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**First federal legislation promoting K-12 engineering introduced to Congress**

There is a national concern that the country's preeminence in science and innovation is eroding. According to the National Science Board's 2010 Science and Engineering Indicators, only 5 percent of college graduates in the United States major in engineering, compared with 12 percent of European students and 20 percent of those in Asia.

Since no national programs support K-12 engineering in core academic classrooms, the National Center for Technological Literacy® (NCTL®) at the Museum of Science, Boston drafted the Engineering Education (E2) for Innovation Act. The legislation is the first to promote K-12 engineering education specifically in core academic classrooms. The bill offers states planning, implementation, and evaluation grants to integrate engineering education, including standards, curricula, assessments, and teacher preparation, into K-12 instruction.

The NCTL applauds the leadership of Senator Kirsten Gillibrand (D-New York) and House Representative Paul Tonko (D-NY-21) who introduced the E2 bill (S.3043, H.R.4709) on February 25 to Congress as well as the bill's many sponsors, led by Senators Edward Kaufman (D-Delaware) and Olympia Snowe (R-Maine).

Sen. Kristen Gillibrand said: "Job growth and the future of the American economy require our continued ability to lead the world in innovation as we tackle the grand challenges of the 21st century -- from clean water to life-saving cures for diseases and biomedical developments to green energy. Much of the answer lies in classrooms across the country. This legislation will give schools nationwide more incentive to implement science and engineering education into K-12 curricula."

According to Sen. Ted Kaufman, "As a nation, our future success depends on our ability to produce a greater number of engineers." For his remarks: http://www.c-spanarchives.org/program/292259-101 (Feb. 25, 2010 starts around 01:52:43)

The sponsors are asking colleagues to cosponsor the bills. Read their "Dear Colleague" letters: Senate and House (PDFs).

Norm Augustine, former CEO, Lockheed Martin Corporation, offered his "congratulations on this fine effort (to introduce K-12 engineering legislation)... I believe it is well aimed," explaining that "one of the many reasons our nation does not seem to attract young people into engineering is that many seem to have no idea what an engineer does. Although we attempt to teach math and science in K-12, seldom do we expose students to engineering."

The E2 for Innovation Act:
--authorizes the Secretary of Education to award planning grants and matching implementation grants to states to integrate engineering education into kindergarten through grade 12 (K-12) instruction and curricula;
--requires each state that desires an implementation grant to develop quantifiable benchmarks for activities supported by such grants and submit them to the Secretary for approval;
--requires states to use implementation grants to: (1) establish assessment tools and challenging academic content and achievement standards for engineering education; (2) develop or obtain effective engineering education curricula; (3) develop or improve engineering teacher training programs; (4) recruit qualified engineering teachers for needy schools; (5) facilitate distance learning and online education in engineering; and (6) invest in after-school engineering education programs;
--directs the Institute of Education Sciences to support engineering education research and an evaluation of this Act's grant programs;

--requires the Secretary to use the evaluation's findings to provide information to the public and technical assistance to states on best practices and promising innovations in K-12 engineering education.

In effect, the E2 Act would:
--integrate engineering education into K-12 classrooms by designing challenging content and curricula frameworks and assessments that include engineering;
--increase engineering and technology teacher preparation programs and recruit qualified teachers to provide engineering education in high-need schools;
--increase student achievement in STEM (science, technology, engineering, & mathematics) subjects and knowledge and competency in engineering design skills;
--promote aspirations for a career in engineering among diverse students, in particular girls and underrepresented minorities;
--promote partnerships among K-12 school administrators and teachers, and engineering member bodies and professionals.

The NCTL drafted and built support for the E2 bill in only five months in response to a September 2009 report, "Engineering in K-12 Education" from the National Academy of Engineering (NAE) and the National Research Council (NRC), which said the introduction of engineering education has the potential to improve student learning and achievement in science and mathematics, increase awareness about what engineers do and of engineering as a potential career, and boost students' technological literacy.

Read the E2 legislation: H.R.4709 and S.3043.

If you want to get involved, encourage your members of Congress to cosponsor the legislation. Contact their DC offices and ask to speak with their education legislative assistant (LA). You may have to leave a message. Ask them to consider cosponsoring the respective bills. Be sure to provide bill numbers, your name, address, and contact information. Congressional contact information is at: www.house.gov and www.senate.gov.

The bipartisan effort, which has involved several other cosponsors from both the House and the Senate, was endorsed by more than 75 organizations:

Alabama Mathematics, Science, and Technology Education Coalition (AMSTEC)
American Chemical Society
American Society for Engineering Education
American Society of Civil Engineers
American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
ASME Center for Public Awareness
Association of Science and Technology Centers
Bechtel Power Corporation
BEST Robotics, Auburn University
Center for Mathematics and Science Education, Teaching and Technology at John Carroll University
Center for Mathematics, Science, and Technology
Center for Minority Achievement in Science and Technology
Center for Technological Literacy at Hofstra University
Center for the Advancement of STEM Education
Cuyahoga Falls High School Technology Education Department
Delaware Foundation for Science and Mathematics Education
East Central Ohio Technology Education Association
Engineering & Technology Educators of Indiana
Hockaday School
IBM Corporation
IEEE-USA

Illinois State University, Center for Mathematics, Science, & Technology
INSPIRE, Institute for P-12 Engineering Research and Learning, Purdue University
Intel Corporation
International Technology Education Association
Learning Institute for Technology Education, MI
LearnOnLine, Inc.
Lockheed Martin Corporation
MassTEC
Museum of Science, Boston
National Alliance for Partnerships in Equity
National Association of State Directors of Career Technical Education Consortium
National Center for Technological Literacy
National Council of Teachers of Mathematics
National Girls Collaborative Project
National Middle Level Science Teachers Association
National Science Education Leadership Association
National Science Teachers Association
National Society of Black Engineers
National Society of Professional Engineers
New Jersey Technology Education Association
New York Hall of Science
North Dakota State University's College of Engineering and Architecture
North East Ohio Technology Association
Ohio Engineering Deans' Council
Ohio Northern University
Ohio Technology Education Advisory Council
Ohio Technology Education Association
Pathways into Science
Pennsylvania Technology Student Association
Project Lead the Way
PTC
PTC-MIT Consortium
Real World Design Challenge
Rensselaer Polytechnic Institute, School of Engineering
Science Museum of Minnesota
Skillpoint Alliance
Sloan Career Cornerstone Center
Society of Women Engineers
South Carolina's Coalition for Mathematics & Science
Stevens Institute of Technology, Center for Innovation in Engineering and Science Education, NJ
Technology Education Association of Maryland
Technology Education Association of Pennsylvania
Technology Is Elementary
The CAD Academy + STEM Academy
The Engineering Place at North Carolina State University
The Learning Institute for Technology Education
The Ohio Academy of Science
The Pittsburgh Regional Center for Science Teachers
The STEM Academy
The Teachers Clearinghouse for Science and Society Education
Triangle Coalition
Tuscaloosa City Schools, Career Cluster
University of California

Valley City State University, ND
Vernier Software & Technology
Wisconsin Science Network
Wisconsin Technology & Engineering Education Association