

## **What do engineering faculty consider when choosing to adopt an equity-focused social belonging intervention in their courses?**

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# **What do engineering faculty consider when choosing to adopt an equity-focused social belonging intervention in their courses?**

## **Abstract**

This full empirical research paper explores factors influencing engineering faculty's decisions to implement an equity-focused intervention in their courses. Despite concerted efforts, women, as well as Black, Latiné, and Indigenous (BLI) students remain underrepresented in engineering. Transforming course environments through social belonging interventions has been shown to improve the performance and retention of these students. Faculty investment in this process is critical; however, little is known about the factors that drive or dissuade faculty willingness to implement equity-focused interventions or the role of faculty identities in this process. We address this gap via a convergent parallel mixed-methods design examining the perceptions of 10 engineering faculty from two different institutions who have implemented an equity-focused social belonging intervention. Quantitative data comes from a pre-survey that interested faculty completed before beginning work with the research team and qualitative data from a post-intervention interview. The quantitative data was analyzed descriptively and the qualitative data inductively. The findings from the study offer nuanced insights into the motivations and challenges faculty face in adopting equity-focused interventions and highlight potential strategies to support faculty's equity-focused development.

## **Introduction**

While there have been considerable increases in equitable participation and completion rates among historically marginalized students in engineering over the last few decades [1], [2], [3], [4], the generation of fully inclusive environments has been impeded by longstanding cultural and social forms [5] within the discipline [6]. This results in hostile educational environments [7], [8], [9], [10] and disproportionate attrition [11], [12], [13] which maintains inequity, intensifies structural underrepresentation, and threatens national priorities [4], [14].

Engineering faculty play a central role in defining and reproducing disciplinary culture [15], [16]. However, faculty engagement in equity-focused cultural change mechanisms faces challenges like institutional barriers and lack of resources [17]. One promising method of engaging faculty in equity-focused disciplinary transformation is through brief, low-cost, course-embedded interventions. Such interventions have demonstrated marked success in closing equity gaps [18], [19]. Developing a firm understanding of how faculty can be motivated to engage in such equity-focused efforts is therefore critical to promoting disciplinary cultural shifts. Knowledge regarding faculty motivations and perceived barriers to engaging in these efforts is limited. Therefore, our research question is: What do engineering faculty consider when choosing to adopt an equity-focused social belonging intervention in their courses?

## **Literature Review**

### ***Inequities in Undergraduate Engineering Environments***

Women, and BLI students are underrepresented in engineering [1] due in part to disciplinary resistance to adopting culturally sustaining curricular and instructional practices [6], classroom

microaggressions [9], [10], [20], and racialized or gendered stereotypes [9], [21] that reinforce a feeling of “unbelonging” in engineering spaces [21]. This is compounded by a frequent lack of alignment between student sociocultural beliefs and values and those embedded in STEM instruction that often contributes to departure from the field [22], [23]. Social belonging interventions have been demonstrated to be effective for improving marginalized student performance and retention [2] and improving long-term success [24].

### ***Barriers to Equity Efforts***

Several systemic barriers impede the adoption of equity-focused practices and interventions in engineering spaces. Notably, the engineering disciplinary culture reinforces an apolitical, objective, and meritocratic perspective that frequently discounts the influences of sociohistorical forces, cultural (in)compatibility with engineering culture, and differential opportunity for success [25]. Consequently, students receive conflicting messages regarding who can be an engineer [26]. While faculty and students may often believe that ‘anyone can be an engineer’, they simultaneously espouse an uncomplicated perspective of meritocratic performance that fails to account for differential access to and congruence with engineering knowledge, or for the different educational environments experienced by students of differing backgrounds. Due to these cultural norms, attempts to integrate diverse social and historical perspectives into engineering curricula are often met with challenge and a lack of valorization [27] - despite evidence that culturally engaging curricula [28] and support for students with nonstandard engineering backgrounds [29], [30] have been demonstrated to positively alter engineering cultures and environments.

Faculty operating within the predominant engineering culture also face significant challenges to the adoption of equity-focused pedagogical reform and interventions. While faculty-student interaction powerfully fosters student engagement [6], [31] and belonging [32], and increases faculty satisfaction [33], individual perceptions of responsibility for creating equitable course environments vary individually, as does competence with the necessary equity-focused skills to generate such environments. Notably, engineering faculty of color are often motivated to use inclusivity best practices due to past experiences of discrimination in STEM classrooms [34] - a factor that is not universal among faculty.

