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Conducting a Diversity, Equity, and Inclusion Climate Survey of Engineering within a Large Texas University

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Abstract

Recent events have highlighted the importance of diversity, equity, and inclusion (DEI) within engineering education. Improvement of DEI within these settings faces a variety of obstacles, most notably a dearth of models for effective assessment of DEI initiatives. In this evidence-based practice paper, we detail the process by which a DEI climate survey was adapted and executed within a School of Engineering at a large public Texas university. After establishing specific design criteria and principles, research-practice partnerships were sought out with social scientists to address gaps in understanding of DEI evaluation. After review of numerous existing surveys, the 14-item CELL-MET Engineering Research Center's culture of inclusion scale was identified as the most robust scale that met our parameters. Adaptations were made to accommodate our application, and specific strategies were employed in survey deployment that resulted in an 18% response rate in the spring of 2021, when all courses were being taught online. Research-practice partnerships were extended into the analysis and synthesis stages to best translate findings into policy recommendations and to identify improvements for future administrations of this survey.

Introduction

Importance of DEI in Engineering

The relationship between inclusive climate and student performance is widely known. A positive classroom climate has been shown to contribute directly to higher academic achievement across all levels of schooling and disciplines [1]. In this vein, colleges and universities across the country have created and funded positions, committees, departments, and divisions to cultivate positive school and classroom environments through the development of diversity, equity, and inclusion (DEI) initiatives. Seeking to address centuries-old systemic inequities, professionals involved with these DEI initiatives work to both identify and rectify issues of exclusion within higher education. This trend has not escaped engineering education. ASEE's Diversity Pledge has over 230 signatories who commit to "ensuring that our institutions provide educational experiences that are inclusive and prevent marginalization of any groups of people because of visible or invisible differences" [2]. To be considered a top engineering program today, colleges of engineering must not only have excellent research and academics, but also a strong commitment to diversity and inclusion. ABET recently proposed changes to the Engineering Accreditation Commission general criteria that further prioritize DEI in engineering education. Future accreditation may require curriculum to include "a professional education component that… promotes diversity, equity, and inclusion awareness for career success". It also may ask that faculty "demonstrate awareness and abilities appropriate to providing an equitable and inclusive environment for its students, and knowledge of appropriate institutional policies on diversity, equity, and inclusion" [3]. Similarly, federal agencies that fund engineering research are increasingly mandating that work address broadening participation. Further, employers within the engineering industry are focused on promoting DEI within their organizations and seeking new hires that have the cultural competency and professional skills to foster this culture. This increasing focus on and commitment to DEI within all sectors of the engineering ecosystem requires that engineering schools are able to effectively train the next generation of engineers to be both technically *and* culturally competent. Naturally, the quality of this training is proportional to the quality and rigor of its assessment. Engineering education has lagged behind other fields in developing and implementing assessments of DEI.

Importance of DEI Evaluation

In their review of broadening participation evaluations in engineering and computer science, Holloman et al. [4] identify a number of factors limiting the utility of existing DEI evaluation tools. Most DEI evaluations in STEM spaces focus on K-12 education, so there is a need for more tools targeted for higher education. Often, these DEI evaluations focus on the outcomes of a particular initiative but neglect the broader institutional context and climate within which those programs operate. So there is a need for evaluation that looks at the climate for DEI as a whole and considers the specific aspects of the given context that may interact with the climate of inclusion. Baber's [5] interest-convergence in STEM study found that the most common DEI assessment tools used in STEM are quantitative measurements of diversity. In his study of 10 top public institutions, it was found that institutions overwhelmingly focus on compositional diversity of engineering programs at the expense of positive racial climates. This approach simplifies the experiences and development of traditionally marginalized groups in STEM down to enrollment and graduation rates and ignores the quality of climate. This focus does little to address the systemic racism present within engineering spaces, essentially putting a band-aid over a broken bone. When DEI evaluations in STEM environments do go beyond quantitative measures of diversity, student outcomes are often used as proxy measures of program performance [4]. So there is a need for evaluation tools that measure experiences and perceptions of the climate, in addition to investigating how that might impact student outcomes. These authors also point out that published DEI evaluations often focus on reporting positive findings rather than identifying areas for improvement. This work clearly demonstrates a need for more formative DEI evaluation that provides action-oriented guidance on areas for improvement, and that tracks the impact of changes made over time. Finally, they point out the need for more "well-developed and broadly shared" evaluation tools to allow for comparison across institutions and contexts.

