

Reaching Out: Increasing Diversity

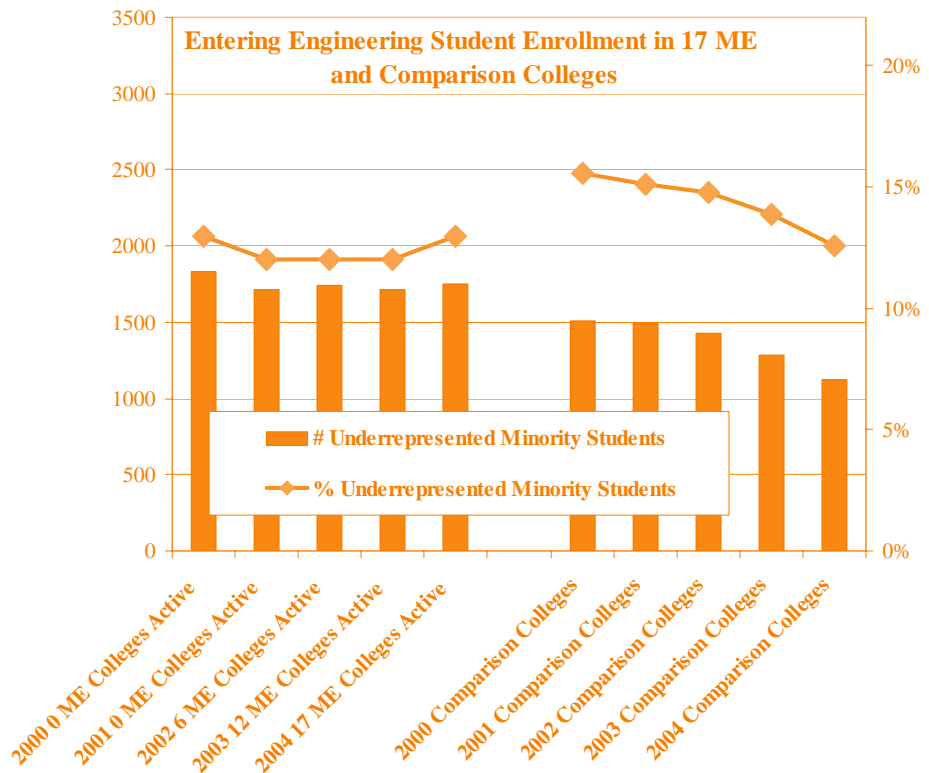
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In recent years the number of students going into engineering has been increasing, but the diversity of engineering students has not. Between 1999 and 2004, the number of American men entering engineering programs increased 15% to over 83,000 while the number of American women decreased 7% to just over 16,000. The pattern for underrepresented minority students is mixed. First year African American student enrollment is down by 8%, while Hispanic student enrollment is up by 17%, and Native American student enrollment is up by 3%.¹

Increasing Diversity In 2001, the GE Foundation established the Math Excellence (ME) program to support comprehensive K-16 strategies that result in long-term, sustained impact on underrepresented students in engineering and other quantitative fields. Since then, 19 colleges and universities with engineering schools have received ME grants.²

Participating in ME makes a difference. Engineering enrollment in ME colleges was compared to that of other colleges of the same type, geographic location, public/private designation, and size. The number and percent of underrepresented minority student enrolling in engineering has been consistently decreasing in comparison colleges. This has not been the case for ME colleges. As more colleges became active in ME new underrepresented minority enrollment stabilized. Now with all the ME schools active, new underrepresented minority student enrollment is increasing.

Over time, the annual number of underrepresented minority students going into engineering in ME colleges stayed around 1725. At comparison colleges underrepresented minority student enrollment declined 25% to 1,126! Fifteen of the 17 ME colleges did better than their comparison colleges.



Reaching Out is one of a series of lessons from the GE Foundation's Math Excellence Evaluation, a 5-year grant awarded in 2001 to the National Action Council for Minorities in Engineering, Inc. The principals in this effort are Daryl E. Chubin, now Director of the Center for Advancing Science & Engineering Capacity at the AAAS and Patricia B. Campbell of Campbell-Kibler Associates. "Lessons from Math Excellence" can be downloaded from www.campbell-kibler.com, and www.nacme.org/news/publications.html. Math Excellence resources can be downloaded from www.ge.com/foundation/resources.html. Inquiries should be directed to campbell@campbell-kibler.com.

The pattern is not as clear for women students. The decline in women entering engineering has been dramatic. In four years, the number of women entering engineering in comparison colleges went from 1,996 to 1,509, a decline of 22%. However, entering women's student enrollment in ME colleges fell 9%—from 2,904 to 2,486.

Participating in ME appears have a greater effect on underrepresented minority student enrollment than on women student enrollment. Since all ME colleges explicitly targeted underrepresented minority students and only four explicitly targeted women students, this difference is not surprising.

Reaching Out Using the following strategies, ME colleges have been increasing the diversity of their entering students:

Directly involve engineers, engineering students, and schools of engineering.

[Precollege] students are passionate about having the engineering fellows there. They're more engaged and ask more questions when the fellows are in the classroom and there is an increase in interest. Additionally, this gives students some interest in college life and exposure to the idea of going to college in engineering. (Evaluator)

Most ME efforts are located within engineering schools (71%), are lead by engineers (65%), and involve engineering students working with other students (59%).

Bring students to the campus.

We're starting to bring [precollege] students to campus to tour our labs, have lunch with some faculty members and engineering students, and I think it's a good opportunity for people at campus to meet young, enthusiastic minority students. It's not common to see women engineering students, much less minority, and I think it's good for both students and people here. (Engineering Professor)

Over half of the ME (53%) colleges bring targeted students to campus through summer bridge programs for high school graduates, student summer camps, and school year campus visits.

Increase outreach to schools in the community.

Teachers are less afraid to ask for our resources. They regard [engineering faculty] as peers. Last weekend, a number of teachers brought their own kids and students to a festival here. They're more aware of us as a resource and a lot more comfortable to approach us. (Education Professor)

Through ME, 88% of the 17 colleges increased their outreach to area schools, teachers, and students.

In Closing Under Math Excellence colleges of engineering are reaching out to underrepresented students and teachers in their area. Teachers and students are becoming more familiar with both the engineering programs and faculty. For their part, engineering faculty are learning more about area students. In the short term, this increases both the knowledge and comfort levels of all the groups involved, leading to longer term effects on the diversity of students entering engineering in participating schools.

¹Data were collected from Engineering Workforce Commission, <http://ewc-online.org/>.

²Two ME colleges were not included in the analysis: one, the only women's college with an engineering program, for which it was not possible to find a match, and another whose students do not declare engineering majors until after their first year.