How Engineering Faculty, Staff and Administrators Enact and Experience Diversity Programs.

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Introduction

Colleges of engineering face difficulties in recruiting and retaining undergraduate students from underrepresented minority groups, despite a professed commitment to having a diverse student body. Although numerous programs and efforts to enhance diversity in engineering education exist, they have not led to substantial gains in the participation of students from underrepresented groups [1]–[3]. Studies regularly find that substantive barriers exist for underrepresented students, which may include a lack of academic preparation, feelings of isolation and lack of belonging, discrimination and unwelcoming college climates [4]–[9]. While many of these studies have investigated the perspectives of students to uncover these findings, less has been done to explore how diversity policies are implemented by engineering faculty, staff and administrators. Little research considers the challenges they face in implementing diversity initiatives.

To address this gap, we consider the perspectives of administrators (deans and department chairs), faculty and staff in one college of engineering at a predominantly White institution (PWI). We ask the following questions: How do engineering education employees tasked with doing diversity work understand their roles? What structural barriers do they encounter in this work? We draw on interviews to better understand their views and experiences as they relate to this institution's efforts to recruit, retain and graduate undergraduate underrepresented minority students. In our view, for diversity and equity outcomes to be successful, we must extend our focus beyond students to understand how engineering educators do diversity work within their institutions.

We first begin by providing the theoretical frameworks that influenced our analysis. We review some of the literature that takes an institutional approach to understanding how diversity work is conceptualized, implemented and performed in institutions. We then describe our methodology for coding and analyzing the interviews. Next, we present our key findings. Finally we end with a discussion and implications section for our work.

Theoretical Framework

Our framing of this paper is based on the literature that considers organizations and their relationship to diversity work. Rather than looking solely at individuals in isolation, this perspective understands that administrators, faculty and staff operate within an institutional structure that impacts diversity outcomes [10]–[16].

One example of this type of research can be seen in the concept of "diversity regimes," developed by sociologist James M. Thomas [11], [17]. Thomas's work is based on an ethnographic study he performed at a flagship university in the southern United States. As Thomas argues, the persistence of racial inequality is a lingering problem on many college campuses despite the increase in efforts and programs to address it. Based on his study he uncovers what he defines as a diversity regime or, "a set of meanings and practices that institutionalize a benign commitment to diversity, and in doing so obscures, entrenches, and even intensifies existing racial inequalities by failing to make fundamental changes in how power, resources, and opportunities are distributed." pg. 141 [11].

His focus lies in looking at how diversity work actually unfolds, thereby providing an understanding of the stumbling blocks. There are three main processes that characterize diversity regimes: condensation, decentralization, and staging diversity. Condensation refers to the idea that institutions may use various definitions of diversity, often lacking a coherent definition of how diversity is defined. Without a standard definition it becomes difficult to realize. Decentralization refers to a lack of coordination or slow coordination, an absence of regulations, and an inability to enforce existing regulations. This is often the case in loosely coupled organizations where there is not a shared sense of a mission and when goals are not clearly articulated. The third component is staging difference, which is largely performative in nature rather than substantive. This often takes place by asking minority staff and faculty to represent the university and present it as a racially diverse and harmonious environment.

Sara Ahmed has also been influential in understanding institutional responses in higher education toward diversity [18]. Ahmed performed interviews with diversity practitioners at universities in Britain and Australia. Based on those interviews, she points out the ways that diversity work is often more of a performative act than a substantive one. She describes how practitioners experience institutions as resistant to efforts, even though they are employed by those institutions to do this type of work. As she finds, institutions often craft elaborate diversity plans and make a public commitment to diversity, without necessarily enacting the changes they include in their plan. Often, the existence of plan is used as evidence that diversity is achieved, even when the work to realize the plan is not supported or performed. Faculty or students on campus from minority groups are often used as evidence that promises of diversity are being fulfilled.