Need for Engineering-Specific DEI Scales

Additionally, as most of the current tools originated outside of STEM, their application to engineering spaces is deficient in three major ways. First, this adaptation practice seeks to apply something that may not be appropriate for the specific gender, racial, and socioeconomic inequities unique to engineering [6]. Specifically, people who identify as women, Black/ African American, Hispanic/ Latino, American Indian/ Alaska Native, Native Hawaiian/ Other Pacific Islander, persons living with a disability, veterans, and/or first-generation college students have been historically excluded within engineering while people who identify as white and Asian men tend to be over-represented within engineering [7]–[9]. Importantly, DEI evaluation within engineering education spaces must account for inclusion of all historically excluded groups, going beyond just racial/ethnic minority inclusion specifically. Second, engineering educators are not effectively trained to design and execute these measurement and assessment tools alone. Nowhere in engineering education are students trained in the quantitative research methods and metrics needed to evaluate diversity, equity, and inclusion. This is akin to asking a biologist to evaluate the mass of the sun. An approach can be cobbled together, but by no means will the method be as efficient or precise as can be achieved. Finally, engineers are not explicitly trained in the design and implementation of DEI programming. Thus, their understanding of how climate survey results can and/or should be applied to new initiatives and the modification of existing ones is limited. Instead, collaborations between engineering educators and social scientists are needed to assess climates of DEI effectively.

Need for Collaboration in Assessing DEI in Engineering

A report commissioned by the Alfred P. Sloan Foundation titled "Assessing the Landscape for Diversity, Equity, and Inclusion Efforts in U.S. STEM Graduate Education" calls these collaborations research-practice partnerships. This systematic review of 228 recently published research manuscripts identifies these partnerships as necessary to address the skill gap striking DEI innovation in engineering education. "The people designing programs and change initiatives are often STEM community insiders, but the people best equipped with knowledge about the dynamics of inequality and power are often outside of STEM" [10]. The report calls on engineers to partner with DEI experts, especially in the design stages of initiatives, to provide for sustainable change. Similarly, research-practice partnerships between engineering educators and program evaluation experts are also needed for effective evaluation of these initiatives.

Herein we describe a process of identifying, adapting, implementing, and applying the results of a climate survey within an engineering education space. Executed at a large R1 university in Texas, we detail numerous decisions made by the research team to successfully assess the DEI climate within a school of engineering. Employing a research-practice partnership, we illustrate specific strategies to improve data collection in the era of COVID-19, provide guidelines for analyzing data, and discuss a strategy on how to translate raw data to inform policy recommendations. Finally, we recommend next steps based on lessons learned.

Survey Design, Selection, & Adaptation

Suskie [11] states that "good assessments are used," meaning that assessment design will begin with a concrete understanding of why that assessment is needed. In taking this maxim to heart, and following a charge from the dean of engineering and associate dean for DEI, we began the survey design process by identifying the motivation to assess. Motivation identification took the form of conversations with important stakeholders: school administration, faculty, staff, and students. From these initial conversations, a central theme began to emerge: we need an assessment to generate robust, quantitative data on the state of DEI within our college of engineering. Supporting thoughts on this theme tied the need directly to a desire for a strong ground state data point to which future progress could be compared. Others sought specific, concrete data to convince skeptics within the School on the importance of DEI and related initiatives. Overall, a robust, well supported body of data was desired to support future decision making.