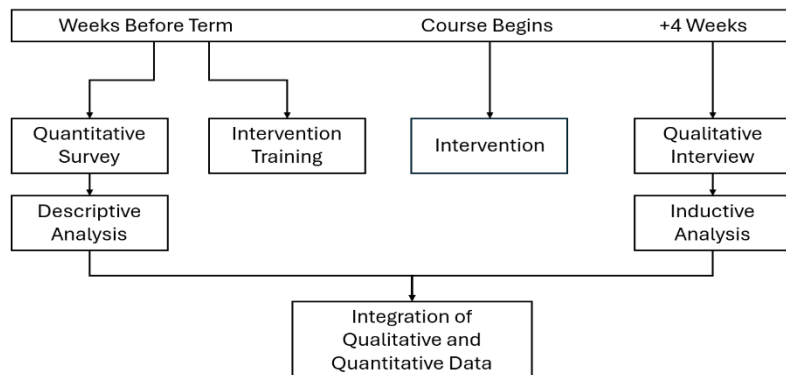
Even faculty who feel it is their responsibility to adopt equity practices may refrain from doing so due to potential interpersonal and career impacts. For example, engineering faculty often express concern about discussing race in the classroom [35] due to a lack of self-efficacy and uncertainty regarding their ability to authentically connect with students. Despite these concerns, research demonstrates that explicitly discussing race as a factor in engineering experiences and pathways is crucial for creating change within the discipline and validating the experiences of students of color [36], [37], [32]. Adopting race-evasive approaches to engineering teaching and mentoring can be harmful to students of color [38], [39], further accentuating the necessity of enhancing faculty self-efficacy for inclusive change. A final concern regards the difficult and often inequitably distributed expectations of engagement in equity work among faculty. Supporting women engineers and BLI students often falls to women and BLI faculty [28], [40] who, due to their underrepresentation in the field [1] can become seriously overburdened with equity-focused service expectations [41].

## Positionality

As a research team, we brought our personal and collective experiences, perspectives, and understanding of the importance of enhancing diversity, equity, inclusion, and justice in engineering to this study. Our team includes individuals who identify as Black, Latiné, and white as well as women, men, and non-binary. Some of us have completed PhDs and others master's degrees. We are all social scientists, some of us have expertise in the study of faculty, some focus on students, and some of us were undergraduate science and engineering students. Together we engaged in reflexivity throughout the research process. Reflecting on our identities, experiences, and areas of expertise helped us to collectively develop this study.

## Methodology

This study employed a convergent parallel mixed-methods design [42] (see Figure 1 for an overview of the study). Consistent with this design the results from the quantitative and qualitative portions of the study were merged at a singular point of integration in the final phase of the study. The combined results triangulate core findings and patterns in addressing the research question with greater trustworthiness, nuance, and reliability than possible with either method alone.



**Figure 1: Research Design**

Participating faculty came from two institutional contexts, one in the Midwest and the other in the Mid-Atlantic region, both are research universities. The courses these faculty teach were purposely selected by the larger research team from which this data is drawn due to known equity-gaps in student outcomes. Faculty who taught these courses in either the Spring 2023, Fall 2023, or Spring 2024 terms were invited to a session in which these equity-gaps were discussed, and an overview of the social-belonging intervention was provided. They were then invited to complete a brief survey if they were interested in implementing the intervention in the course the research team had selected for the intervention. During this period 10 different faculty from these two institutions participated in this study. In addition to the initial survey these faculty also completed a one-on-one in-depth semi-structured interview that took place four weeks after they implemented the intervention. The interviews were conducted either in person or over video-conferencing software. All interviews lasted between 40-70 minutes.

These faculty were in various academic ranks including two continuing lecturers, three visiting assistant professors, two assistant professors, two associate professors, and one full professor.

Sixty percent of the participating faculty were men. They had teaching experience ranging from 4-30 years and averaged 11.7 years. All but three of the faculty were in the engineering education discipline and all but two of the faculty were white (see Table 1 for other participant characteristics). To protect participant confidentiality limited identifying characteristics are provided in the table and all participants were assigned pseudonyms.

