium
	Not discouraged by male ratio	

Table 4. Thematic analysis of "What advice would you give to the faculty and administration to improve the experiences of women students in the first year of the engineering?"

Theme	Some Example Phrases/key words	Frequency
Balanced group assignments & inclusion	Don't put only one woman in a group of all men More gender balance in projects	High
Equal treatment / Avoid bias	Treat women like you would treat a man	High
	See everyone by how hard they work	
Representation & connection with female mentors	More women professors sharing stories	Medium
	Female peer mentors	
Confidence and empowerment	Teach women to take up space	Medium
	Encourage them to speak out	
Addressing exclusion or sexism seriously	Take complaints seriously	Medium
	Make sure everyone's voice is heard	
Visibility of opportunities	Advertise scholarships for women	Low-Medium
	Promote SWE and other women clubs	

These results highlight that while most women believe opportunities are formally equal, many still feel their gender affects how they are perceived, and a significant minority encounter

undermining behaviors. This points to the need for ongoing efforts to address both overt and subtle forms of gender bias within engineering programs.

Support and Resources

When asked whether there is a need for specific resources or support systems tailored to address gender-related challenges within engineering departments, 64 out of 99 participants responded "Yes," indicating a strong perceived need for targeted support. In contrast, 35 participants felt such resources were unnecessary, suggesting that while a majority see value in additional support, a significant minority do not perceive a need.

Regarding awareness and utilization of support programs for women in engineering at the University of Arkansas, responses were mixed. Seventeen participants reported having used at least one resource, while 40 were aware of available programs but had not yet accessed them. Notably, 42 participants indicated they were unaware of any such resources. These findings highlight both a gap in awareness and an opportunity to increase engagement with existing support systems among women engineering students.

Figure 4 shows a word bubble of responses to “Have you participated in any women in engineering organizations or events? If so, which ones? How helpful were they?”.

Figure 4: Word bubble created from the responses to question related to participation in women in engineering organizations.

Many students have not participated in any such organizations or events, often responding with "No," "Not yet," or similar answers. Among those who have participated, the Society of Women Engineers (SWE) is the most frequently mentioned organization with 14% of participants mentioning it. Some students also referenced involvement in other groups like Phi Sigma Rho or Girls in Tech, but these were less common.
Those who participated in organizations such as SWE generally described their experiences as positive or helpful, noting benefits like networking, mentorship, and a supportive community. Several respondents specifically highlighted that SWE was "helpful" or "really nice," and appreciated the chance to meet peers and access resources tailored to women in engineering. However, a few noted limited involvement or that they had not yet fully engaged with available resources.

Conclusion

Despite ongoing efforts to improve gender diversity in engineering, women continue to be significantly underrepresented in both engineering education and workforce accounting to less

than one fourth. Our study highlights that even with high women retention due to support programs like first year engineering, women still experience challenges related to gender bias, stereotype threat and lack of awareness or engagement with support resources.

The study sheds light onto the perceptions of first year women engineering students. It reveals that although many students believe that opportunities are comparable for both men and women, yet a good number still encounter biases that affect their confidence, academic achievement and perceptions of future career prospects. Inspiringly, organizations like SWE and other gender specific initiatives are viewed as valuable by the survey participants. However, boarder awareness and participation remain limited.

Our study findings highlight the importance of early intervention and support through inclusive teaching practices, peer mentoring, community-building initiatives, and the increased visibility of women role models in engineering. Addressing these factors during the first year of study is critical for promoting a more inclusive environment and improving long-term persistence and success for women in engineering.

The present study looked at the perceptions of first year women engineering students only. We strongly believe it is important to explore female student perceptions beyond the first year to assess the lasting impacts of early interventions on graduation rates, career placement, and professional confidence. This is especially important in certain engineering disciplines, such as Civil engineering that are male dominated in the workplace.

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Appendix A: First-Year Engineering Students' Perspectives on Gender Influences on Education Survey

First-Year Engineering Students' Perspectives on Gender Influences on Education Survey

Principal Researchers:
Lekshmi Sasidharan, Teaching Assistant Professor, Civil Engineering, University of Arkansas
Aysa Galbraith, Teaching Associate Professor, First-Year Engineering Program, University of Arkansas

Welcome to our survey on gender influences in engineering education. Your participation is crucial in helping us understand the diverse experiences and perspectives of students like you.