Design Principles

We identified two major principles to guide survey selection and customization. Firstly, the survey should meet the highest standards for data collection and analysis. To generate a dataset powerful enough to sway a skeptical technical audience, the survey design, administration, and analysis needed to be methodologically robust. Specifically, the appropriate survey needed to provide data on respondent demographics and other aspects of identity so that results could be disaggregated to identify group differences and assess generalizability. Secondly, the survey should be administered anonymously, to promote honest feedback and protect the identities of those from marginalized backgrounds. In a space where simply knowing someone's gender or race and position can be identifying, respondent anonymity was to be prioritized, to ensure representative sampling and avoid response bias. It is important to note the tension between these two guiding principles. Demographic data are essential to a complete dataset on climate of inclusion so that conclusions can be specific and inform future programming. At the same time, reporting demographic data jeopardizes respondent anonymity which can lead to unbalanced sampling and response bias. Thus, our first guiding principle is in conflict with our second.

Acknowledging this tension between our two guiding principles, the next step was to elaborate these guiding principles into design parameters that struck a balance between the two. Following the first principle, numerous survey requirements were established. Firstly, given the stressors already placed on would be respondents by the COVID-19 pandemic, we decided to keep the survey as brief as possible. We strongly believed people would be more likely to participate if the burden to participate was minimized. Secondly, to ensure survey rigor and meet all levels of compliance, Institutional Review Board approval was obtained. Finally, identifying the knowledge gaps of the team in developing such an assessment tool, we decided to partner with social scientists, rather than design measures from scratch.

We defined additional survey features stemming from the second principle. Firstly, to ensure the survey was inclusive of all stakeholders within the School of Engineering, we decided that questions on climate must be applicable to faculty, staff, and students. Questions that pertain specifically to one group over another would be excluded or modified. For example, "I feel respected by professors in class" would instead need to be changed to "I feel respected by faculty" so that faculty, staff, and students may all answer. We decided against collecting certain demographic variables, specifically information on academic department. Again, given the scarcity of certain identities within departments, it was thought that exclusion of this identifier would more effectively preserve the anonymity of respondents at all levels. Respondents had the option to identify as part of an historically excluded racial/ethnic group without specifying which group. Finally, we decided on the outset, to not disaggregate results of identity groups smaller than 5 members in any reports resulting from this survey. Instead, these results would be combined with other identities to preserve anonymity. While this parameter does come at the expense of principle one, we believed that preserving anonymity would result in more, complete, and unbiased responses. These procedures were clearly communicated to participants in informed consent materials.

Scale Selection

With these design parameters in mind, we reviewed existing DEI surveys that had been conducted specifically in higher education. We could not at the time identify any instruments specific to engineering but broadly encompassing students, staff and faculty. We reviewed surveys conducted at the University of Michigan, the University of Florida, and Virginia Tech and ruled them out for their extensive length and specificity. Eventually, we identified the 14-

item CELL-MET NSF Engineering Research Center's culture of inclusion scale as the most robust of scales that met our parameters [12].

The CELL-MET COI Scale was based on a review of relevant literature within multidisciplinary scholarship, including community psychology, organizational psychology, STEM education evaluation, and workforce diversity and inclusion [13]–[20]. This review helped identify relevant constructs and existing surveys, including psychological sense of community, group dynamics, and workforce diversity engagement. The COI scale items were then selected from existing scales measuring the targeted constructs and adapted for the CELL-MET context. The scale consisted of 14 items reflecting the core components of an inclusive climate within an engineering education context: fairness, fulfillment of needs, sense of belonging, respect/value, support/access to resources, trust, common purpose, and cultural competence. The scale structure was validated using exploratory factor analysis [12].