**Table 1: Participant Characteristics**

| <b>Pseudonym</b> | <b>Institution</b> | <b>Gender</b> |
|------------------|--------------------|---------------|
| Brian            | Mid-Atlantic U.    | Man           |
| Bridget          | Mid-Atlantic U.    | Woman         |
| Daphne           | Midwestern U.      | Woman         |
| Lawrence         | Midwestern U.      | Man           |
| Lewis            | Midwestern U.      | Man           |
| Matt             | Mid-Atlantic U.    | Man           |
| Miles            | Midwestern U.      | Man           |
| Shana            | Midwestern U.      | Woman         |
| Whitney          | Midwestern U.      | Woman         |
| Zachary          | Midwestern U.      | Man           |

### **Social Belonging Intervention**

These faculty employed a brief social belonging intervention during the first week of their engineering courses (see [43] for a full description of the intervention). To prepare to successfully lead the intervention and understand the mechanism employed in the intervention they participated in three training modules (two were brief asynchronous sessions and one was longer synchronous online training with the instructional team) before implementing the intervention in their course. The intervention utilized the framework of well-tested, effective interventions and was designed to close equity gaps in academic outcomes for women and BLI students [24]. Each course instructor delivered intervention during the first or second week of classes, usually during the second session of the class. The intervention activities all reinforce a central message: that struggle is normal, and surmountable with time and continued effort [43].

### **Quantitative Instrument and Analysis**

Beyond confirming faculty interest in implementing the intervention in the course the research team had identified as a target for the intervention and collecting demographic information, the short-survey faculty completed prior to attending intervention training included questions designed to assess how faculty view their responsibilities in supporting student success, their willingness to implement inclusive practices in their classroom despite the loss of course time devoted to content instruction, and their self-efficacy for implementing equity praxis within their classroom.

Within the responsibility domain of the survey there were two item banks. The first item set used the stem, “When students are struggling in my class I” followed by items like: “Feel a personal responsibility to help them succeed.” The second item set used the stem, “When teaching my courses I” and included items like “Focus on supporting marginalized groups.” For these item sets a four-point Likert-type frequency response options were provided ranging from “Never”, to

“Sometimes”, to “Often”, to “Always”. These responses were graded numerically 1-4 (respectively). In the inclusive practices domain, there were also two item sets. The first item set used the stem “How willing are you to include an activity in your classes that”. An example item is: “Increases social belonging for all students?”. The second set used the stem: “How willing are you to” followed by items like: “Incorporate something new in your classes, given the constraints of your curriculum?” Response options for these item sets included “Not at all,” “Slightly,” “Very,” and “Extremely” which were coded 1-4 respectively. In the equity practice self-efficacy domain there was one item set. The stem was “I feel prepared to”, and the index included items such as “Engage in class discussions on topics related to race, ethnicity, or gender”. Response options used in this item set were a 4-point Likert-type agreement scale without a neutral option. Full scales and the descriptive characteristics of all items are reported in Appendix A.

One percent of data was missing, which was not replaced or imputed, and no outliers were detected. Maximum kurtosis was 8.1 and skewness was 2.7. Restrictions in range were observable on many variables. Due to the small sample size and strongly non-normal multivariate distributions, the data was analyzed descriptively rather than inferentially.

## **Quantitative Results**

Faculty exhibited the strongest sense of responsibility for ensuring that all students can succeed ( $M = 3.9$ ) and feel like they belong ( $M = 3.9$ ), demonstrating motivating concern for both academic and psychosocial outcomes. They also endorsed strong responsibility for enforcing classroom policies equally across all students ( $M = 3.7$ ), indicating a motivating concern for fairness in student experiences; however, they also strongly endorsed responsibility for focusing on supporting marginalized groups ( $M = 3.5$ ) suggesting a perspective that the two goals are fully compatible. Faculty felt strong personal responsibility to help struggling students succeed ( $M = 3.6$ ), and to do so through taking time to understand their challenges ( $M = 3.5$ ) and providing them with additional feedback ( $M = 3.5$ ). These suggest that equity measures that reliably promote academic achievement for low-performing students, that strengthens communication between them and faculty, and that generate an informed and empathetic stance on the part of faculty may be more attractive. Faculty weakly endorsed the perspective that nothing more can be done for struggling students ( $M = 1.4$ ) with all endorsing ‘Disagree’ or ‘Strongly disagree’. Further, they did not feel students were unprepared ( $M = 2.0$ ) with all participants endorsing ‘Disagree’; this may indicate openness to interventions to help these students and a generally asset-based perspective on student performance. Finally, faculty moderately endorsed ( $M = 2.4$ ) the perspective that students had equal opportunities to succeed in class. Though the sample size was small, faculty endorsed the full range of responses from ‘Strongly disagree’ to ‘Strongly agree’, suggesting a broad range of perspectives on the degree of inequity students face.

