

GUEST EDITORIAL

SPEED: A Concept for Enhancing the Quality of Engineering Education

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The Calls to Action Have Been Made

For the past century, many organizations have published their visions of what the technological needs will be in the future for the United States and how the engineering profession might change to meet those needs. The Engineer of 2020, released by the National Academy of Engineering in 2004, is a good example of such a vision.

In response to these calls, engineering and technology departments have a long history of adapting to changing societal needs so that their graduates will possess relevant skills and knowledge vital to potential employers.

In parallel with the changing engineering and technology curriculum, there has also been a long-standing call to strengthen engineering and technology educators' capabilities and preparation to perform the task of educating students. This latter call, however, has remained virtually unanswered for more than a century.

SPEED is a Model for Success

It is time for the engineering education community to begin to address this issue in a substantive and effective fashion. One way to address this will be to create a formal, nationally recognized professional development program for engineering and technology educators. Such a program is now being developed with the support of ASEE. It is called SPEED: Strengthening the Performance of Engineering and Technology Educators across the Disciplines.

Many countries around the world have already successfully introduced professional development programs for engineering faculty teaching in higher education. These programs help all participating engineering and technology instructors to be better prepared to take on their educational mission.

Barriers Can Be Addressed

One of the arguments against such a proposal will be the fact that "New faculty already have a lot on their plates. They are working very hard preparing for tenure and promotion, so they should primarily be concerned with developing their research. Besides, they are already facing significant challenges in simply preparing for the new classes that they are supposed to teach." Well, yes, yes, and yes. The SPEED program can help them succeed. One of the benefits of having such a formalized faculty development widely available is that participants will be more effective and efficient both inside and outside the classroom, leaving significant additional time for other pursuits including technical research.

A Path Forward Has Been Presented

The recent ASEE report *Creating a Culture for Scholarly and Systematic Innovation in Engineering Education* states that ASEE should "Lead the development of a national network of seminars, workshops, and continuing education courses on education theory, research findings, and proven practices for engineering learning. ... Offerings should address graduate students, new faculty, mid-career faculty, and senior faculty ..." It also states the ASEE should "Create a certificate to recognize faculty who have become distinguished teaching scholars through faculty development programs."

The SPEED program would seek to accomplish the above recommendations by fostering participant progress through several levels of expertise, with each level typically separated by a period of several years of experience. While SPEED programs will not necessarily follow one single standardized model, all SPEED implementations will contain common elements in three categories: (1) Foundations of teaching and learning, involving the inclusion of educational theory and best practices, (2) Scholarship of engineering education, and (3) Reflective practice and portfolio development, including an experience-based practicum component and instructor peer coaching. Clear criteria and milestones will be required for each program component and will be developed with collaborative input from many key constituents within the ASEE community. These constituents should include, among others, the Educational Research & Methods Division of ASEE and selected engineering education programs and/or centers for teaching and learning (such as those located at Virginia Tech, Purdue, Penn State, Georgia Tech, University of Washington, University of Wisconsin, etc.).

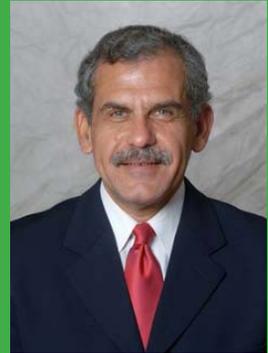
Success will have broad implications

Not only will the speed program impact the practice of engineering education, but it will also connect participants across multiple contexts. For example, participants will be better able to pursue interdisciplinary collaboration through connections developed in the SPEED program both within and across disciplines.

Finally, SPEED will positively impact public perceptions of engineering education through high quality learning produced in participant classrooms and clear recognition of SPEED participant qualifications as professional engineering educators.

The core team members working on this project are Tris Utschig, Dirk Schaefer, Don Visco, and Norman Fortenberry. I welcome your input on this initiative and encourage you to communicate your suggestions and ideas directly with me.

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Dr. Mohsen was named Engineer of the Year in Education by the Kentucky section of the ASCE in 1999. He received the University of Louisville Distinguished Service to the Profession Award in 1999, the Distinguished Teaching Professor Award in 2003, and the International Service Award in 2009.