

Mentoring Today's Youth to Recruit Tomorrow's Engineering Leaders

By Maryam Peters

High school students today are often overwhelmed with vocational options. Mentorship provided by industry specialists offers valuable real-world insight and enables young adults to make more educated career decisions.

Many of today's youth show a lack of interest in pursuing careers in the architecture, engineering and construction (AEC) fields. This fact has been a hot topic of discussion among industry experts for the last several years, as studies warn of a shortage over the next decade.

It is imperative that proactive measures are taken to ensure that the future of engineering is not diminished due to these projections. One effective way to overcome this obstacle is through mentoring, a research-proven technique credited with opening the hearts and minds of individuals who are undecided about their career paths. By positively influencing career decisions through mentorship relationships, we can help students become more interested in engineering in particular, and in AEC career options, in general.

A Distressing Workforce Shortage

A study released at the American Institute of Architects (AIA) 2012 National Convention and Design Exposition revealed that there is a continuing decline of skilled AEC workers due to three primary factors: the nation's economic slump, mass retirement of AEC professionals, and a shortage of young skilled workers entering into architecture, engineering and construction roles (Dodge Data & Analytics).

According to the U.S. Bureau of Labor Statistics (BLS), between 2014 and 2024, the construction industry is anticipated to undergo the largest increase in job growth when compared to other industries. Architecture and engineering sectors alone will potentially add 67,200 new jobs by 2024. BLS surveys further predict that employment of environmental engineers is projected to grow 12% from 2014 to 2024, faster than the average

for all occupations. Learn.org attributes the AEC industry's job growth to "the need to improve existing structures and repair aging infrastructure."

Unfortunately, even in America's forward-thinking society, there exists a gender-related disparity within the AEC institution. The National Science Foundation reports that females received approximately half of all science and engineering bachelor's degrees over the last two decades; it also notes that within science and engineering college programs (including bachelor's, master's and doctorate), the majority of females earn degrees in chemical, materials, industrial and civil engineering. These facts serve to show that plenty of females are serious about pursuing careers in the AEC industry. The foundation further stipulates that, "although the number of women earning degrees in engineering has increased in the past 20 years, women's participation remains well below that of men at all degree levels and in all fields of engineering." To help bridge this gender divide, industry experts—both male and female—need to encourage more females to actively pursue engineering-related careers. One of the ways to do this is to become a mentor. In her research paper titled, "Overview: Mentoring and Women in Engineering," Virginia Tech professor Catherine T. Amelink, Ph.D., explains that "mentoring can facilitate positive socialization among women to STEM [Science, Technology, Engineering, and Mathematics] fields by encouraging interaction with successful individuals and by providing career and psychosocial...support. This support helps women overcome perceived gender role barriers." Dr. Amelink's studies attest that various forms of mentoring relationships, by both male and female mentors, are effective in promoting the long-term retention of females in STEM fields.

Mentoring: The Recruiting Tool that Packs a Punch

Mentoring can be an invaluable tool used to get youth interested in engineering and related professions. These one-on-one interactions help students better understand the nature of certain career roles. Open dialogue also helps students recognize that many industry experts are actively involved in meaningful enterprises involving humanitarian efforts, which is a real selling point to many millennials. Mentorship relationships provide students with comprehensible perspectives on the day-to-day processes of a targeted profession. Students are exposed to real-world insight, concrete concepts and unique ideals that they can plug into their personal career decision processes. These mentor-protégé connections also help students establish clearly defined goals to be used in preparing for college programs, certifications, internships, and even their first jobs.

The ACE Mentor Program of America is a national nonprofit organization that uses mentoring to encourage high school students to pursue AEC-related careers. The association defines AEC mentors as “dedicated professionals who are passionate about what they do and want to share that [passion] with the next generation of the industry’s workforce.” The program utilizes volunteer mentors from every quadrant of the AEC realm—from architects and engineers, to interior designers and construction managers. Each individual commits to developing a rapport with high school students, educating them on the benefits of establishing a career in the AEC realm, and further supporting them as they pursue their career choices.

Considering factors such as job satisfaction and pay scale, U.S. News & World Report ranked the environmental engineering profession as #41 on its list of the 100 Best Jobs of 2016. Similar AEC occupations referenced on the list include mechanical engineers (ranked #38), civil engineers (ranked #64), and construction managers (ranked #98). Clearly, many AEC jobs are favored and are in high demand in the U.S.—another reason to support mentoring programs to recruit potential AEC assets.

Mentors are Equipped with Experience

Stepping into a mentorship role—especially an ongoing one—can be a big commitment of time and a lesson in perseverance. However, as our NV5 engineers have discovered, the intrinsic rewards can make the effort exceedingly worthwhile.

