

**U.S. HOUSE OF REPRESENTATIVES  
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY  
SUBCOMMITTEE ON RESEARCH AND TECHNOLOGY**

**HEARING CHARTER**

*Private Sector Programs that Engage Students in STEM*

**Thursday, January 9, 2014  
10:00 a.m. – 12:00 p.m.  
2318 Rayburn House Office Building**

**Purpose**

On Thursday, January 9, 2014, the Subcommittee on Research and Technology will hold a hearing to review science, technology, engineering and mathematics (STEM) education initiatives developed and conducted by private organizations to learn what is being done by these organizations and industry to support STEM education and to ensure the federal government can leverage, not duplicate, these initiatives.

**Witnesses**

**Panel I**

- **Mr. Dean Kamen**, Founder, For Inspiration and Recognition of Science and Technology (*FIRST*), Founder and President, DEKA Research & Development Corporation
- **Mr. Hadi Partovi**, Co-founder and CEO, Code.org
- **Dr. Kemi Jona**, Director, Office of STEM Education Partnerships, Research Professor, Learning Sciences and Computer Sciences, Northwestern University
- **Dr. Phillip Cornwell**, Vice President for Academic Affairs, Professor of Mechanical Engineering, Rose-Hulman Institute of Technology

**Panel II**

- **Ms. Ellana Crew**, 12<sup>th</sup> Grade, South River High School, Edgewater, Maryland
- **Mr. Brian Morris**, 12<sup>th</sup> Grade, Chantilly Academy, Chantilly, Virginia
- **Mr. Daniel Nette**, 11<sup>th</sup> Grade, George Mason High School, Falls Church, Virginia
- **Mr. Vishnu Rachakonda**, 12<sup>th</sup> Grade, Eleanor Roosevelt High School, Greenbelt, Maryland

**Overview**

The Administration's fiscal year 2014 (FY14) budget request proposed over \$3 billion across over thirteen different agencies of the federal government for science, technology, engineering and mathematics (STEM) education, a 6.7 percent increase over FY12 enacted levels. Despite this level of federal spending, American students rank 26<sup>th</sup> in math and 21<sup>st</sup> in science among the 34 nations who comprise the Organization for Economic Cooperation and Development in a survey reported last month.<sup>1</sup> Over 510,000 students age 15-16 years old were surveyed in 2012 with standardized testing methods.

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<sup>1</sup> <http://www.oecd.org/pisa/keyfindings/PISA-2012-results-US.pdf>

This survey also reported:

*“...the Slovak Republic, which spends around USD 53 000 per student, performs at the same level as the United States, which spends over USD 115 000 per student. Similarly, Korea, the highest-performing OECD country in mathematics, spends well below the average per-student expenditure.”*

### *STEM and the American Workforce*

A STEM-educated workforce is necessary for preserving American capacity for innovation and discovery and for ensuring U.S. economic strength and competitiveness in the international marketplace of the 21<sup>st</sup> century. According to the National Science Board Science and Engineering Indicators 2012, “the S&E workforce has for decades grown faster than the total workforce... The number of workers in S&E occupations grew from about 182,000 in 1950 to 5.4 million in 2009.”<sup>2</sup> As demand for skilled STEM workers continues to grow the U.S. will work to produce the workers required to fill those employment needs. The looming retirements of the baby-boomer generation and current unemployment rates have exacerbated a U.S. workforce in flux for many generations.

According to a 2007 report from the U.S. Department of Labor, “[i]ndustries and firms dependent upon a strong science and math workforce pipeline have launched a variety of programs that target K-12 students and undergraduate and graduate students in STEM fields.”<sup>3</sup> Finding ways to improve STEM education activities beyond the scope of the federal government, including best practices, is key to the future technical and economic competitiveness of our nation.

Many industry sectors, non-profit organizations, entrepreneurs and educational institutions are working in a variety of ways in order to bolster the STEM related workforce pipeline. Involvement in K-12 initiatives and support for undergraduate and graduate work fall within the broad scope of these STEM initiatives. Partnerships with education providers, STEM focused competitions, and other opportunities have become important pieces of private sector efforts to strengthen the STEM workforce. Industry and philanthropic organizations may offer financial or technical support for students, professional development opportunities for teachers, and technology for classrooms as a way to encourage interest in and support for STEM education. Understanding the work these organizations are undertaking in the STEM fields will inform the federal government’s role, help to reduce duplication of effort, and leverage existing programs.

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<sup>2</sup> National Science Board. 2012. *Science and Engineering Indicators 2012*. Arlington, VA: National Science Foundation (NSB 12-01). P. 3-8.

<sup>3</sup> [http://www.doleta.gov/Youth\\_services/pdf/STEM\\_Report\\_4%2007.pdf](http://www.doleta.gov/Youth_services/pdf/STEM_Report_4%2007.pdf), p. 6