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Supporting Undergraduate Engineering Student Mental Health

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SUPPORTING UNDERGRADUATE ENGINEERING STUDENT MENTAL HEALTH (WORKSHOP)

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Conference Key Areas*: Equality Diversity and Inclusion in Engineering Education, Recruitment and Retention of Engineering Students*

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1 MOTIVATION, BACKGROUND AND RATIONALE

The culture within engineering education can lead to the normalization of stress, which has the potential to impact student mental health. In particular, there have been reports on the perceived stress of the engineering education environment (Prakash and Bajpai 2015, Balaji et al 2019, Jensen and Cross 2021, Wilson et al 2022), perceived difficulty of an engineering degree (Engineering UK 2020) and an increasing body of quantitative and qualitative evidence highlighting mental health and wellbeing challenges experienced by engineering students. Further, engineering students are resistant to seeking professional help for their mental health (Lipson et al 2016, Wilson et al 2020, Wright et al 2021, Beddoes and Danowitz 2022, Jensen et al 2023), which has been proven reduce the potential for progression to more chronic or severe mental health disorders (Mitchel, McMillan and Hagan 2017). Investigating the mental health and wellbeing of engineering students specifically is important due to a global lack of engineers and increased need for engineering graduates (Pozniak 2017, Williamson 2018, Engineering X 2020). While the reasons for this skills deficit are not clear, calls for education reform to address the problem have been growing for some time (Graham 2012, Poole, Khan and Agnew 2017, Das, Keinke and Pistrui 2020, Phillips 2022) Further, more engineers are leaving the sector internationally due to burnout (Phillips 2022) and this can differentially impact female engineering professionals (Ronen and Malach Pines 2008). Concerns are also being raised about the mental health of engineering professionals in the UK (Equal Engineers 2022, Flaig 2022) and beyond (Sheedy 2022, Wilson and Goldberg 2023).

The literature on mental health in engineering highlights the importance of shifting the narrative around prioritization of mental health in engineering. Through this workshop, we aim to provide engineering faculty with the tools to normalize discussions around mental health in the classroom and promote a culture of wellness in engineering. Through creating a culture that is supportive of mental health in the engineering classroom, we aim to create an engineering workforce that understands the importance of prioritization of mental health as they progress through their careers.

2 WORKSHOP DESIGN

The workshop was designed to enable participants to be able to:

1. Define the current state of research on mental health in engineering;

2. Reach out to and support students who might be struggling;

3. Identify research-based strategies for integrating good mental health into the classroom.

2.1 Structure

There were three high level aims of the workshop, which were aligned with the learning outcomes. The major focus of the workshop was to provide faculty with tangible and

research-based ideas to integrate mental health and wellness into the classroom (Tait, Hancock and Bissett 2022, Wilson and Jensen 2023).

Introduction (10 minutes)

The introduction highlighted literature on how mental health concerns can differentially impact students based on their social identity. It also highlighted that engineering students in distress are less likely to seek help for their mental health than students of other disciplines. The introduction provided participants with current knowledge on the state of mental health in engineering internationally.

Facilitated discussion (10 minutes)

There was a facilitated with delegates on their experiences and concerns associated with mental health in engineering. We then asked delegates to discuss common engineering student stressors and then they were asked which stressors impact all students vs. which stressors might differentially impact students within their courses.

Key mental health strategies (10 minutes)

We highlighted key research-based strategies for reaching out to students who might be struggling and encourage faculty to become referral agents for students in mental health distress (Wright et al. 2023, Wilson and Goldberg 2023). Examples included:

1. Distributing student check-ins
2. Modeling wellness in the classroom;
3. Creating a supportive community;
4. Integrating wellness activities (mindfulness, breathing, etc.);
5. Providing students with resources;
6. Creating syllabus statements.

We integrated a breathing exercise into the workshop to allow delegates to see the influence on the classroom environment.

Facilitated discussion (10 minutes)

We facilitated a discussion with delegates on challenges and opportunities with integrating mental health and wellness into their own engineering classroom. This was with the intention of enabling and informing post-workshop reflection on their own practices and to help them identify where they could enhance the culture of their classroom given that there will be different practices in different institutions.

Guidelines for wellness in the classroom (10 minutes)

In addition to strategies for integrating and modeling wellness in the classroom, we provided guidelines for creating an inclusive classroom environment through integrating flexibility and accommodations into the course structure.

Toolkit overview and workshop washup (10 minutes)

The final part of the session introduced the toolkit we have provided to participants and provided a final summary of topics covered in the workshop.

3 RESULTS OF THE WORKSHOP

Throughout the workshop, a frank and open discussion was facilitated on the challenges facing engineering faculty and students. Key areas of concern related to student mental health included: 1) it was unclear how to identify and provide students with the appropriate form of help, 2) the number of steps required to access help, 3) students being hesitant to ask for support due to the faculty-student relationship, and 4) students waiting until they reach a crisis to access support (Figure 1).