Others scholars have also carefully studied higher education institutions and their approaches to diversity to better understand what happens when colleges and universities implement diversity plans [10], [13], [14]. For example, Derria Byrd finds that college campuses often have a unique institutional habitus which heavily influences if the diversity efforts are successful. As she theorizes from one comparative study of different institutions, efforts made to diversity campus cannot be chalked up to individual accomplishments or failures, but rather demonstrate how institutional cultures determine which policies are adopted and acted upon [13].

We have selected these frameworks to reflect our commitment to better understanding how institutions, in conjunction with individual actors, can improve their diversity outcomes. Furthermore, our rationale is to look specifically at the institutional barriers that participants mention that prevent them from being effective at carrying out diversity work, even if they are committed to that effort.

Methods, Context and Sample

This paper developed from a larger project aimed at creating a sociotechnical framework to view, analyze and understand the capacities, resources and limitations in this college with respect to diversity initiatives geared towards undergraduate students. The overarching project is based on a set of interviews with students and employees at this college.

This specific paper, however, is only based on 22 of those interviews, that were conducted with employees primarily in the College of Engineering. Two of the authors conducted the interviews. To recruit participants, the second and third author sent emails out to administrators, faculty and staff in the college explaining that the purpose of the study and scheduled interviews with those who agreed to participate. All interviews were then professionally transcribed. A few faculty and staff were also specifically recruited by asking them to participate. In total, the second and third authors interviewed: 10 administrators (2 of whom were located outside of the College of Engineering in a diversity office), 9 staff members (1 of whom was located outside of the College of Engineering), and 3 faculty members. Of those interviewed, 15 were White, 2 were Black, 3 were Asian, and 2 were Latinx. In terms of gender, 11 were men and 11 were women.

In terms of this institution, like most engineering education programs, efforts and programs are in place to provide support to URM students and to promote diversity, equity and inclusion in the College of Engineering. Cultural and identity-based organizations exist such as the National Society for Black Engineers, the Society of Hispanic Professional Engineers, the Society of Women Engineers and Out in Science, Technology, Engineering & Mathematics, to name a few. Training is also available for faculty and staff on diversity, equity and inclusion. In 2018, a Diversity, Equity and Inclusion Council was established to provide leadership within the college and to promote and achieve a culture that values diversity, equity, and inclusion, especially racial/ethnic and gender diversity. It is comprised of faculty staff and students and began meeting monthly at its inception, though meetings have somewhat become more intermittent since then.

The first author performed the coding of this material and used frameworks primarily from sociological literature. She discussed and refined key themes she found in conjunction with the other authors. The method used is constructivist ground theory, which is an inductive methodology developed by Kathy Charmaz. This method is based on asking emergent critical questions often through interviews [19]. Charmaz's method is defined as "constructivist" because she emphasizes the fact that regardless of how structured coding may be, it is always difficulty to study social phenomena and reality objectively. Her stance is a postpositivist one and she emphasizes that researchers and participants are active participants in constructing and influencing the research processes and findings.

To perform the coding, the first author put all interviews into Dedoose and relied on an open coding process without any predetermined framework. She began by looking simply at how respondents discussed their understandings of the diversity mission at this university, their involvement in any diversity efforts at this college, and the difficulties and successes they voiced in doing diversity work. She considered how this related to overall goals in the college to achieve a more diverse student body. In this process she first attached descriptive labels to segments of text with descriptions such as: recruitment issues, lack of staff, time constraints, strategies to enhance diversity in classroom, diversity as demographics, measuring and tracking diversity etc., lack of cohesion. These codes were numerous and largely aimed at organizing and getting an understanding of the data. The first author also wrote memos about emerging ideas to describe and reflect on what she found, compare and contrast themes, and to begin organizing her thoughts.

