

Engineers of the Future by Design

James Mayrose, Steven Macho, Clark Greene
State University of New York College at Buffalo

Abstract

The Engineers of the Future Program (EoF) was a grant funded initiative to promote interest in engineering as a career path. Design as a pedagogical approach was used to deliver STEM related content. Courses were developed to train technology teachers in skills and techniques which will help middle and high school level students pass rigorous pre-engineering courses. One notable objective of this initiative was to provide teachers with curricular content and design based activities that enable engineering relevant learning in the classroom at a low to moderate cost.

Three hundred seventy seven teachers took part in the six week summer program at 7 sites spanning the state of New York. Over 25 instructors from seven different states in the U.S., Canada, and England, and six different colleges and universities developed and conducted the courses. The six separately delivered course content areas included Digital Electronics & Control Systems, Engineering & Technology, Engineering & Prototyping, Biotechnology & Bioengineering, and Design & Innovation.

Pre and post program surveys were given to all participants. Based on responses, the EoF program has impacted an estimated 27,556 New York State students, of which 40% were female (11,098) and 60% male (16,458). The analysis also shows, with a level of significance of 0.05, that post EoF program participants are now more confident in regards to delivering rigorous pre-engineering curricula in their classrooms, aligning the curricula with state standards, and implementing EoF content in their future classes.

Creating engineers of the future involves special support for teachers to incorporate instructional techniques to address a rigorous curriculum. Extensive use of hands-on design based activities was used to expose students to what engineers actually do. The activities-based learning environment developed in the EoF program has given participants the confidence needed to implement preengineering curricula in both middle and high school classrooms.

Proceedings of the 2008 ASEE Gulf-Southwest Annual Conference
The University of New Mexico – Albuquerque
Copyright © 2008, American Society for Engineering Education