Scale Adaptation

Some adaptation of the scale was needed to meet our application requirements. Initially, minor changes to the wording of questions were made to ensure all questions asked about the X School of Engineering. Secondly, some items were expanded. The item measuring fulfillment of needs was expanded to two items to address support for both professional and academic success (Appendix, Question 2.4 & 2.19). The items on respect/value were expanded from two items addressing respect from supervisors and others to three items assessing respect from faculty, staff, and students (Appendix, Question 2.6, 2.7 & 2.8). Finally, following pilot testing with various stakeholders, some questions were added to the survey. This pilot testing consisted of 30-minute blocks of time wherein survey designers sat individually with volunteer staff, faculty, undergraduates, and graduate students. All volunteers were members of the school of engineering's DEI committee. In these pilot sessions, volunteers followed a think-aloud protocol, voicing their interpretation of each question. Misinterpretations and general confusion were noted and used as feedback to improve the wording of some questions. Notably, a question on diversity imperative (Appendix, Question 2.15) was added to the scale. Additionally, a question on representation in leadership was also added at the request of students and faculty (Appendix, Question 2.16).

In addition to the COI scale items, a number of demographic questions were adapted from the CELL-MET survey and some additional contextual questions were added. We added an open ended question asking respondents to explain the COI scale ratings they provided (Appendix, Question 3). We also added questions about staff respondents' level of interaction with engineering students (Appendix, Question 11). Respondent role questions were modified for the current context (Appendix, Question 1), and additional questions about faculty rank and tenure (Appendix, Question 12) and student academic standing (Appendix, Question 10) were also added. Additional demographic questions were added to assess LGBTQ+ identities and experiences of inclusion; these were piloted independently with an engineering LGBTQ+ research group on campus. Respondents were initially asked whether they identified as being a part of the LGBTQ+ community. If they responded yes, then display logic was used to present follow-up questions on feelings of belonging with subgroups within the School of Engineering (Appendix, Question 16).

The final survey included 18 climate questions and a maximum of 12 demographic questions. Climate questions were asked as statements with 5-point Likert scale responses indicating level of agreement (1=strongly disagree; 5=strongly agree). Both open-ended and forced-choice questions were used as appropriate for the demographic questions. The overall survey flow had respondents identify first their general role as faculty, staff, or students, and then continue on to the 18 climate questions, followed by an open-ended reflection question, and then the demographic questions. Responses to the role question dictated the wording of some climate questions and the specific demographic questions asked, via skip logic.

Survey Deployment and Analysis

Survey Deployment

The survey was deployed in March 2021 using the web-survey platform Qualtrics. The survey was sent to all students, staff, and faculty in the School of Engineering via a direct email from the School's Dean. This direct email offered the highest amount of visibility for the survey to garner responses and enabled School Administration to communicate progress towards DEI goals. A respondent incentive was also included in the email, offering respondents the chance to win 1 of 25 $50 Amazon gift cards. The survey was kept open for 3 weeks, including over the University's Spring Recess. A reminder email was sent out a week before survey closure. Additionally, faculty were specifically asked to allocate instructional time for students to fill out the survey. During this semester, all engineering courses were taught online.

Quantitative Analyses

After survey closure, we downloaded and analyzed data using R. The first author calculated means for each question and compared them across a variety of cross sections including role, ethnicity, and gender identity. We processed race/ethnicity cross sections in the following way. We created a combined under-represented racial/ethnic minority (URM) group using responses to a separate item about URM status (Appendix, Question 6) and/or more specific responses identifying as African American/Black, Hispanic/Latinx, or Native American/Alaskan Native (Appendix, Question 7). The number of responses for Native Hawaiian/Other Pacific Islander were below our reporting threshold, so these individuals were also included with the combined URM group. If respondents provided detailed race/ethnicity data indicating more than one race or ethnicity, they were also included in Black+, Latinx+, and/or Native American+ groups as relevant; multiracial individuals were included in all race/ethnicity groups with which they identified. We also created groups for individuals identifying as Asian American/Asian only, white only, white and Asian but no other identities, and Middle Eastern+ (i.e., individuals identifying as Middle Eastern/North African only and multiracial combinations including Middle Eastern/North African and white). The first author analyzed statistical significance of group differences using ANOVA and post-hoc pairwise t-tests with Bonferroni adjustments for a large number of tests. School of Engineering-wide results provide a baseline measure of the culture of inclusion and a benchmark for longitudinal evaluation of changes to the climate. Having such a benchmark will allow administrators to track the impact of new programs and policies designed to address institutional culture of inclusion. Similarly, the disaggregated analyses based on respondent role and demographic characteristics can be used to identify disparities to be addressed through new and improved policies and programs. Further, item-specific comparisons can help identify specific aspects of the culture of inclusion that should be addressed to improve the overall climate and reduce disparities in inclusion across all relevant stakeholder groups.