Faculty inclusive teaching willingness was universally high, with means of 3.7-3.8, small standard deviations, and frequent restrictions in range to the high end of the scale. These data suggest faculty are neither more nor less motivated by the prospect of helping all students learn versus just minoritized students or enhancing student performance generally versus specifically closing student achievement gaps. Faculty generally felt strong self-efficacy for equity praxis with individual item means ranging from 3.2 to 3.6. However, some faculty members disagreed

or strongly disagreed with every item, indicating a broad range of reported self-efficacy. Faculty felt least able to engage in class discussions on topics related to race, ethnicity, or gender ( $M = 3.2$ ), and to perform activities that disrupted their extant lesson plans like stopping class to address emergent issues of student belonging ( $M = 3.3$ ) or deviating from planned class content to discuss current topics affecting students' lives ( $M = 3.3$ ). Mild trepidation was also expressed at the prospect of using student feedback to make course policy changes ( $M = 3.3$ ). These patterns suggest that mild uncertainty about one's ability to perform these actions do not deeply impede faculty's decisions to take up equity-focused interventions. Faculty felt the most confidence ( $M = 3.6$ ) in their ability to use student feedback to make course content changes, to be genuine with students, and to help them learn to work inclusively during group projects. This pattern may indicate a willingness to enact vulnerability and alter course learning material and interactional patterns.

### **Qualitative Instrument and Analysis**

The interview protocol was semi-structured though developed with elements of conversation interviewing in mind to allow for each interview conversation to take its own path through back-and-forth interactions as mutual understanding was built through clarification and follow-up [44]. The protocol was designed in part to elicit insights into the factors these faculty considered when choosing to implement an equity-focused social belonging intervention in their classroom. The data were analyzed via an inductive approach which allowed the research team to work with the data free from any pre-established ideas or concepts [45]. Each transcript was read and analyzed independently by at least two team members who had previously been trained in common coding practices using a single participant transcript. In accordance with Saldaña's recommendations [46], team members first read through the full transcripts to obtain a broad grasp of the data. Following this, each team member independently wrote analytical memos focusing on the faculty's perspectives and insights. In the memos, research team members recorded their interpretations of the data and initial codes related to the research question. Subsequently, each researcher employed thematic analysis, which permitted the identification of patterns within the data and memos. Next, the researchers discussed their memos and initial codes, refining, grouping, and categorizing them to develop themes and subthemes. Discrepancies in coding and interpretation were resolved via negotiated meaning-making and commonalities were enriched through multiperspectival interpretation, resulting in the triangulation of central findings [47]. The codes were further refined and interpreted considering the study's purpose, resulting in robust qualitative assertions.

### **Qualitative Findings**

Four themes emerged from the data: the influence of faculty backgrounds and experiences, the importance of data in framing the potential efficacy of intervention adoption, the ease with which the intervention could be incorporated into the course structure, and the potential and realized effects of this equity work on improving student engagement. Below we summarize these themes and in Table 2 we provide illustrative example quotes.

### ***Theme 1: Engineering Faculty Backgrounds Influence the Implementation of Student-Focused Practices***

Many faculty participants' challenges and struggles as engineering students helped them embrace the implementation of equity-based interventions in their first-year courses. In interviews, faculty members reflected on their experiences as college students trying to find their place in engineering. Most expressed disappointment that such an intervention was not available to them as students. They recalled times when they felt they did not belong, were uncomfortable, or felt out of place due to course content, negative behavior by faculty, ineffective study habits, and the general struggles of being a student in a STEM discipline.

Specifically, the women faculty participants discussed how their gender identities often played a role in their mental/emotional fatigue experiences in the engineering classroom and department. Such environments often create barriers and complexities that women, individuals of color, and first-generation students typically find difficult to navigate [48], [49], [50], [51]. For others, it was the lack of empathy and compassion they often felt from their faculty. Participants described professors as often being unapproachable and engagement challenging. Several participants mentioned that they often felt unable to ask for help or were unsure of where to turn to establish effective ways to succeed as engineering students in undergraduate and graduate school.

