

Advances in Recruitment Encouraging Students by Making the Links

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Introduction

Many advances have been made in the areas of recruitment for engineering and engineering technology (ET) students. However, the numbers are still small and this paper provides many suggestions to get your recruitment program on the fast track. Many of the recommendations are a synopsis of a marketing discussion from a pre-engineering summit for region educators held in Portland, OR on September 15-16, 2005.

The Goal

A fundamental problem with recruitment of Engineering and ET students is that many don't understand what engineering is, what engineers and engineering technologists do, how they impact lives and how these professions can lead to rewarding careers. An excellent recruitment goal is to ensure that every student entering high school is exposed to engineering and engineering technology and has the resources (mentors, books, videos, etc.) available to make an informed choice on whether to pursue a technical career or not.

Fundamentally, recruitment has to start at elementary or middle school to get students on the right track so they can take the right classes in high school. According to the 2005 National Data Profile by Achieve, Inc. "Preparation for postsecondary education and good jobs begins well before high school. Students who take challenging courses and meet high standards in middle school are much more likely to enter high school ready to succeed. Algebra is widely recognized as a "gateway" course — students who take it by the end of 8th grade are much more likely to take rigorous courses in high school that lead to a college degree."

The findings are similar in high school aged students. In this case, Advanced Placement or AP classes serve as the gateway courses. "Research has shown that a powerful predictor of whether high school students will graduate and earn a college degree isn't only grades or even test scores, but rather the rigor of the high school curriculum they complete. Taking a high-level math course beyond Algebra 2 (trigonometry or Calculus) is a key indicator of such a curriculum." Juniors and seniors taking AP exams in 2003 was only 11.4%.

The Problems:

1. Motivating students to be interested in Science, Math, Engineering and Technology (STEM) careers is an uphill challenge.
2. Students are not academically prepared in middle and high school to pursue a technical degree.
3. Stereotyping of engineers by the media turns kids off.
4. Students don't know that there are thousands of jobs available. A few large companies are so worried about the upcoming shortage that they are taking matters into their own hands. Intel, the semiconductor giant, pays \$2000 to an employee that refers a person that gets hired. It is rumored (not verified) that they are also paying \$7000 for minority recruits.

Recruitment Strategies

Recruitment strategies to address the problems can be created with more industry/education partnerships, more association/education partnerships, more Hollywood or glamorous types of

associations, by leveraging and or replicating existing models and by developing innovative partnership programs such as the 2+2 program.

1. Industry/education partnerships. What can industry do to help?

- a. Get engineers into the classroom.
- b. Establish web based Q&A forums with professionals.
- c. Arrange for teachers, counselors, and administrators to visit and tour industry.
- d. Restore sabbaticals and allow teachers to practice in tech industry job for a few months to 1 year. This is currently being done through the University of Philadelphia for Philadelphia Public School Teachers. The program is designed to “encourage local teachers to strengthen their skills through short-term sabbaticals, residences and professional projects, the program includes a special effort to pair teachers with seasoned colleagues, who have significant expertise in particular teaching strategies.” For more information, visit:
http://www.gse.upenn.edu/news_publications/news_item.php?id=55
- e. Have highly successful teachers train other teachers in intensive 1-week summer courses.

2. Association/education partnerships. What can your local branch of IEEE, ASME, ASCE, etc. do?

- a. State societies can host a web page where a teacher can request to have an engineer come to class. To prepare engineers to visit the classroom, the society should also have a resource for speakers to get ideas about or obtain products on how to engage the kids.
- b. Develop tours or demonstrations for kids that combine with after school programs.

3. Hollywood associations. We have to make the pop culture links.

- a. Show students how Dr. Octopus in Spiderman was an engineer.
- b. Show how Willy Wonka was an engineer.
- c. Ben Affleck played an engineer in Paycheck.
- d. Jody Foster is playing an engineer in Flight Plan.

4. Find out what students like and link engineering back to it.

For example, if they like music, show how iPod engineers are transforming our culture based on how we listen to music. Do they like skateboarding? If so, show how skateboard engineers develop boards, trucks and bearings. Do they like to eat? Show they how engineers work at Hershey developing chocolate.

5. Replicate existing models.

What do the students need? Are they non-traditional students that need paychecks while attending school or are they living at home with Mom, Dad and a high school mentality? What programs work for each type of student?

One example of a replicated program is the 2+2 program. Many engineering technology schools are teaming up with technical schools and community colleges to offer 2+2 programs. Students begin his or her engineering education by obtaining an Associates degree in engineering technology and transferring to another school to earn a Bachelor of Science in engineering technology. An advantage of the 2+2 program is that it allows students to obtain the skills to be immediately employable after they complete their Associates degree and while they obtain their Bachelor of Science.

As educators, we want to recruit the best students into the fields of engineering and engineering technology. By working together and leveraging the strength of partnerships with industry, engineering societies and other educational institutions will we be able to recruit more high quality students. As times change and society evolves, we must always work on adapting and advancing our cause to meet the needs and expectations of students.

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Celeste Baine is a biomedical engineer, Director of the Engineering Education Service Center and the award-winning author of *Is There an Engineer Inside You*, *The Fantastical Engineer*, *High Tech Hot Shots* and six booklets on engineering careers. She won the 2004 American Society for Engineering Education's Engineering Dean Council's Award for the Promotion of Engineering Education and Careers and is listed on the National Engineers Week website as one of 50 engineers you should meet. The National Academy of Engineering has also included Celeste in their Gallery of Women Engineers. She is the editor of *The Pre-Engineering Times* and the producer of *Engineers Can Do Anything!* on DVD. She has spent the past eight years advising students and parents on the challenges and benefits of obtaining an engineering degree.