The first author conducted benchmark analysis by calculating sample-wide scale means and standard deviations across all COI scale items. Data collected in future years will be compared against these descriptive statistics to identify and quantify any change to the COI over time. Disaggregated analysis involved calculating scale and item means and standard deviations along demographic identifiers, starting with role and followed by racial, ethnic, and gender identities. Analyzing demographic group differences in overall climate rating and at the item level allows us to identify group differences and targeted areas to improve for the various impacted groups. An example of this analysis is presented below for the climate question "The culture of X School of Engineering is accepting of people with different ideas." First, mean scores of each role were calculated and compared, identifying significant differences (F= 6.512, p<0.01) among roles. Further analysis yielded significant differences between undergraduate/graduate students and faculty/staff (p<0.05) (Figure 1a). Next, the mean scores, by race/ethnicity were calculated and compared. Within this breakdown, there were no significant differences (ANOVA p<0.05). Finally, within each role, gender identity breakdowns showed that cis-gendered males had significantly higher levels of agreement (p<0.001) with this statement comparted to all other gender identities (Figure 1b). In this circumstance, the number of respondents reporting non-cis gender identities was too small to be reported independently by gender (e.g., non-cis men, non-cis women, etc.) without jeopardizing respondent confidentiality. We did calculate means separately for cis-men, cis-women and individuals who did not identify as cisgendered, noting that many of the means and significant differences (when they could be calculated) were similar for non-cisgender respondents and cis-women respondents. Therefore, all non-cisgender male identities were combined into one grouping and compared to cisgender males. Analyzing COI scale results by item and by various demographic groupings allows us to identify targeted areas for improvement as well as differentially impacted populations. In the above example, we are able to identify a need for increased inclusion around philosophical differences; particularly for community members who do not identify as cis-gendered males. Being able to drill down in this way allows for highly targeted policy responses.

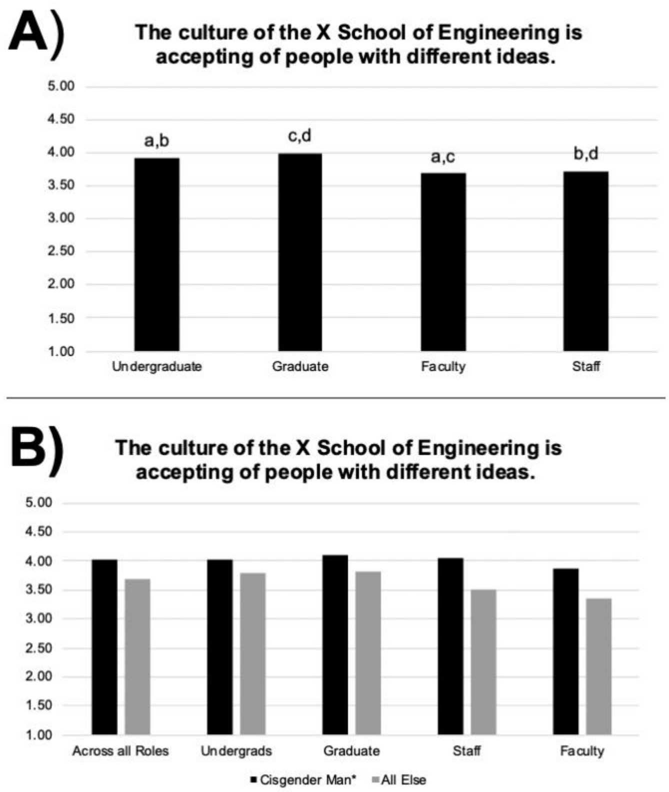

Figure 1: Example analysis of climate scores. A) Mean scores by role. Letters indicate statistically significant (p<0.05) differences between paired groups of responses, i.e., undergraduate students answered differently from faculty (a) and graduate students answered differently from staff (d). B) Mean score by role and gender. Differences between cisgender male and all else are significantly (p<0.05) different for each role.