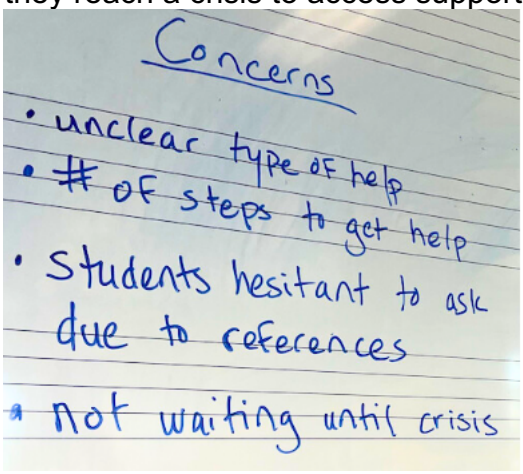

Figure 1. Participant concerns related to student mental health and wellness

We then had a discussion around stressors in engineering and how those stressors might differentially impact students within their classroom (Figure 2). Stressors that were identified as impacting all students include: homework, overlapping exam schedules, fear of failing, grades, pre-requisite sequences and faculty interactions. Stressors that were identified as potentially differentially impact students include: finances and course overload. Other stressors that were identified include: administration and policies, competition, high expectations, group projects, power structures, culture, climate change, careers, priorities, life/family, not belonging and connecting with faculty.

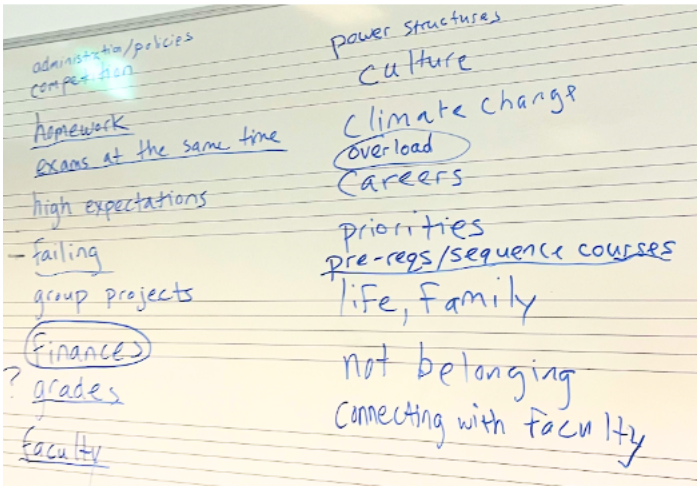

Figure 2. Identified engineering student stressors. Stressors that are underlined were identified by participants as impacting all engineering students. Stressors that are circled were identified by participants as only impacting some students in engineering.

Finally, we talked to faculty about strategies that they use within their classroom to support mental health and wellness (Figure 3). Key strategies that were implemented by those in the room included: 1) identifying and reaching out to students that are not present within class or might be showing other signs of mental health distress, 2) putting up posters around the engineering space to encourage prioritization of mental health and highlight mental health resources and 3) making yourself known as someone that students can reach out to if they are in need of support.

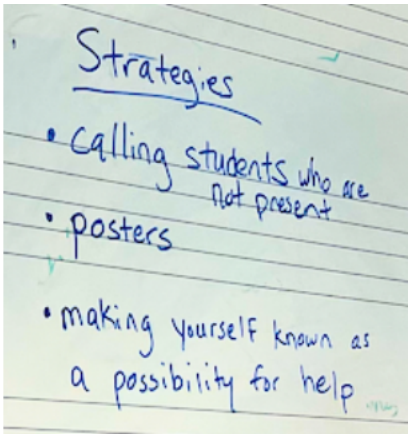

Figure 3. Strategies that participants use to support student mental health and wellness

4 CONCLUSIONS

The workshop aimed to fill a gap in faculty knowledge and increase confidence in their ability to act as referral agents for students in mental health distress and was tailored for faculty and administrators in engineering who would like to create an engineering environment that is supportive of student mental health. Delegates will left with a toolkit of research-based strategies for developing a classroom environment that promotes prioritization of mental health and wellness. The toolkit included a mental health advocate worksheet that they can utilize to document both institutional and regional mental health resources. Additionally, this worksheet provides guidance for

recognizing students who are struggling with their mental health, as well examples for how to reach out to students of concern. Delegates will be able to modify the toolkit to be appropriate to their institution.Opportunities for collaboration and further research and/or interventions to support engineering student mental health and wellbeing were identified. Further, workshop participants recognized that institutional support is needed to support engineering faculty to empower them to make impactful change.

5 SIGNIFICANCE FOR ENGINEERING EDUCATION

There has been an increase in the prevalence of mental health concerns in students globally. Because of the role that faculty play in student's lives, they are often in a position to recognize signs of mental health distress (Kalkbrenner 2016). Further, students often approach faculty as a source of support when they are struggling. Despite this, studies have shown that faculty do not feel prepared to support their students who are struggling with their mental health (Albright and Schwartz 2017, Wilson, Hammer and Usher 2021). Therefore, this workshop aims to fill a gap in faculty knowledge and increase confidence in their ability to act as referral agents for students in mental health distress. Further, because the current engineering training environment contributes to what has been called a culture of stress within engineering (Jensen and Cross 2021), we aim to provide faculty with a toolkit to change this narrative and create a training environment that is more supportive of student well-being.

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