For example, our team recently had the unique privilege to serve in a mentoring capacity for approximately 40 high school students at the School of Environmental Studies (SES) in Minnesota. These students, motivated by a unified desire to improve their environment, have partnered with the U.S. Green Building Council (USGBC) to obtain LEED (Leadership in Energy & Environmental Design) accreditation for their facility.



Student group interactions at the LEED kickoff meeting at SES.

In a mentorship role, NV5 engineers helped ensure that the students’ background data collection processes were carefully mapped out and on-point. Our team assisted these students and their instructors in many tasks, including: performing energy audits; studying water usage; measuring ventilation performance to identify low-cost improvements that increase energy efficiency; conducting transportation and pedestrian traffic surveys; and acquiring interior and exterior building inventories. Our staff used both informal (telephone and email), and formal (in-person) modes of interaction to connect with students, faculty, and other individuals volunteering their time and effort in this mentorship program. The team used PowerPoint presentations to provide the students with a visual representation of relevant information and processes. The face-to-face discussions involved topics such as the

different types of credits involved in LEED, sharing why people care about LEED accreditation, and detailing what needs to be acquired for campus surveys. USGBC staff volunteers also went to the school to walk the campus with students when they performed certain surveys, to give guidance and clarification as needed.

Throughout this process, the NV5 engineers listened carefully to ideas from both students and faculty. We encouraged candid dialogue to help build problem-solving skills and help students feel more confident in a collaborative setting. Our team showed them how to use certain tools to help them stay organized and efficient throughout the data collection and analytical processes.

This group of students already possessed a fundamental understanding of current global environmental challenges, thanks to their core studies. Our team enhanced their appreciation of the subject matter by sharing professional insights to help them see how their efforts, now and in the future, will help minimize the negative impacts of environmental dilemmas in a real-world setting.



Jeff Seewald from Trane presenting on the energy audit at SES.

Mentoring Supporters Receive Valuable Perks

Mentoring is the perfect vehicle used by seasoned professionals and businesses to pay homage to their respective professions and trades. Businesses that endorse or sponsor mentorship practices also receive significant side benefits, as these opportunities often generate networking and recruiting prospects. Multiple studies indicate that employees usually experience increased job satisfaction in working for an establishment touting a positive reputation for giving

back to society via mentoring (Aryee, Chay, & Chew, 1996; Chao et al., 1992; Corzine, Buntzman, & Busch, 1994; Fagenson, 1989; Goh, 1991; Ragins & Cotton, 1999; Scandura & Viator, 1994; Viator, 1991). Mentors will often provide guidance and support throughout students' post-secondary education, so they can provide personal recommendations. Mentees are also wonderful candidates for special projects or as part-time help, as they are eager to gain experience in practical settings.

Pay It Forward, One Student at a Time

Effective mentors strive to increase public awareness of a problem that needs to be solved or an obstacle that needs to be overcome. They take action to effect positive change, and their offerings of real-world experience are an incomparable form of insight for today's youth.

The ACE Mentor Program of America cites several important benefits to students engaged in a mentorship program, including:

- Career guidance from active professionals
- Understanding of the building design and construction industry
- Understanding of the workplace
- Connections to students and professionals
- Introduction to college programs
- Behind-the-scenes access to construction sites
- Opportunity for internships and post-college employment
- Opportunity for college scholarships
- Excellent training in presentation and team building skills

At times, our younger engineers are resistant to mentoring because they feel they do not "fit the bill" in terms of age or experience. Yet each person's unique perspective can offer worthwhile insight and inspiration. The priorities of a 25-year-old mechanical engineer versus a 25-year-old environmental engineer are obviously going to differ; likewise, the real-world experiences of a 25-year-old civil engineer compared to those of a 50-year-old civil engineer will vary. Mentees benefit regardless of a mentor's age or expertise. We all have something to share.

Time to Step Up

Regardless of your role in the AEC industry, you are in your current position because you enjoy (most of) your job responsibilities, you find your life's work beneficial to society, and it pays the bills. Navigating into an engineering career is tough work, and many stray from the path or get lost entirely somewhere along the journey. As a mentor, your wisdom can be a "compass" that can help guide young adults into making informed career choices. Your professional experience can serve as the "road map" to plot a course through unfamiliar territory. Whether it is a one-time obligation, or a long-term commitment, mentoring is a gratifying opportunity to enrich and expand our industry's skilled workforce.

Maryam Peters is the Vice President of Human Resources at NV5. Her passion is to provide opportunities to help employees achieve their full potential and to give back to their communities through efforts like mentoring. Contact her at maryam.peters@nv5.com