Qualitative Analyses

In addition to quantitative analysis, we also analyzed qualitative data to develop a deeper understanding of respondent experiences. Qualitative content analysis was used to analyze responses to Q3 “Please elaborate or explain any of your responses above. This information will help us focus the next steps undertaken by the X School's DEI Committee.” Given that this was the first time we deployed this survey with this population, we used a grounded theory approach to develop codes that captured themes identified in the submitted responses. Three team members read the responses and discussed codes; the fourth author applied the codes to the text. The coded data were then analyzed to identify frequently occurring themes [21]. Once the most salient themes were identified, the supporting text was then used to develop a deeper understanding of participant responses related to those themes. For example, some women students described how their contributions are not always valued in team projects for their engineering courses. These themes identified (Belonging and Climate, Diversity Imperative, and COVID-19) through qualitative analysis were helpful in organizing the report and presenting the 19 quantitative items in smaller, strategic groupings. The full extent of these groups can be found in the larger report.

Climate Study Report Writing and Structure

Taking this mix of quantitative and qualitative data, the next step was to synthesize findings in the form of a climate survey report to be submitted to the school administration and distributed to the community. This report summarized findings and communicated recommendations for each role within the School of Engineering. Here again, the authors acknowledged limitations to skill sets and extended the research-practice partnership approach to developing the climate report and resulting policy recommendations. A consultant with a PhD in higher education with specialization in organizational change around DEI assisted in translating findings of the survey into report themes and policy recommendations. This collaborator encouraged our framing of the report as the start of a community-wide conversation as opposed to an end of an assessment process. Our collaborative group of engineering educators and social scientists worked systematically through the scale and item statistics, relying on significant group mean differences and salient themes from open-ended comments to identify major themes on diversity imperatives, sense of belonging, and climate to include in the report. The social scientists on the team were able to place findings in a broader context, and engineers on the team were able to tailor recommendations to best fit the School of Engineering context. For example, in the sample quantitative and qualitative analyses shared above, we identified role and gender identity based differences in ratings of the extent to which X School of Engineering is accepting of people with different ideas. Qualitative analysis also highlighted the impact of gender-based inequities on participant ratings of agreement with that statement. Our collaborating DEI expert was able to use existing literature to identify both the societal and organizational structures that inform these results, as well as evidence-based practices to mitigate their impact on the culture of inclusion for engineering education contexts. The engineers on our team then tailored the policy recommendations to reflect those societal and organizational structures most salient in an engineering education context, highlight evidenced-based practices that are the best fit for that environment, and name specific resources and offices in report recommendations. Our evaluation experts were also able to identify targeted next steps for evaluation, such as focus groups and interviews, to deepen our understanding of the differences identified and to inform future programming.

At the suggestion of the Associate Dean for DEI, we structured the report recommendation for different groups based on their role in the School of Engineering. This forced us to balance our recommendations and identify actions that undergraduates, graduate students, faculty, staff and administrators can take to improve the inclusivity of the climate in engineering. For example, we recommended that students increase conversations about DEI in extracurricular groups and to prioritize the empowerment of their peers to advocate for change in the School of Engineering. We encouraged faculty to reconsider the workload assigned to students, to use diverse examples in class, and to engage in honest and open conversations with graduate students. For administrators, an example recommendation was to institute stricter requirements for the diversity of faculty candidate pools, as well as stronger consideration of DEI statements and contributions in evaluation of faculty candidates and promotion cases.