While performing the analysis, the first author also began to become more familiar with the literature reviewed in the previous section and began to consider diversity initiatives at this university through an institutional lens. Ongoing discussions among the team of these findings led to themes we will cover in this paper. At this point, this paper is a work in progress and will be revised and formalized more as we proceed on the project. As we detail below, our analysis of 22 interviews resulted in four interrelated themes: 1. Participants need additional resources to be effective in performing diversity work. 2. Diversity work is not tightly coordinated or organized. 3. Diversity work is not always consistently rewarded by the institution. 4. Diversity outcomes are rarely tracked systematically.

Diversity work lacks resources

Though diversity is lauded as an integral goal in higher education, the success or failure of programs depends on sufficient resources [15]. Throughout the interviews respondents were asked about the resources they had, as well as the resources they needed to improve outcomes related to the recruitment, retention and graduation of minority students. While responses were somewhat varied, we often heard from our participants, that they believed they could be more effective in doing their work if they had more: money, staff and perhaps most notably, time.

A number of participants believed that in order to really improve on these efforts and make an impact, having more financial resources to address diversity work would be important. One administrator mentioned it as one of the challenges he saw to improving the diversity of URM students. As he explained when asked about the top barriers,

“We don't have financial backing. These are the things. I think the intentions and the desire is there, especially right now, but I don't think the framework is there for really ramping it up. It's a missed opportunity in some ways.”

Interestingly, some expressed the idea that they had money and funds to do the work they were tasked with doing, but explained that more would be needed for their efforts to really have an impact. As one other staff member mentioned,

“I think it (the budget) is adequate for what our current activities are, but I don’t think our current activities are adequate if that makes sense.”

For this participant she had some funding to do outreach work to recruit students, but in order to truly increase the number of URM students and retain them, more money would likely be needed to fund additional programs.

We also heard respondents discuss the need for additional employees to help with the work. For example, a staff member who was actively working on student engagement with URM students in the college explained the need to have more people work on diversity initiatives. As she explained,

“As you said, money fixed fixes a lot of things maybe. That would mean more money to hire faculty and maybe lower the teaching load for people, or provide an opportunity for the department to hire, maybe people who specialize in advising, or people who specialize in developing plans to make undergraduate students successful, or people who are knowledgeable about recruiting and nurturing URM students. Those are some ideas and some of the barriers.”

In a somewhat similar fashion one administrator said,

“If we had a budget for a person whose job was DEI, that would be excellent. That would give us someone whose focus was how can we make it so that everyone is actually being included?”

We regularly heard from participants that they were not necessarily convinced that money itself would make the difference. Money, it seemed, was not always the biggest concern. In fact, one notable theme that emerged was related to time. Participants regularly mentioned being busy with multiple tasks and suggested that diversity work was not always included in their formal job descriptions. For example, as one administrator said,

“I think faculty are short on time. I don't need to tell you two that, obviously, but there's a lot of pressures on us from perspective of teaching classes, writing papers, being productive, getting grants, those sort of things.”

As this quote indicates, if diversity work is not included as a part of the job responsibilities, then it runs the risk of being excluded. Institutions also decide how to reward employees for their work, and therefore employees must decide how much time they can invest in each one and what is the most valued and rewarded.

Time was a factor that we heard from several of those interviewed. As another participant explained,

“I think the two biggest ones that come, well, three big ones that come to mind, two of them are closely related, and that's time and buy-in. There are certainly a few people in the department who are very committed to the DEI mission, and those few people alone can only do so much. Getting buy-in from all of our faculty, and all of our staff, I think is really important for improving the experience of URM students. The second one, is closer related in that time. I think

we have so many demands on our time, that it's difficult to get buy-in when everyone is already spread so thin, so those two I see as interrelated barriers. In terms of addressing those barriers, I think I'm a little bit stuck on that one. I feel like a lot of that is out of my control personally, I do feel like, as the college moves towards a potentially more stable state where we all have a little bit more flexibility in our time, and perhaps fewer administrative or teaching demands, that there could be more room to get time and buy-in from all."

