

Cultural Models of the Admissions Process In Engineering: Views On The Role of Gender

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Gaining entry to a college of engineering is something that most people who eventually become engineers must do. However, for some this is not the straight-forward process for which a prospective student might hope, and because of this we are interested in how students navigate the process of admissions.

Implications of Findings

Every engineer who is awarded a college degree has to navigate the admission process, yet not much is known about the impacts of the process on engineering students. We argue that students assemble a cultural model of admission, which, for some, includes the view that women have an easier time getting into the major than men do.

The view that women get into the college easier than men was prevalent among students, despite the fact that UWest has been effectively banned by State law for almost a decade from treating a student preferentially because of her gender. This cultural model of engineering admission at UWest has implications for students' experiences in the college. We see some women reporting a belief that if there are different standards for men and women, then women must be less able than their male counterparts. The men also indicate that the programs specifically for women mark women as different and needing support. The women want to prove that they are not just filling a quota. At UWest this study has helped to initiate conversations about revisiting the admissions process and policies. We should also be concerned that this cultural model seems to force women to “go underground” when they need help, and avoid working in teams with their male peers. We argue that it is important that we understand what both men and women admit to believing about the reasons these programs exist.

Method and Background

In the last 30-50 years, attempts have been made to increase the number of women who go into the field of engineering. In this study we are looking to see what cultural models are shared among members of UWest’s engineering and pre-engineering students, in particular the body of shared knowledge behind the students’ talk about the admissions process at UWest’s College of Engineering.

Most students in the study believed that gender was a mitigating factor in the admissions process.

This study is part of the Academic Pathways Study (APS) of the Center for the Advancement of Engineering Education (CAEE), a five institution center funded by the National Science Foundation. UWest is one of the partner universities and is a flagship state school on the west coast of the United States. UWest is unique among the participating APS institutions in requiring

that students go through a competitive application process for admission to the college of engineering before their junior year. A small number of students (approximately 2%) who the college considers highly qualified are admitted directly as freshmen.

Sixteen pre-engineering and engineering students at UWest agreed to participate in the study early in their freshman year (2003-2004). Students were recruited through the college's pre-engineering LISTSERV and of those who volunteered, eight men and eight women were selected; women and students of color were over-sampled. Also selected were students who demonstrated a strong commitment to applying to the college or were already in college. Participants in the study came from varied backgrounds, and applied to a variety of departments within the College of Engineering.

The students participated in unstructured, ethnographic interviews in the spring of each year of the study, and researchers at the schools shadowed eight of the sixteen as they progressed through their undergraduate engineering education programs. Interviews were generally 1.5 to 2 hours, followed an open-ended interview guide, and were audio-recorded, transcribed, and coded using Atlas.ti. Excerpts were then analyzed with an eye to emergent cultural models shaping the reported beliefs of students about the admission process.

What We Found

The excerpts discussed below were chosen because they are representative of the notion being discussed or because they contrast or contradict a commonly held view among participants (see full-text article at the link below for participant quotes).

Assembling an understanding of the admissions process.

Uncertainty about the process. Admission was a source of worry for many students in the study throughout their first two years of pre-engineering, unless they were a direct admit to the college, because admission to UWest's College of Engineering is highly competitive. Students were familiar with the stated "nuts and bolts" of admission, but were uncertain about how these documents would be used to judge them. Many students talked of contingency plans if they weren't accepted.

Sources and navigational practices. Interviews with the students revealed that they used a number of different sources to construct a cultural model of the admissions process. These sources were both "official" (e.g., department advisors or department and college Web sites) and "unofficial" (e.g., friends, classmates, or sorority sisters). Generally, the students in the study reported consulting multiple sources. Conversations with advisors were key in the construction of a cultural model of admission at UWest and the navigation of the admissions process.

What counts in admissions decisions.

Grades, activities and work as factors. Most of the students talked about what kind of grades would be required to get into the major. Additionally, a student's activities were also cited as things that an "admission committee" would consider when deciding who would be accepted. Also mentioned were research projects and jobs in the field (both on campus and off) as being factors in being admitted. Grades seemed to be what most students thought were given the greatest weight in the decision about their futures in engineering. The other things, such as activities, played a supporting role and were used to prop up a student's chances if their GPA was not believed to be strong enough.

Gender as a factor. Most students in the study believed that gender was a mitigating factor in the admissions process. Many students cited the presence of the Women in Science and Engineering program on UWest's campus and other women-targeted programs as evidence that UWest was striving to reach out to women. For some, these programs were evidence that women needed more help or were disadvantaged in some way. Others saw such groups as evidence that the college wanted to "encourage" women to be engineers, because of the relatively small number of women in the field. Clearly, the engineering and pre-engineering students (both men and women) in this study seemed to see gender as a factor within their cultural models of the admission process.

Impact of beliefs about the admissions process on women *"I haven't had any problems."* Some of the women in the study reported that they hadn't had any problems in their departments. However, one also felt that women may now have an easier time than women in engineering in the past; another did not see herself as one of the elite in her program and did not see other women in this position either; and another felt that her experience was likely different, even harder, than her male peers socially.

Social differences. The desire to avoid perpetuating the "stereotype" that a women in engineering would not "know what she's doing" was also mentioned by participants. This caused women to avoid interacting with their male peers, limiting the pool of peers whom they could collaborate with, which in turn may have a negative impact on them academically. This stereotype can be read as being related to the notion that the engineering college applied a different set of standards for admission to women applicants.

Proving oneself. Prevalent in the talk of the women (even those with high GPAs relative to their counterparts in the study) was the notion of having to prove oneself to others. Even though they were admitted to the college and have proven themselves worthy of admission, women still talked about the need to demonstrate (especially to their male peers) that they deserved a place in the field.

Future work will continue to explore the impact of this cultural model of engineering in the context of senior capstone design projects to determine if, after at least a year in the major, these beliefs are shaping student interaction.

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