

Endangered Species: Structural Engineer

By Ann Marie Garko-Hill, P.E.

Do you agree or disagree with the title? Like it or not, if we do not take the time to show our youth what a Structural Engineer does, this title will be fact. Ask a middle or high school student, "Who designs the structure of a building?" They will most likely respond, "The Architect." I know this may sting, but it is a harsh reality. For the most part, and as I am sure you are well aware, Structural Engineers stay behind the scenes and are rarely featured in the limelight.

Career selection is happening earlier and earlier. It has become the middle and high schools' obligation to expose our youth to a variety of different careers so they can at least choose a general area they would be interested in. There are a wealth of programs available to our youth to help in "trying out" different professions – space camp, robotics competitions, and Future Cities, to name a few. I have been mentoring for 18 years, and the only program I know of that gives exposure to Structural Engineering is the West Point Bridge Design competition. This lack of programming is something structural engineers should work to change.

Most of the programs mentioned above are national, if not global, programs. This may seem intimidating, but most of them started out as small local programs. All of these programs have one thing in common: enthusiastic volunteers. Realistically, we are not going to create a nationally recognized structural engineering mentoring program overnight. But with engineers becoming involved locally, we can engage and generate interest about structural engineering among our youth.

Getting involved can start at your child's school or scout troop. If you do not have children but would still like to get involved, find out what schools are closest to your work or home. (Student chapters of ASCE occasionally look for structural engineering presenters as well.) Then email the principal, science teacher, or scout

Hint: Job shadowing is a relatively easy way to volunteer. Many high schools now require students to spend time job shadowing as part of course work. Check in with the career/counseling department of the local high school and add your name to the list.



Middle School and High School students participating in a hands-on Structural Engineering workshop. The students were tasked to build a structure from a box of office supplies. The structures were later load tested, allowing the students to see if their theories worked.

leader. If you are feeling really ambitious, many school districts have science and technology centers that offer longer-term opportunities. It has been my experience that these individuals or groups are typically thrilled to have a volunteer and can always find some way to get you involved. Word travels fast; just one inquiry could lead to many different opportunities.

Now that you have found a group that wants to learn more about structural engineering, what should you present? Pulling together a stunning powerpoint with pictures of our projects is definitely appropriate for youth presentations, but it should not be the whole presentation. Depending on the age group, spend time explaining the basic science behind our profession – gravity loads, lateral loads, tension and compression. Always ask the group for input through open-ended questions. You will be surprised how much even young children know about loads and forces.

The best way to really drive home these concepts is through hands-on activity. Kids learn and retain more from doing, and it is a great way to get them excited about a topic. It is the hands-on activities that may seem most difficult to develop and plan. Frankly, it may be keeping many of us from pursuing youth mentoring opportunities. Luckily, there are many tested activities that are easy to pull together. Gum drop geodesic domes, balsa wood bridges, and gum drop bridges are all quick and easy activities that kids enjoy. For older students, outlining the design process using analysis software is always a big hit.

If I have inspired you to find opportunities to show our youth how exciting it is to be a structural engineer, and I hope I have, contact your local SEA and let them know what you are doing. Perhaps they will be able to assist you with supplies or ideas. Ask if they have a resource bank for presentation ideas or materials. If they do not, suggest they start one. Through networking on a local, regional and national scale, we can help each other make youth mentoring fun and easy and increase the awareness of structural engineering. ■

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Tip: Increase volunteerism by asking a colleague to assist you with the youth mentoring opportunity. Once they see how fun and rewarding it can be, they may be tempted to do it again.

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