

GEE: Opening Doors and Minds to Engineering

Business Case for **Girls Experiencing Engineering**

The Program. Girls Experiencing Engineering is a summer program that attracts young women to science, technology, engineering, and math (STEM) fields by increasing awareness of career opportunities, addressing misperceptions and stereotypes, and providing hands-on learning experiences that build confidence and offer leadership opportunities. GEE is hosted by the University of Memphis Herff College of Engineering and has been funded since inception by the Women's Foundation for a Greater Memphis.

National Need Explained. Critical to building an American workforce with 21st century skills is the recruitment, retention, and graduation of students in STEM fields. However, nationwide, lack of student interest in and preparation for various STEM fields, in particular engineering, results in a shortage of workforce talent. In addition, there is a lack of diversity in the STEM workforce. This is particularly important, as people of varied perspectives, backgrounds, and experiences are needed to solve the increasingly challenging problems faced by our global society.

The American Community Survey statistics show that women are still very underrepresented in STEM fields. Although women make up nearly 50% of the U. S. workforce, they account for only 27% of the STEM workforce¹. The statistics for specific fields, such as engineering, are even more sobering. Only 15% of engineers in the U. S. workforce are women¹. These trends are concerning not only because women must be well represented in STEM in order to meet job market demands, but also because diversity of thought is very important for solving STEM challenges. In fact, numerous studies have documented a business case for diversity in terms of increased profit, innovation, and organizational performance, with these indicators being particularly linked to representation of women².

Local Relevance Explored. Within the State of Tennessee, it is anticipated that more than 100,000 STEM related jobs will need to be filled within the next six years and 88% of these jobs will require post-secondary education. Memphis mirrors these findings, with a large STEM industry based in transportation and logistics, bioscience, and chemical fields. Because of this significant industry base, it is essential to produce a talented STEM workforce locally.

In Shelby County, women make up 50% of the local workforce but are significantly underrepresented in technical fields³. Women only hold 31% of jobs in the computer, engineering, and science (CES) occupations. The discrepancy is even greater for computer and mathematical occupations, where women make up 28% of the workforce and in architecture and engineering occupations, where they account for 22% of the workforce³. Median earnings in the CES sector are \$69,209, as compared to the overall median in all employment categories of \$49,647⁴. This is important because this sector is one of the top occupation categories in terms of earnings in Shelby County, and can lead to economic self-sufficiency for women.

Evidence of Success. Since its inception in 2004, the GEE program has engaged an estimated 1,950 students (including 1,183 unique participants where nearly 30% are repeat attendees), over 850 teachers, and 335 peer mentors. Program tracking efforts reveal that of the tracked former participants who have graduated high school, 99% are attending college and 58% are majoring in Science, Technology, Engineering, or Math. As more students progress from the middle school to the high school GEE programs, graduate, and enter college, it is expected that the number of STEM majors will also rise. This success contributes to the availability and diversity of a local STEM ready workforce, which is crucial for the local economy.

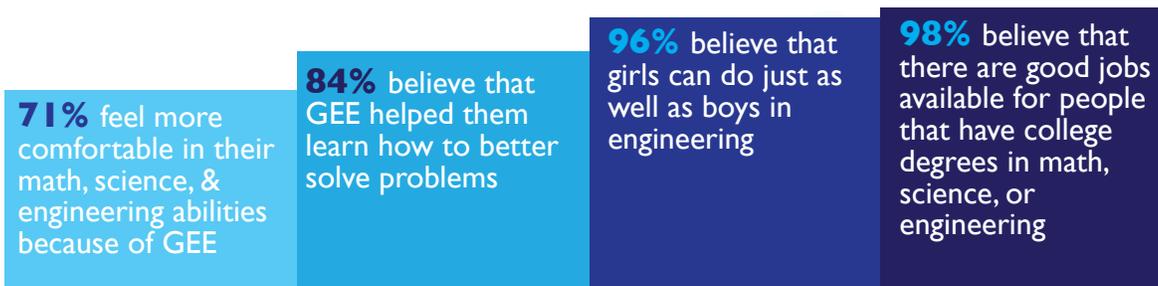
1. Martinez, A. and Christnacht, C. Women are Nearly Half of U.S. Women Making Gains in STEM Occupations but Still Underrepresented. U.S. Census Bureau, January 26, 2021.
2. McKinsey & Co. (2017). Women in the Workplace 2017. McKinsey & Co.
3. U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.
4. DataUsa (2017). Shelby County, TN. <https://datausa.io/profile/geo/shelby-county-tn>

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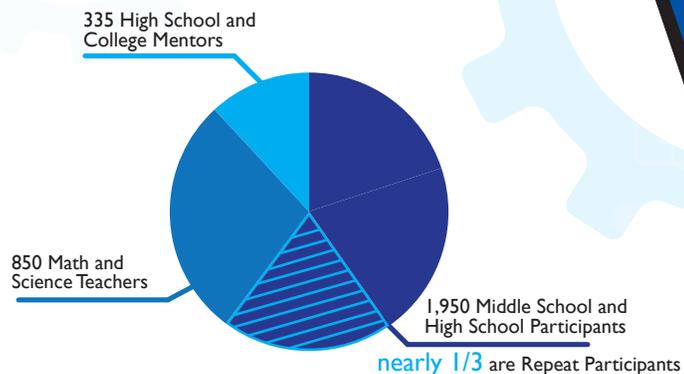
Longitudinal data on current student activities. We have been able to track 577 of 843 former participants who have graduated high school (314 tracked to major) and of these ...



Participant opinions as they exit the program.



Over the course of the past **18 years (2004-2021)** GEE has involved **1,950 participants**. Importantly, approximately **88%** of these girls represent minority groups traditionally underrepresented in math, science, technology, and engineering fields. Of the high school girls selected to serve as mentors, **77% are now in engineering majors, 87% are in a STEM major, and 99% are in college!**



Hear from GEE Program participants.

“All my life I have wanted to be a scientist, and now I feel like I can follow my dream.”

“GEE was fun, challenging, intriguing, and engaging!”

“GEE has helped me figure out what I want to do when I go to college. I've enjoyed this program so much, and I am definitely now considering becoming an engineer.”

Thank you 2020 GEE Sponsors!!!