After implementing the intervention faculty realized the importance of conveying to students that transitioning to college and pursuing an engineering major is often demanding. The power of sharing stories of past students, as well as their own struggles and how they overcame them, was powerful for the faculty participants. The intervention assisted in informing students that everyone faces challenges, and that even highly successful faculty members were not exempt from struggle. The intervention humanized the faculty and allowed students to envision future engineering success. Through the intervention, faculty saw an opportunity to address student insecurities and isolation. Faculty members believed implementing the intervention in their classrooms would help engineering students feel included and foster interpersonal support networks, thus contributing to student retention. This finding spotlights the faculty's reflections on their own experiences and lack of belonging and informs their decision to adopt the intervention.

**Table 2: Qualitative Insights into Engineering Faculty's Adoption of Equity-Based Interventions**

| <b>Factors</b>             | <b>Representative Quotations</b>                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Faculty Backgrounds</b> | I struggled a lot in my engineering curriculum. I really struggled with getting support from faculty members. When I did have questions or needed help with things, I always felt like...nobody really took me seriously...when I would go to office hours...I have a distinct memory of going to my professor and him just essentially laughing.... Those experiences really informed my approach to how I taught...I really struggled with my own personal | The practice I have is at least making everyone feel belong. I let them know that it's okay to struggle. As I said, I typically pull up my transcript in the beginning of the semester. I say, it's okay to struggle. I say, here's a whole bunch of Fs and Ws and withdrawals in my transcript. That's right. You guys can get through it. I'm like, I'm here to make sure you guys don't have these things. – Zachary |

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|                                     |                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                             |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                     | <p>identity as an engineer. I never felt like I belonged in the space. I felt very alone. – Shana</p>                                                                                                                                                                                         |                                                                                                                                                                                                                                                                             |
| <b>Data Support</b>                 | <p>A lot of it comes down to -can you show a reason why this [intervention] is needed and data to prove that this thing will do something and we need to care about that outcome as being important. – Daphne</p>                                                                             | <p>I think having more data to show as people get comfortable with the implementation, to have that “A/B” comparison, I think makes sense to me. – Lewis</p>                                                                                                                |
| <b>Time Commitment</b>              | <p>I think that just that one hour or 50 minutes - what a difference it makes with the students. Just feeling like, okay, here are really concrete examples of where people struggled, but were able to turn it into good and realize that yes, they do absolutely belong here. – Bridget</p> | <p>It's a nice intervention. It's just not going to take a lot of time away from thermodynamics or the electrical circuits class. ...It doesn't take much time...there was still plenty of time to do everything else on that day that we had to get done. – Whitney</p>    |
| <b>Increased Student Engagement</b> | <p>There seemed to be a little bit more of a connection between myself and my students. I normally have a pretty good connection...but this semester, there's more students who initiate that contact after class or even into the class. – Miles</p>                                         | <p>[A Latinx student and I] were talking for a while, and we sat down and he said that he felt more comfortable talking to me as an advisor after [the intervention] as well. He also said that he was telling his other classmates, “You should go talk to him.” – Ken</p> |

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## ***Theme 2: Leveraging Data to Encourage Faculty Adoption Course-Based Interventions***

As discussed earlier, during study recruitment, faculty were shown data from past studies of the intervention and its effects in addressing equity gaps in student outcomes. They were also shown equity gaps in standardized GPA in the targeted course they were teaching. This evidence gave them insight into the benefits for themselves and their students.

Faculty expressed that they were convinced by the data and expressed a strong belief in its potential to persuade their colleagues. They maintained that data highlighting the importance of the intervention could help instructors appreciate the value of incorporating such activities and discussions in their classrooms. Presenting evidence to potential new faculty participants about the benefits of normalizing academic struggles, creating pathways for asking for help, and fostering a sense of belonging, could lead to more students receiving the intervention. Sharing data that shows how a minor adjustment in the classroom can lead to improvements in student outcomes was particularly relevant for faculty.

## ***Theme 3: Course Time and the Delivery of Engineering Content Remains Unaffected by Intervention Implementation***

Despite the willingness of these faculty to implement the intervention, they expressed that they had concerns regarding time constraints, the difficulty of merging the intervention with extant course structures, balancing course demands, and ensuring effective execution. Several faculty reported they worried that the intervention timing might compromise content delivery, or

instructional time. However, after intervention implementation, these faculty noted it did not significantly disrupt the course schedule. In fact, faculty reiterated their appreciation for the intervention's effectiveness without significantly reducing content delivery. Overall, faculty generally shared that implementing the intervention was easy and seemed beneficial for students. Some faculty mentioned that the training provided by the research team simplified implementation. These findings highlight that with proper preparatory training and resources, faculty can implement new teaching practices confidently and effectively without disrupting the delivery of course content.