As this participant pointed out, the DEI mission was something that one could embrace but might also neglected without the time to do it and getting buy-in was necessary. We detail this more in the next section referencing Thomas's concept of decentralization or a lack of coordination were interviewees believed held diversity efforts back [11].

Diversity work is not tightly coordinated or organized

Another issue that became clear in the interviews related to the concept of decentralization. Decentralization occurs when there is a lack of coordination across divisions and departments. When there is not a clear meaning and a centralized strategy for diversity initiatives, individuals and departments are left to determine on their own what the mission is [11]. In coding our interviews we noticed that when we asked respondents to define and describe the diversity mission at this institution, we received a variety of answers that were difficult to classify and characterize.

For example, when we asked questions about the college's DEI mission, we received an array of answers. Many participants discussed what they were doing personally towards the DEI mission, which included outreach, teaching activities, and recruitment issues related to both students and faculty. Others professed ideas about how a more diverse student body should ideally be achieved. We also heard about ideas related to racial politics in the United States. Others provided general statistics about the current make-up of the student body and how that was represented in their department. Some stated that there was no policy in their department that addressed diversity issues with respect to students. We rarely heard a unifying vision from our respondents of what this college of engineering was trying to achieve as an organization or what the overarching vision was in this respect. In fact, much like in Thomas's study, we found that diversity had different meanings attached to it depending on the participant. For example, some departments were very focused on increasing female students or faculty, others had programs to increase faculty recruitment, while some spoke about addressing racism in general and the needs of racial minorities. While all of these issues are extremely important, we were struck by a lack of shared direction.

As we talked to respondents, we also heard them articulate the idea that there was not always centralization in what was being done with respect to diversity. As one respondent put it when asked about the diversity mission of this college,

"Well, let's see. It changes, and it's hard to tell. The mission itself has been stressed in different ways."

Others also discussed the fact that diversity work was not tightly coordinated because there was

not necessarily a unifying plan at the top. As one administrator we interviewed explained,

" I feel like we need a stronger vision or leadership higher up. I don't know if each level is appropriate to set the goal instead of letting each department to struggle?

Additionally, throughout the interviews we also heard some participants explain the lack of coordination and consistent engagement across the institution and the need for help to address them. For some, one key mechanism they believed should be emphasized dealt with recruiting URM students.

In talking to one administrator, he explained following,

"Well I would say from the recruiting side it would just be sort of the, let's see, I would say leadership might not be the right word, but really, the resourcing and engagement in recruiting activities through the college. If we were a big, big engineering college, then I could see where the department itself might say we have some staff that leads our recruitment efforts, but we're not, and, so, to me, the college would sort of need to do that and then work to engage both faculty, but even more so, some alumni, which I think we could do if we wanted to."

In a somewhat similar vein, another interviewee explained that were was not consistency with respect to the DEI mission at the top and it was also not consistently embraced,

"I will say that one of the most challenging aspects with my role and things that I've seen during my time, is there seems to be this continuous overturn of leadership within the DEI space, people coming and going within leadership, and so that continuity sometimes is not there the way that it needs to be. The thing that I have tried to impress upon our campus is that it's not just up to one person or the division of DEI, it's on all of us across our university to really take a deep dive into this work, so that when one person leaves the torch can be carried on by other people around our campus and in our community."

We also heard ideas from another staff member who mentioned something similar, emphasizing the disruption to diversity efforts when some positions where let go. As she explained,

"Well, we did have a director of diversity, equity, and inclusion. We no longer have a director of diversity, equity, and inclusion. On paper, the idea is that it's now everybody's job or that it be a particular person's job, but unfortunately in any large organization, when something is everybody's job, what it really means is that nobody's job. There are definitely initiatives that we are doing to try and bring diversity, equity, and inclusion, instead of being a separate thing that we do to be part of everything that we do."