Reflection and Next Steps

As the initial climate survey report has been distributed to members of our community, we are reflecting on future plans for a periodic DEI climate survey in our School of Engineering.

The current plan is to administer the next climate survey two years after the first administration. This will allow School leaders the time necessary to review the recommendations resulting from the climate evaluation and adapt university policies and programming to address those recommendations. Any new or modified initiatives would also take time to implement before any measurable change in climate could be detected.

In considering the items themselves, we anticipate little modification before re-administration. Items relating to sense of belonging and fairness were especially useful at elucidating differences in racial and gender groups, particularly in experiences related to power dynamics in staff-faculty and student-faculty relationships. All but one item will be retained in future iterations. Question 2.16 ("I see people who look like me in positions I aspire to hold within the X School of Engineering") engendered many comments indicating misinterpretation of the question's intent. Notably, numerous respondents pointed out that there are other, much more important aspects of leadership to be considered. In future climate surveys, we plan to replace this item with more carefully worded one(s) about considering DEI contributions in selecting our leaders, and/or the degree to which our leadership is viewed as understanding and prioritizing DEI. We also plan to modify Question 2.12 ("At the X School of Engineering, I have opportunities to work or learn successfully in settings with diverse individuals.) to refer to "individuals who have different demographic identities than I do" instead of "diverse individuals" to better control for variation in respondents' definitions of "diverse individuals." Additionally, expansions will be made in our analysis methods. Though we did conduct subgroup analysis intersecting role and race/ethnicity, similar relationships by gender and race/ethnicity were not investigated. Given the large disparity in representation along gender and race/ethnicity within engineering education, specifically the over-representation of white and Asian men, this level of analysis is important to inform policy.

Conclusion

We began this journey by examining pre-pandemic, institution-wide climate surveys. Our research-practice partnership approach emerged organically as we realized the need for additional skill sets and areas of expertise within our team. By bringing together experts in engineering, education, program evaluation, and inclusion, we were able to overcome discipline-specific limitations. This collaboration allowed us to leverage existing expertise across our respective disciplines to identify, adapt, implement, and analyze a culture of inclusion survey and translate the resulting data into empirical, context specific, action-oriented policy recommendations to improve the culture of inclusion within a School of Engineering. Finally, we are both excited and apprehensive about how the report will be received. Climate surveys can be notorious for performing DEI as opposed to deeply considering appropriate changes. Likewise, there is always the risk that the results of any evaluation will not be put into action. We hope that with coordinated follow up and specific action items, the report can become a dynamic part of the conversations and changes happening in engineering, locally, nationally and internationally.

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Appendix: Full Survey

Q1: Please indicate your primary role in the X School of Engineering:

- Faculty (e.g., instructional or research)
- Staff (e.g., postdocs, technical staff, administrative staff, etc.)
- Student (e.g., enrolled undergraduate or graduate student)

Q2: Climate Questions

Please indicate your level of agreement with the following statements. Base your responses on your experiences within the X School of Engineering at X.

(Respondents were asked to rate their agreement on a 5-point Likert scale from 1 = Strongly Disagree to 5 = , Strongly Agree, or they could select Not Applicable)

1) The resources I need to do my work effectively are readily available.

2) My growth and development has been supported through opportunities within the X School of Engineering.

3) I receive recognition and praise for my good work similar to my peers.

4) There is someone in the X School of Engineering who encourages my professional development.

5) I feel like I belong at the X School of Engineering.

6) I feel respected and valued by faculty in the X School of Engineering.

7) I feel respected and valued by staff in the X School of Engineering.

8) I feel respected and valued by students in the X School of Engineering.

9) When I speak up in my daily interactions within the X School of Engineering community, my opinion is valued.

10) I feel that my work or studies contribute to the excellence of the X School of Engineering.

11) I trust the X School of Engineering administration to be fair to all employees and students.

12) At the X School of Engineering, I have opportunities to work or learn successfully in settings with diverse individuals.

13) The culture of the X School of Engineering is accepting of people with different ideas.