#### ***Theme 4: Equity-Based Interventions Increased First-Year Engineering Student Engagement***

Student engagement in engineering courses can be challenging. However, following the implementation of the equity-based intervention in their engineering classrooms, participating faculty identified increases in student engagement and improvements to course climate. For example, faculty reported heightened student interactions in the classroom, such as greater peer engagement during class discussions and on assignments. In addition, there was an increase in students conversing with faculty before, during, and after class. Some faculty disclosed that this transformation sometimes developed organically across the semester, but the implementation of the intervention accelerated this progression. Faculty indicated that students were increasingly comfortable discussing both course content and personal experiences. From the faculty's perspective, they felt students found them more approachable and relatable after the intervention compared to previous courses.

Many faculty recognized an increase in the number of students attending office hours and reaching out via email to request help or gain a deeper understanding of course material. This boosted faculty-student engagement and fostered a sense of connection and mutual benefit. Some students attended office hours with their peers to review homework, quizzes, and exams alongside teaching assistants and faculty. This finding shows that faculty were committed to continuing to implement the intervention in their courses after observing improved student participation and attendance during office hours. The intervention therefore may have helped foster transformational growth, and a shift away from an often-transactional pedagogical experience.

#### **Limitations**

This study has several limitations. First, it should be noted that the present sample was drawn from a small number of engineering backgrounds in which engineering education strongly predominated. Second, study participants were predominantly white and worked at predominantly white institutions (PWI) with high research activity. These limitations in participant numbers, overall diversity, and institutional context precluded sophisticated quantitative analysis. Resultantly, while trends may be apparent and mean differences visible, the statistical significance of these features cannot be responsibly tested.

#### **Integrated Discussion & Implications**

What do engineering faculty consider when choosing to adopt equity-focused course interventions? These data suggest the potential factors are complex, stemming from faculty's

own experiences, aspirations, and identity. Faculty identity and prior experiences played a large role in choosing to engage in this equity work. It is possible that these desires helped foster a strong sense of responsibility among faculty to provide inclusive and equitable environments for their students. Notable past experiences with struggles in the field may also have played a role in the strengths-based perspective that many faculty endorsed regarding struggling students. Adopting the intervention, aligned with these identity and role-based motivations, further served to position faculty members as equity change leaders in the larger organization.

The time and energy demand of implementing the intervention also seemed to play a part in faculty decision-making. Faculty exhibited a strong willingness to devote time to understanding struggling students and to providing them with constructive tools like further feedback, suggesting a desire to develop an empathetic stance and immediate actionable assistance. However, the brevity of the intervention and the ease with which it could be incorporated into extant course designs appeared central to motivating faculty commitment. Faculty were very willing to devote time and effort to the equity intervention, but only if the intervention's efficacy was backed by strong data.

Finally, it was important for faculty that they feel competent in executing equity change work, and that engaging in this work does not detrimentally affect their overall sense of competence as instructors and engineers. Faculty repeatedly expressed the desire for the intervention process and results to create authentic connections with students; however, their self-efficacy in accomplishing this was compromised in situations that disrupted their instructional plans. These findings suggest that it may be difficult to provide genuine, competent support while simultaneously managing unexpected classroom developments. This, in turn, emphasizes the centrality of high-quality training in enabling faculty to engage in such equity work in the long term.

Several implications for policy and practice emerge from these findings. While engineering faculty appear motivated to improve their disciplinary culture, they sometimes lack the knowledge of change mechanisms and equity leadership skills needed to do so independently. Therefore, establishing strong partnerships between faculty and equity education specialists seems critical to sustainable long-term transformation efforts. Such partnerships would be most durable if supported by policy, valorized by departmental or institutional leaders, and aligned with professional incentive structures (e.g., by positively appraising engaging in equity-focused interventions in promotion and tenure reviews). These findings further demonstrate the need for faculty to feel competent in their professional duties while being confident in the new behaviors, perspectives, and roles resulting from engaging in equity work. This tension requires careful management and comprehensive support as it directly impacts faculty identity development as equity leaders. It is possible that training and professional development may provide such support; however, faculty seem to desire training that is brief, well-structured, and that takes their psychosocial needs into account.