The purpose of this survey is to:
Gather insights on how gender may influence your educational experience
Identify potential areas for improvement in our engineering program
Contribute to research aimed at creating a more inclusive learning environment

You may participate in this research if you meet all the following criteria:
You are age 18 or older, and
You are in the First-Year Engineering Program at University of Arkansas

What you will be asked to do: Complete a survey to get insights on your experiences as a first-year engineering student. The survey should take approximately 10 minutes to complete.
Risk and Benefits: There are no foreseeable risks or discomforts associate with this study, and participation is completely anonymous. Your involvement will contribute to a better understanding of the perceptions of first-year engineering students, which in turn will be helpful to make improvements to the program in the future. You will get bonus points to participate in the study.
Confidentiality: Your records will be anonymous.
Participation: You are strongly encouraged to participate. However, participation is completely voluntary and won't cost you anything; you will get bonus points this semester for the participation in the survey.

You may also contact the University of Arkansas Research Integrity and compliance office listed below if you have questions about your rights as participant, or to discuss any concerns about, or problems with the research.
Ro Windwalker, CIP
Institutional Review Board Coordinator Research Integrity and Compliance University of Arkansas
105 MLKG Building
Fayetteville AR 72701-1201
479-575-2208
irb@uark.edu

We are expecting around 500 participants in the study. Your participation is voluntary, but your input is invaluable to our research and potential improvements in engineering education. Thank you for your time and contribution to this important study.

Required

This form will record your name, please fill your name.

Consent to Participate in the Study

I have read the above statement and have been able to ask questions and express concerns, which have been satisfactorily responded to by the investigator. I understand the purpose of the study as well as the potential benefits and risks that are involved. I understand that participation is voluntary. I understand that significant new findings developed during this research will be shared with the participant. My completion of the survey indicates my consent for my responses to be used in the research as described. *

I accept to participate
I decline to participate

First, we want to know a little bit about you!

Collecting socio-demographic information helps to enhance the data quality and validity, and ensure inclusivity in representation.

How old are you? *

Are you Hispanic, Latino, or Spanish origin? *

Yes

No

Prefer not to answer

How would you describe yourself? *

American Indian or Alaska Native

Asian

Black or African American

Native Hawaiian or Other Pacific Islander

White

Prefer not to answer

Other

Do you have any siblings? (Enter the number in the box below. Enter 0 if you have no siblings.) *

Are you a first-generation college student? *

Yes

No

Do you have any family members in engineering field? *

Yes

No

Are you a traditional student? *

Traditional student: enroll right after high school and attend full time. Non-traditional student: enroll later in life, attend part time, or have other commitments (family, full-time work, etc.)

Yes

No

What motivated you to pursue an engineering degree? (You can choose more than one.) *

Interest in technology and innovation

Career opportunities

Influence of role model (family)

Influence of role model (teacher, mentor)

Enjoy math and science

Parental expectations

Other

When did you make your decision to study engineering in College? *

I always wanted to be an engineer

During high school

While in workforce after high school

During my first semester at UofA

I'm still not 100% sure

What percentage of the engineering workforce do you believe is comprised of women? *

Less than 10%

10-15%

15-20%

20-25%

25-30%

30-35%

35-40%

40-45%

45-50%

What is your gender identity? *

We are asking about your gender identity as part of this survey because it will allow us to analyze whether there are any gender-based patterns or disparities in educational experiences. Some survey questions may vary based on your response to ensure we capture relevant experiences and perspectives.

Woman

Man

Non-binary

Other

Prefer not to say

**Note: Survey branches after this question:

- Students who chose “woman” for the question above receive the sets of questions with “woman only” in the title. (Note that the “woman only” text was added manually to the survey copy for this paper only; students had the same titles regardless of their response.)
- Students who chose “man”, “non-binary”, “other”, or “prefer not to say” for the question above receive the sets of questions with “chose not woman” in the title. . (Note that the “chose not woman” text was added manually to the survey copy for this paper only; students had the same titles regardless of their response.)