14) The culture of the X School of Engineering is accepting of people from all backgrounds.

15) I believe diversity is imperative to the success of the X School of Engineering.

16) I see people who look like me in positions I aspire to hold within the X School of Engineering.

17) I feel respected and valued by my primary supervisor at the X School of Engineering. (*Only shown to staff/students*)

18) I feel respected and valued by my department chair/center director at the X School of Engineering. (*Only shown to faculty*)

19) There is someone in the X School of Engineering who encourages my academic success. (*Only shown to students*)

Q3: Please elaborate or explain any of your responses above. This information will help us focus the next steps undertaken by the X School's DEI Committee.

Demographic Questions

Q4: What is your gender/gender identity?

*Cisgender means that your gender identity is aligned with your assigned sex at birth.

- Cisgender Man*
- Cisgender Woman*
- Transgender
- Nonbinary/Gender Non-Conforming
- Response not listed (you'll have a chance to specify later)

Q5: Do you identify as a member of the LGBTQ+ community?

- Yes
- No
- It's complicated, I'd like to expand further

Q6: Do you identify as a member of a racial/ethnic group traditionally underrepresented in engineering? (Black/African American, Hispanic/Latinx, or American Indian/Alaskan Native)

- Yes
- No

Q7: Please indicate the racial or ethnic groups with which you identify. (Check all that apply.)

- African American/Black
- Asian American/Asian
- Hispanic/Latinx
- Middle Eastern/North African
- Native American/Alaskan Native
- Native Hawaiian/Other Pacific Islander
- White

- Other (Please specify)

Q8: Do you have a disability?

- Yes, I have a disability
- No, I do not have a disability

Q9: Have you ever served in the military?

- I am currently serving in U.S. Armed Forces, Military Reserves, or National Guard
- I am no longer serving in U.S. Armed Forces, Military Reserves or National Guard
- I am currently serving or formerly served in the military forces of another government
- I have never served

Q10: What is your academic classification? (*Only shown to students*)

- 1st year undergraduate
- 2nd year undergraduate
- 3rd year undergraduate
- 4th year undergraduate
- 5th+ year undergraduate
- Master's student
- PhD student

Q11: Do you work directly with engineering students on a daily basis? (other than hourly workers hired by your department) (*Only shown to staff*)

- Yes
- No

Q12: Please indicate your faculty rank: (*Only shown to faculty*)

- Assistant
- Associate
- Full
- Not applicable to my position

Q13: What is the nature of your appointment? (*Only shown to faculty*)

- Tenured or tenure-track faculty
- Instructional faculty
- Research faculty

Q14: How would you describe your gender identity? (*Only shown to those that responded to Q4 with Transgender, Nonbinary/Gender Non-Conforming, and/or Response not listed (you'll have a chance to specify later*)

Q15: How would you describe your sexual orientation/sexuality?(*Only shown to those that* *responded to Q5 with Yes and/or It's complicated, I'd like to expand further*)

Q16: How comfortable are you being open about your sexual orientation/sexuality with each of the following groups? (*Only shown to those that responded to Q5 with Yes and/or It's complicated, I'd like to expand further*)

(Respondents were asked to rate their comfort level on a 5-point Likert scale from 1 = Extremely uncomfortable to 5 = Extremely comfortable for each group listed below)

- Engineering Undergraduates
- Engineering graduate students
- Engineering faculty
- Staff within the X school of Engineering
- Your family

Q17: What type(s) of disabilities do you have? (Check all that apply.) (*Only shown to those that responded to Q8 with Yes, I have a disability*)

- Acquired/Traumatic Brain Injury
- Attention Deficit/Hyperactivity Disorder
- Asperger's/Autism Spectrum
- Blind/Low Vision
- Deaf/Hard of Hearing
- Cognitive or Learning Disability
- Chronic Illness/Medical Condition
- Mental Health/Psychological Condition
- Physical/Mobility condition that affects walking
- Physical/Mobility condition that does not affect walking
- Speech/Communication Condition
- Other (please specify):