

Engineering is Elementary (EiE)

2016-2017 STEM Scale-Up Program

Overview: Engineering is Elementary (EiE) is a rigorously researched, classroom-tested curriculum that increases students' interest in and confidence about engineering. EiE is designed to encourage all children—including those from underrepresented groups—to envision themselves as potential engineers. The EiE Curriculum is the nation's leading engineering curriculum for grades 1-6.

Grade Levels: 1-6

Program Summary

The EiE curriculum has been expressly designed to address the critical need of increasing children's STEM literacy. Inquiry-based and standards-driven, EiE teaches engineering content and skills, links engineering to the science and mathematics students are already learning, and helps children develop positive associations with engineering and science—to see them as being integral to modern life, and also potential career paths. Besides promoting STEM literacy, EiE units also connect with literacy and social studies.

Program Objectives and Description

The EiE curriculum is expressly designed to:

- Foster science and engineering learning and technological literacy;
- Help all students, but especially girls, minorities, and other underrepresented groups, recognize their ability to engineer;
- Build enthusiasm for engineering as a career choice;

The EiE curriculum integrates engineering with science and improves student understanding of technology. Though people tend to think of science, engineering and technology as three separate things, they're actually closely connected. Because the EiE Project serves young children, it has a simple Engineering Design Process (EDP) to guide students through the engineering design challenges. This EDP has just five steps and uses terms children can understand.

What does the program provide to the educator?

EiE's 20 units present fun, engaging engineering challenges that allow students to apply science knowledge in meaningful ways. Materials kits with supplies for 30 students are provided for each unit. Each unit is introduced by a storybook about a child who solves a problem through engineering. Set in locations around the world, the storybooks integrate literacy and social studies and provide context and meaning for the hands-on activities that follow. In addition to introducing students to the excitement of engineering, EiE fosters valuable cognitive skills such as critical thinking, collaboration, communication, creativity, flexibility, persistence and learning from failure. Educators see the EiE materials as an excellent fit for elementary school students and most often cite as strengths the hands-on approach, the sound pedagogical design of the units, the ease with which they can be adapted to fit local circumstances, the collaborative nature of the activities and the many ways in which using the EiE units promote a greater awareness of the ubiquity of engineering in the lives of their students.

EiE's "Engineering Adventures" and "Engineering Everywhere" are available and especially created for out-of-school programs. "Engineering Adventure" offers real-world engineering challenges, which promote creativity and teamwork. In "Engineering Everywhere," kids engineer a better world with engaging activities that relate to real-world experiences.

What is required by the educator in order to implement this program?

Grant Wood AEA requires the applicant to attend a one-day Professional Development training related to EiE. EiE's "Everyone Engineers" workshop introduces you to the concepts of engineering and technology and prepares applicants to facilitate EiE unit(s) with their students. Educators who experience EiE's professional development feel more prepared to teach engineering, technology, and problem solving.

Website (with link to Standards Alignment): EiE website [<http://www.eie.org/>]; Connections to Standards and Curricula [<http://www.eie.org/eie-curriculum/eie-connects-standards>]

Program Video: <https://vimeo.com/eieboston/review/129435399/b9261b33d3>

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