Academic Experience (woman only)

How confident do you feel in your ability to succeed in engineering courses? *

0	1	2	3	4	5	6	7	8	9	10

Not confident — Very confident

Do you feel comfortable and included in class discussions, group projects, and other academic activities? *

0	1	2	3	4	5	6	7	8	9	10

No — All the time

Have you ever felt that your gender affected how you were treated in engineering classes by your fellow students? *

Never
Very rarely

Rarely

Occasionally

Frequently

Very frequently

Have you ever felt that your gender affected how you were treated by faculty or staff? *

Never
Very rarely

Rarely

Occasionally

Frequently

Very frequently

Perceptions and Stereotypes (woman only)

Have you encountered any gender-related stereotypes or biases in your engineering program? *

Never
Very rarely

Rarely

Occasionally

Frequently

Very frequently

Do you feel that your gender influences how your peers or instructors perceive your abilities? *

Yes

No

Have you observed or been subject to comments or behaviors that undermine your abilities or contributions based on your gender? *

Yes

No

Do you feel that there are equal opportunities for men and women in the engineering program? *

Yes

No

How do you think being a woman affects your future career prospects in engineering? *

Role Model and Representation (woman only)

How important is it to you to have woman professors or teaching assistants in your engineering courses? *

0	1	2	3	4	5	6	7	8	9	10

Not important at all Extremely important

Have you received adequate support and mentorship as a woman in the engineering program?

Yes

No

Have you encountered any challenges specific to being a woman in the engineering field during your first year of studies? If yes, please explain. *

Do you have any woman role models in the engineering field? If so, how have they influenced you? *

Support and Resources (woman only)

Do you believe there is a need for specific resources or support systems tailored to address gender-related challenges within the engineering departments? *

Yes

No

Are you aware of any support programs or resources specifically for women in engineering at University of Arkansas?

Yes, and I have used at least one

resource.

Yes, but I haven't used any resources yet.

No

Have you participated in any women in engineering organizations or events? If so, which ones? How helpful were they? *

Challenges, Opportunities, and Future Outlook (woman only)

How difficult is it to balance your academic responsibilities with other aspects of your life, such as extracurricular activities, work, or personal obligations? *

0	1	2	3	4	5	6	7	8	9	10

Not difficult — Extremely difficult

What do you perceive as the biggest challenges for women in engineering? *

Have you experienced any unique opportunities as a woman in engineering? *

What advice would you give to the faculty and administration to improve the experiences of women students in the first year of the engineering? *

Academic Experiences (chose not woman)

How confident do you feel in your ability to succeed in engineering courses? *

0	1	2	3	4	5	6	7	8	9	10

Not confident Very confident

Do you feel comfortable and included in class discussions, group projects, and other academic activities? *

0	1	2	3	4	5	6	7	8	9	10

No All the time

Have you ever felt that your gender affected how you were treated in engineering classes by your fellow students? *

Never
Very rarely

Rarely

Occasionally

Frequently

Very frequently

Have you ever felt that your gender affected how you were treated by faculty or staff? *

Never
Very rarely

Rarely

Occasionally

Frequently

Very frequently

Perceptions and Stereotypes (chose not woman)

Have you encountered any gender-related stereotypes or biases in your engineering program? *

Never
Very rarely

Rarely

Occasionally

Frequently

Very frequently

Do you feel that your gender influences how your peers or instructors perceive your abilities? *

Yes

No

Have you observed or been subject to comments or behaviors that undermine your abilities or contributions based on your gender? *

Yes

No

Do you feel that there are equal opportunities for all genders in the engineering program? *

Yes

No

How do you think your gender affects your future career prospects in engineering? *

Role Model and Representation (chose not woman)

How important is it to you to have professors or teaching assistants same gender as you in your engineering courses? *

0	1	2	3	4	5	6	7	8	9	10

Not important at all — Extremely important

Have you received adequate support and mentorship in the engineering program?

Yes

No

Have you encountered any challenges specific to your gender in the engineering field during your first year of studies? If yes, please explain. *

Do you have any role models in the engineering field? If so, how have they influenced you? *

Support and Resources (chose not woman)

Do you believe there is a need for specific resources or support systems tailored to address gender-related challenges within the engineering departments? *

Yes

No

Challenges, Opportunities, and Future Outlook (chose not woman)

How difficult is it to balance your academic responsibilities with other aspects of your life, such as extracurricular activities, work, or personal obligations? *

0	1	2	3	4	5	6	7	8	9	10

Not difficult — Extremely difficult

What advice would you give to the faculty and administration to improve the experiences of students in the first year of engineering? *