Deploy data-driven messaging to swell the ranks of women in engineering

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Any gathering of scientists or engineers will sooner or later gravitate to a discussion of data. At a time of heightened sensibility about the technical workforce and the persistent inequity in opportunities to join it, data take on an urgency of purpose—not just informing, but systematizing what we know, and potentially stigmatizing those supporting the status quo.

This is the subversive function of data, the one that celebrates some individuals and organizations, but can shame others. If performance matters, then displaying measures of excellence, productivity and innovation—particularly metrics that are made intelligible—should be an evaluative staple of engineering among all the STEM disciplines. We should never underestimate the power of data to catalyze change.

The role of data in the demographics of engineering was at the center of discussion at a recent American Society for Engineering Education (ASEE) workshop. Engineers were the numerical majority, but counselors, statisticians, and social scientists, among others, played key roles in provoking discussion and foraging for new ideas about ways to increase the participation of women in engineering

I saw the workshop as an exercise in intergroup relations. We comprise a subculture of professionals from various disciplines who are impatient about the underrepresentation of women and persons of color in engineering. The dominant culture of engineers in a specific discipline or industry tends to be either: (a) content with engineering enrollments, degrees and workforce patterns as they are; (b) feeling powerless to change the situation; or (c) unaware that engineering is dominated by white males despite demographic realities and inequities in participation.

The challenge to the subculture is to motivate the dominant culture to act in more inclusive and supportive ways—using data to frame the message and eliminate ignorance as an excuse for inaction. In skilled hands, data can help reshape behavior, organizations, and even professions like engineering.

Some would call this constructive, others subversive. Either way, it is “scientific” in the sense of supplying quantitative measures—in the form of scorecards, dashboards, ratings, and rankings—to augment perceptions and stereotypes about who is doing the job of producing a workforce that reflects the demographics of our population. Data can be deployed to advance agendas, justify causes, and pressure organizations—especially institutions of higher education—to fulfill their missions and keep promises to educate all qualified enrollees.

The singular conclusion on which workshop participants converged was the need for data—not just its production and validation, but its adroit aggregation and presentation in compelling messages. Indeed, messaging was a seen as a strategy, a rallying-cry, and a way to disrupt the incremental progress that women's priorities could bring to engineering.

Recently, Nigerian writer Chimanmanda Ngozi Adichie exemplified this eloquently during a 2015 commencement address at Wellesley College. First, she said, “Teach your students to see that vulnerability is a human rather than a female trait." Secondly, she advised employers to “...hire more women where there are few. But remember that a woman you hire doesn’t have to be exceptionally good. Like a majority of the men who get hired, she just needs to be good enough.”

In addition, I would remind us that college classrooms, like workplaces, have a culture. That culture has a climate that may be more supportive of some than others. Take the temperature regularly. Discover who finds it “chilly” and how that is impacting performance. Identify the behaviors (“micro-aggressions) that sustain the chill and drive some away. Finally, reward those who serve as the models and the mentors, who celebrate difference in how engineers look and work to change the organization that employs them.

When we talk of accountability, we should remember the populations to which universities, and particularly schools of engineering, are accountable: parents, accrediting bodies, employers, assorted patrons, professional societies, media outlets, and most importantly, students.

We must speak to them all with data that convey the humanity of engineering as well as its problem-solving ability, that communicate who is thriving and who is not (and then setting a research agenda for finding out why), and that identify the leading and lagging schools of engineering.

The data must be disruptive. They must be impossible to ignore. Then we will learn who's listening.