As this quote also suggests, and we heard throughout the interviews, some participants were quite active in certain aspects DEI work and considered it important, while others spent less time or simply had less knowledge about what needed or how best to do it.

As in the previous section, the concept of buy-in was often addressed. When we asked questions about whether or not folks believed that everyone in their department or office understood the

mission, we got a very similar and consistent response across interviews, which was summed up nicely in this quote,

“I think they understand….that is a tricky question. I would say one, it varies, I think some understand better than others. I think each person connects to the mission in a different way, which causes them to maybe understand some aspects of the mission better than other aspects of the mission. I think that each of them can appreciate the importance of what we're trying to accomplish, and certainly I think there's an acknowledgement that it's the right thing to do.”

Without a unifying institutional vision and resources to achieve it, employees had to create their own plan for promoting diversity and inclusion. As we discuss in the next section, this was also connected to the fact that even as participants recognized the importance there was not always a clear incentive structure for performing this work.

Diversity work is not always rewarded by the institution

One issue we were curious about had to do with how participants got feedback about the diversity work they were performing. Were faculty recognized for their successes? Was the work valued? While we regularly heard about people’s individual motivations and their success stories in terms of diversity work, we did not hear as much about how they were rewarded by the institution. For example, when we interviewed one participant from a field that had a higher representation of women than others and asked about his perspective on whether or this was appreciated, he explained the following,

“I suspect they do at some basic number-counting, bean-counting level. I don't think I've ever heard them say that wow, you’re doin' a great job on X, which would certainly be nice if they would recognize that.”

The idea that being attentive to diversity goals was something that the institution appreciated, but did not necessarily provide direct feedback on, was something we heard often. As one administrator explained about feedback from leadership,

“I think it’s valued by the people in the area, but it’s also hard because I don't hear feedback. Does that make sense? I don’t personally hear much feedback. I would hope that they value what we’re doing.”

Ambiguity and little direct recognition and feedback that the work was important was indeed a common theme. When we asked one staff member if she was being recognized she responded in the following manner,

“Well no, I think it's just part of the work….It should be part of the work. In other words, there should be an expectation that people in my position are paying attention. In other words, anybody who has student contact should be paying attention. I understand that that's really, really hit-or-miss in our college, but I guess mostly what I think is our college should be—our college should have a more—what's that word—a more multifaceted strategy.”

Another respondent explained that she believed diversity work was valued, not because of any feedback, but because few people were not dismissive of it. To her, the college was making progress, yet she had concerns. As she reflected on this, she raised the following question and subsequent thoughts on this topic,

"How are we structurally and systematically valuing it (diversity), incentivizing, and making part of the culture, this idea of engagement with the whole process? I think there are some folks who get it, and they're all on board, but without it being more structural and systematic than that, I think you'll always have that be a little disjointed, a little bit piecemeal, and for no one will it really make sense as like, "Oh, okay, here's what we're all doing. Here's the college's directive and direction that we're moving in." There's interest; there's support. There's good relationships that are maintained, but I think that's the piece, to me, that I think can prove the most vital in the long term. I, at least, have not seen that cultural or systematic buy-in being totally present yet."

As she indicates, without this college valuing it at a structural level, it may be difficult to maintain and grow.

Some of those interviewed did believe they were getting direct and positive feedback for their work. However, most of these participants mentioned that the feedback came from others involved in diversity work, or students who appreciated what they had done. Positive feedback came from others involved on the DEI council, as that was a space where they encouraged each other and assessed how effectively diversity work was being implemented.

We did hear from one faculty about a method in which her department incorporated DEI activities every year into her annual performance review. She also described receiving some direct praise and appreciation for their work from a leader in the college.

It is worth noting, however that beyond one faculty member who mentioned having a component of their yearly performance evaluation devoted to DEI activities, we did not hear about any kind of substantial rewards for diversity work, such as receiving an increase in salary or promotion. We also did not hear that there was any type of enforcement or accountability mechanism for those who did not actively engage in doing it.

