



Views & Comments

The Greatest Global Grand Challenge: Preparing Our Next Generations to Solve the Challenges of Tomorrow: International First and the National Academies Partnership

Dean Kamen

President, DEKA Research and Development Corporation

Franklin Roosevelt said, “We cannot always build the future for our youth, but we can build our youth for the future,” a statement and a calling that has never been more true and relevant as it is today.

The Grand Challenges for Engineering are fourteen ambitious goals identified by some of this generation’s leading technological thinkers and doers. These challenges are believed to be both achievable and necessary to help all of humanity and to ensure that our planet will survive. I was honored to be part of the National Academy group that met to identify and carefully select the most urgent issues to be solved.

As National Academy of Engineering (NAE) President Mote has said, solutions to the Grand Challenges for Engineering in the 21st century are required for life, as we know it, to continue on this planet. The challenges include providing clean water for everyone, engineering better medicines, providing economically competitive solar energy, securing cyberspace, personalized learning, and other challenges. These multidisciplinary and complex problems will be resolved by future generations of engineers and scientists. It is our responsibility to create the next generation of problem solvers by getting today’s students excited about technology and applying it to solving the world’s problems.

Fundamental to tackling these problems is education. Universities have already begun establishing the multidisciplinary programs, and students will need to undertake these challenges. The Global Engineering Deans Council has adopted the Grand Challenges for its program planning on a global scale. One-third of all US engineering deans have committed to the President of the United States’ goal to graduate at least 50 000 “Grand Challenge engineers” over the next decade. While these educational movements at the university level are welcomed, they will only reach students who are eighteen and older. Much earlier exposure to the Challenges, and the technologies that can solve them, are required. We need to inspire students to study science and engineering well before entering college, so that they are ready, able, and committed to pursuing their science or engineering studies at the university level.

FIRST’s (For Inspiration and Recognition of Science and Tech-

nology, www.usfirst.org) mission is to inspire young people—beginning at the elementary school level—to become science and technology leaders by engaging them in exciting mentor-based programs. FIRST’s programs develop science, engineering, and technology skills, inspire innovation, and foster well-rounded life capabilities including self-confidence, communication skills, and leadership. Founded in 1989, FIRST has a proven track record of engaging students in technology—especially women and minorities. Thus, FIRST will be a vital part of addressing the Grand Challenges as it continues to inspire students of all ages.

Currently, the US NAE and FIRST Robotics have entered a collaboration that will bring together the Grand Challenges for Engineering program and FIRST Robotics’ international competitions to enlist hundreds of thousands of the world’s youth in addressing one or more of the Grand Challenges. The goal of the collaboration is to give these students the opportunity to experience first-hand the thrill of using engineering to tackle critical world problems.

While FIRST has been primarily focused in the US, it has organically grown internationally to include teams in more than 86 countries. During the last season, FIRST had more than 1 million students participate across its various platforms. It has more than 3500 corporate sponsors, more than 200 000 volunteers and mentors, and a distinguished Board of Directors.

Building on the success of FIRST in the US, and its growth internationally, we are bringing together international business leaders, government officials, and national academies to establish a new organization, the International FIRST Committee (IFC). Modeled on the Olympics, our mission is to ensure the global workforce of tomorrow is prepared for the enormous scientific and engineering challenges they must face and confront.

The IFC is chaired by President Shimon Peres and includes global business leaders who are dedicated to building a truly international structure to enable the next generations to have the science and engineering skills to confront the challenges their world will face. To compliment, inform, and guide the IFC, a Global Advisory Committee is being formed, consisting of national academies from various nations, to focus on the Global Grand Challenges. We would welcome participation from China.