

Are You an Advocate?

Contributed by Brian Dekker, P.E., S.E., LEED AP, NCSEA Past President

How many times have you described your job to someone and had them respond, “So, you’re an architect?” Members of the general public often have an incomplete, and sometimes distorted, view of the structural engineering profession. What are you doing to change that?

The greatest opportunity for us to change the image of structural engineering is with children; children are eager to learn, they learn quickly, and they will carry our society into the future. It’s also easy to speak to an audience of children – at your local schools.

Structural engineers have asked [NCSEA’s Advocacy Committee](#) for help in this process. In response, the Advocacy Committee offers several [resources](#) to equip engineers to better reach students. The process typically begins with our posters. At your request, NCSEA’s office can send you posters that you can distribute to local schools. The posters are often a “foot in the door” that prompts requests from teachers for you to come and speak to their students. That’s where most engineers (introverts) start to get nervous. The NCSEA website has [resources](#) such as PowerPoint presentations, videos, and activities that you can use. Your approach will vary depending on the age of the students.

In Elementary School, children are beginning to learn basic concepts about society and how individual people fit into the whole. This is a perfect age for structural engineers to explain the importance of the built environment and the role of structural engineers in design. You can point out the fact that most of their life will be spent inside buildings that were designed by professionals including structural engineers. The structural engineer’s design protects them from wind, snow, earthquakes, and rain. *Structural engineers save lives.*

To engage 5 to 10-year-old children, it’s best to use brief demonstrations and videos. An hour lecture on finite element analysis will not be helpful. You can use simple models to demonstrate basic ideas about environmental loads and building materials. It’s great to bring some samples of rebar, CMU, steel, concrete, and wood. Check with your local material suppliers to see if they have any leftovers that you could have.

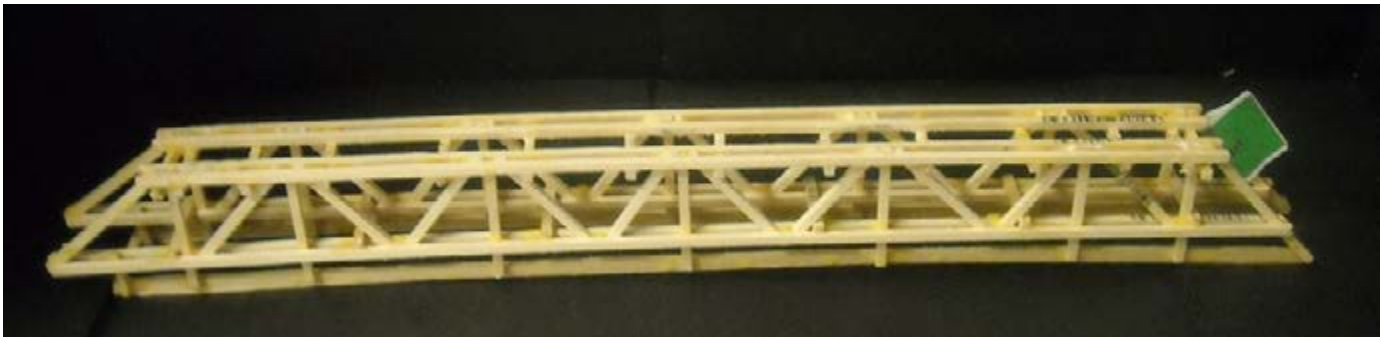
By Middle School, children have been introduced to the basic math and science principles that form the foundation of structural engineering. At this age, you can encourage them to improve their math and science skills. Explaining how math and science is used in structural engineering can help motivate them to try harder. NCSEA has a PowerPoint presentation that will help you hit all of the main topics.

Hands on activities with 11 to 13-year-olds can be physics-based with an element of competition. One idea is making bridges or towers with gumdrops and toothpicks. My favorite activity is building Lego towers and testing them on a shake table. If you want the construction plans for my shake table, email me at brian@soundstructures.net.



When talking with High Schoolers, you can explain how they can use their math and science skills to become a structural engineer. [Click here for NCSEA's "what is structural engineering" video](#) for pre-college students.

Hands on activities for this age are effective and can test the students' abilities. You can use the Middle School activities and step up the level of competition, or you can help plan a longer-term project. The International Bridge Contest, from Illinois Institute of Technology, is a great program that you could start in your area. To host a virtual bridge contest, you can introduce the students to Engineering Encounters' Bridge Designer Software. Check out both of those resources online.



Like structural engineering, all of the STEM (Science, Technology, Engineering, and Math) professions have a lot of room for growth. According to the U.S. Department of Education, only 16 percent of American high school seniors are interested in STEM careers. But, the demand for STEM jobs is continuing to increase. We need to tell students how fun, challenging, and fulfilling it is to be a structural engineer. The next step is yours. Advocate!