Diversity outcomes are rarely tracked systematically within the institution

In the interviews we also wanted to assess how people in this college were able to see the results of their work with respect to diversity. How were outcomes and progress being measured? A lack of institutional oversight is also one way that a commitment to diversity in higher education is obscured [17]. Throughout the interviews we heard that beyond collecting official demographic data, few systematic efforts were being made to assess the outcomes with respect to diversity work, which in turn makes it difficult to determine whether or not they were successful.

As one administrator described, he wrote a newsletter to students to build community but mentioned that it he could only discuss this in an anecdotal way. While admirable, as he himself explained, it was hard to know the effectiveness of this action.

We also found that interviewees recognized measurement and assessment issues as important, but noted the difficulty in finding appropriate measures. For example one individual who was on the universities' DEI committee told us this,

"I think it is difficult to identify ways to measure success, and that's been one challenge, is really how do we get everyone on the same page with how we're measuring these things, and how do we know that those measurements are the right way to measure, and also how do we measure these things without putting the students in a vulnerable position, or making it seem inhuman somehow. We certainly don't want to just think about students as numbers, to think it's important to consider their experience as a measure as well. We haven't quite identified a great way to do that at the department level. I know at the college level there are some ideas."

Another administrator also put it this way,

"That this whole notion of DEI is that it's not a destination, it's an ongoing thing that we need to continually practice, right? I know that sometimes people can find themselves frustrated, and how far have we come looking five years out? Initially, sometimes it's hard to see progress in the DEI area because there's a real lack for very clear key metrics in this area."

Some interviewees shared ideas of what could be measured. We heard about some efforts that were being formulated. One participant discussed a plan to do climate surveys in the department with students to gauge whether or not they were adapting and integrated on campus. Another suggested measuring students' attendance at events to see if those events were having some form of impact. We also heard it would be beneficial to have data on how many faculty received diversity training.

In fact one administrator discussed some of the issues with respect to understanding how to measure progress,

"I mean, you always look at retention data, but I don't think that always tells the whole story because there's a difference between retention and student persistence. A student can be retained but not necessarily happy in their goals to get there. I really want the focus on the creating an environment where students want to persist and strive to persist and aren't just completing something so to speak."

Indeed, we were told that the college had data about retention or enrollment with respect to URM students and was assessing it. However, as these participants pointed out, measuring outcomes related to diversity can be challenging.

Conclusion

In sum, this research presents an analysis of in-depth interviews with administrators, faculty and staff members at one college of engineering regarding their involvement, understanding and perceptions of diversity work. We found that many articulated a strong desire to improve outcomes with respect to the recruitment, retention and graduation of underrepresented minority

students in this college. However, there were structural obstacles that made it difficult to successfully move forward with these goals. As these interviews demonstrate there was not always available resources to do the work. Money was one of them, but we heard several people explain that more staff and time also needed to do more on this front. Second, we found that while there were many people performing laudable work, the diversity mission was not necessarily tightly coordinated across this institution. This meant that our participants were left to interpret and construct diversity as individuals, leading to piecemeal efforts and a misalignment of goals. Third, we also noticed that most of those interviewed rarely received consistent feedback or praise from leadership on their work. Feedback can engage employees, help communicate and promote the mission with respect to diversity, and signal the importance of the work. Fourth, measuring the results around diversity work can be challenging. Our interviewees acknowledged that it was difficult to identify the right targets and metrics. However, knowing if recruitment events or training opportunities had a measurable effect is necessary to assess the effectiveness of diversity efforts.

This work is intended to expand the conversations about how diversity work in engineering can be realized and how we might begin thinking about how individuals do this work within institutions. How do the practices, cultures and policies in institutions influence how individuals can do the work? Our hope is to spark new discussions about how colleges of engineering can transform their institutional cultures, so that they can realize meaningful and sustainable cultural practices.

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Resources

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