

## **Hands-on Engineering for High School Students**

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The University of Washington is part of the National Science Foundation's ECSEL (Engineering Coalition of Schools for Excellence in Education and Leadership) program. The Student Leadership component of the University of Washington group has been busy developing interactive modules for high school students.

A group of dedicated undergraduate students has been working on interactive teaching modules for high school students. The modules are designed to be self-contained hands-on learning labs for the high school students. Both long term and short-term modules are being developed. The long term modules are designed to be taught over the course of several weeks, and the short term modules are designed to be taught in a couple of hours.

The module topics range from building strong composite structures to tall towers. The way the modules are structured is that the engineering topic is introduced, students brainstorm ideas, students are broken up into groups and given materials. Engineering design concepts are introduced and the high school students start building their project. All projects are tested and the engineering designs are discussed with the students.

A small group of undergraduate students goes to a local high school and facilitates the class or sequence of classes that compose the module. High school students have reacted well to undergraduate students teaching them. High school students seem to feel comfortable with college students who are closer to their age. The undergraduate students also act as mentors to the high school students, answering questions via e-mail long after the engineering learning labs are over. Tours of engineering labs at the University of Washington are often arranged for classes of high school students who want to learn more about engineering. This type of outreach, from college students to high school students, appears to be effective and enjoyable for those who teach and those who learn.

RACHEL SPEAKS is a Ceramic Engineering junior at the University of Washington. She has been involved in science outreach to inner-city elementary school students, gifted junior high school students, and local minority high school students. She has also been involved in research work in biomimetics, engineering internships at Intel, and is the Professional Mentoring Co-Chair for the Women in Engineering Initiative at the University of Washington.