When confronted with a challenge, engineers have always been able to rely on their technical proficiency and ingenuity. They have built computers that are small but powerful, reusable space vehicles, and a tunnel under the English channel—often after skeptics said it could not be done. Today, however, engineers face a new challenge with no convenient technical solution: globalization. How engineering educators respond will determine to a great extent how good a job engineers do in meeting this challenge.

Few would contest that the rapid spread of free markets combined with the telecommunications “shrinking” of the world is having a progressively more pronounced effect on the engineering profession. Increased global competition requires engineers to couple technical innovations with sensitivity to the world marketplace. Global telecommunications opens the door for engineers to work at home or abroad. And mega-mergers such as the union of Daimler Benz and Chrysler prompt corporations to bring engineers together across national and cultural boundaries. The question for engineering educators is an obvious one. What is the best way to prepare students to succeed in a dynamic, increasingly international workplace?

The short answer is educators must strive to prepare engineers to work anytime, anyplace and anywhere. As a long time participant in the activities of the Accreditation Board for Engineering and Technology (ABET), I believe ABET can provide guidance in reaching this goal. ABET does not and should not dictate the content of universities’ programs. But our policies and philosophies furthering international cooperation and our new engineering accreditation criteria, Engineering Criteria 2000, can assist institutions as they plan strategies for the international arena.

ABET currently has several policies aimed directly at the international community. When asked, we evaluate programs outside the United States, recognizing those that are comparable in content and educational experience as “substantially equivalent” to ABET-accredited U.S. programs. Additionally, ABET has signed a number of agreements with other countries recognizing their accreditation systems as comparable to ABET’s system. ABET also exchanges information and provides assistance to countries in the midst of developing accreditation systems. When combined, these practices have the desired impact: They facilitate the ability of engineers and engineering educators to work in a global environment.
Our efforts go further. One of ABET’s underlying philosophies is that the best judges of the quality and effectiveness of engineering programs are engineers themselves. Thus, we strive to encourage the spread worldwide of accreditation systems based on concepts of peer review and self-assessment. Practicing engineers and engineering educators help to create similar standards and expectations from country to country. Educators in one peer-reviewed system may approach electrical engineering programs differently from educators in another, but the outcomes will be similar – and graduates will have skills that are useful internationally.

Additionally, peer-reviewed systems create the most effective and efficient mechanisms for changing educational standards and goals to meet changing demands. Governments and their agencies may not recognize the skills required for a developing market in, say, flat-screens or nanoengineering, but engineers certainly will. As markets become more global, engineer-piloted accreditation systems will evolve in sync. Among other countries, Japan, Malaysia and Argentina are all in the midst of developing peer-based review systems.

ABET has another underlying philosophy that speaks to the international arena: that the social sciences and humanities are important elements of an engineer’s education. With more and more engineers on the payrolls of international companies or working abroad, the merit of such a wide background is obvious. Encouragingly, we are starting to see more institutions outside the U.S. put in place a similar emphasis on this non-technical side of engineering professionalism.

ABET is active on a number of other fronts, including promoting discussions and resolutions relating to engineering and mobility. Especially noteworthy is ABET’s Engineering Criteria 2000, or EC2000. This major change to ABET’s accreditation criteria expands the emphasis from technical training to also include communications and teamwork skills. Broadly speaking, EC2000 also shifts the focus from what is taught to what is learned, making institutions accountable for the success of their graduates in whatever workplace they find themselves in. Areas of student achievement range form the very technical “an ability to design a system, component process to meet desired needs” to the very internationally-targeted “understand the impact of engineering solutions in a global and societal context.”

Engineers helped bring about the era globalization by designing and building the computers and telecommunications equipment that are its backbone. Now, engineering educators must ensure all engineers are prepared to work in a global environment. With its emphasis on international cooperation, peer-reviewed systems and EC2000, ABET is helping to lead the way.
Bibliography