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**Note:** The first and last author share first authorship equally.

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## Appendix A

### Descriptive Statistics of all Measures

| Items and Stems                                                                           | <i>n</i> | Mean | S. D. | Min | Max |
|-------------------------------------------------------------------------------------------|----------|------|-------|-----|-----|
| Responsibility                                                                            |          |      |       |     |     |
| When students are struggling in my class, I                                               |          |      |       |     |     |
| Feel a personal responsibility to help them succeed.                                      | 10       | 3.6  | .516  | 3   | 4   |
| Expect them to work harder.                                                               | 9        | 2.7  | .707  | 2   | 4   |
| Adjust my teaching.                                                                       | 10       | 3.0  | .471  | 2   | 4   |
| Feel that they are unprepared.                                                            | 10       | 2.0  | .000  | 2   | 2   |
| Provide additional resources.                                                             | 10       | 3.4  | .516  | 3   | 4   |
| Take time to understand their challenges.                                                 | 10       | 3.5  | .527  | 3   | 4   |
| Cannot do anything more.                                                                  | 9        | 1.4  | .527  | 1   | 2   |
| Provide additional feedback.                                                              | 10       | 3.5  | .707  | 2   | 4   |
| When teaching my courses, I                                                               |          |      |       |     |     |
| Feel responsible for ensuring that all students have the opportunity to succeed.          | 10       | 3.9  | .316  | 3   | 4   |
| Make sure that students have equal learning experiences.                                  | 10       | 3.3  | .675  | 2   | 4   |
| Focus on supporting marginalized groups.                                                  | 10       | 3.5  | .527  | 3   | 4   |
| Seek development for inclusive teaching.                                                  | 10       | 3.4  | .699  | 2   | 4   |
| Treat all students equally.                                                               | 9        | 3.3  | .866  | 2   | 4   |
| Feel responsible for ensuring that all students feel like they belong.                    | 10       | 3.9  | .316  | 3   | 4   |
| Integrate discussions of diversity, equity, and inclusion with course topics.             | 10       | 2.6  | .516  | 2   | 3   |
| Know that students have an equal opportunity to succeed.                                  | 10       | 2.4  | .843  | 1   | 4   |
| Enforce classroom policies equally across students.                                       | 9        | 3.7  | .707  | 2   | 4   |
| Inclusive Teaching Willingness                                                            |          |      |       |     |     |
| How willing are you to include an activity in your classes that                           |          |      |       |     |     |
| Increases social belonging for all students?                                              | 10       | 3.7  | .675  | 2   | 4   |
| Increases social belonging for minoritized students?                                      | 10       | 3.7  | .675  | 2   | 4   |
| Reduces achievement gaps between students?                                                | 10       | 3.8  | .422  | 3   | 4   |
| How willing are you to                                                                    |          |      |       |     |     |
| Incorporate something new in your classes, given the constraints of your curriculum?      | 10       | 3.8  | .632  | 2   | 4   |
| Give up time for course content in exchange for an activity that enhances learning?       | 10       | 3.8  | .422  | 3   | 4   |
| Give up time for course content in exchange for an activity that closes achievement gaps? | 10       | 3.8  | .422  | 3   | 4   |
| Equity Praxis Self-Efficacy                                                               |          |      |       |     |     |
| I feel prepared to                                                                        |          |      |       |     |     |
| Engage in class discussions on topics related to race, ethnicity, or gender.              | 10       | 3.2  | .632  | 2   | 4   |
| Stop class to address emergent issues of student belonging.                               | 10       | 3.3  | .675  | 2   | 4   |
| Use student feedback to make course content changes.                                      | 10       | 3.6  | .966  | 1   | 4   |
| Use student feedback to make course policy changes.                                       | 10       | 3.3  | 1.059 | 1   | 4   |
| Conduct an educational activity to enhance student belonging.                             | 10       | 3.4  | .699  | 2   | 4   |
| Deviate from planned class content to discuss current topics affecting students' lives.   | 10       | 3.3  | .675  | 2   | 4   |
| Be genuine with my students.                                                              | 10       | 3.6  | .699  | 2   | 4   |
| Help students learn to work inclusively during group projects.                            | 10       | 3.6  | .699  | 2   | 4   |

