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Increasing Diversity bringing sublime changes in Engineering Pedagogy

Rahul Mukherjee

Scientists and engineers with diverse backgrounds, interests, and cultures can produce better scientific and technological results, as well as ensure the best uses of varied technologies & to obtain those results.

Earlier, the National Science Foundation (NSF) reported some positive news in its 1998 report on Women, Minorities and Persons with Disabilities in Science and Engineering (1999):

- In last two decades the world had seen drastic changes & advancements in the engineering domain pertaining to various diversities.
- The number of students enrolled and earning undergraduate science and engineering degrees continues to increase.
- Between 1982 and 1994, the percentage of students taking basic and advanced math courses doubled.

In the U.S. and abroad, calls abound for attracting students to engineering in high school, for providing incentives to students to complete their engineering degrees, and for increasing funding for engineering programs. Why? The argument is simple: we face unprecedented global challenges and opportunities, from the need for clean water and clean energy to fighting cyber terrorism. These challenges demand new ideas, and one obvious approach is simply to increase volume. After all:

More engineers = More innovation

In some sense, this equation is hard to dispute. But it misses an equally powerful possibility:

More diverse engineers = More innovation

In other words, responding to the economic, social and environmental challenges of the coming century will take more than increased number of engineers. It will require a more diverse population of engineers which will pertain a dedicated & logical approach to the upcoming challenges.

Diverse perspectives are critical for addressing the multi-disciplinary, global problems we face. Furthermore, research shows that diverse teams are more creative and more effective. If we want to adequately address the

world's problems, we need to have a more diverse set of people pursuing engineering. So perhaps it's time to rethink what we mean by diversity.

Diversity is important, and so is a renewed commitment to career and technical education programs at the secondary and post-secondary level. This has been shown to not only improve student achievement but also help bridge emerging economic skills gaps.

Doesn't a person need to be comfortable setting jacks winces and pulleys together in creative unruly ways before they think of majoring in engineering. I do that with my geometry I try to set jacks up in important places have patience to twist up because I don't and my back hurts but I think the effort is worth it. I think a person can cure autism this way. The fashion clever ways to tie a line with expectation it should move a deliberate direction. If I can't visualize that would it be wise to ignore engineering?

Addressing and breaking down the (often) negative stereotypes that people have about the word 'engineering'. At FISITA (International Federation of Automotive Engineering Societies) recently launched:

www.yourfutureinautomotive.com

as a response to the global skills shortage and also to provide students and young engineers with education advice, information and career guidance. Engineering as a whole provides some of the best and most exciting opportunities for young people to be involved innovating breakthrough technologies and addressing current issues which affect everyone, whether it's through automotive, environmental, software, telecom, civil, instrumentation, medical or in other sectors.

It's a challenge, but one we're seeking to address.

Welcome the Engineers of Tomorrow

When we focus on the three diversities -- gender, personality and aspirational -- by changing the culture of engineering education, we can attract a broader scope of people to the field. This cultivates the hybrid technologies to greater extent for the optimization, efficient & skilled engineering workforce. Realize, though, that this goes way beyond messaging. If we only change the message and not the experience and the culture, then we're setting people up to embark upon a path they won't finish. But if we change the culture and what an engineer is in that culture, then we have a real chance for positive and long-lasting engineering education reform.

About the Author: Prof. Rahul Mukherjee is the Head of Department, Electronics & Communication Engineering at St. Aloysius Institute of Technology, Jabalpur, India. This article is written on the diversity in engineering which imparts the changing trends in engineering pedagogy & research taking the advances in technology to new horizons for the betterment & enhancement of applied engineering to life.