The Committee on Energy and Commerce

# Memorandum

November 13, 2013

To: Members of the Subcommittee on Commerce, Manufacturing, and Trade

From: Majority Committee Staff

Re: Hearing on "Our Nation of Builders: Training the Builders of the Future"

## I. Summary

On Friday, November 15, 2013, the Subcommittee on Commerce, Manufacturing, and Trade will convene a hearing at 9:30 a.m. in 2123 Rayburn House Office Building entitled "Our Nation of Builders: Training the Builders of the Future." Witnesses are by invitation only.

## II. Witnesses

Jennifer McNelly
President
The Manufacturing Institute

Allyson Knox
Director, Education Policy and Programs
Microsoft Corporation

Sandra Westlund-Deenihan
Chief Executive Officer
Quality Float Works Incorporated

Lazaro Lopez, Ed.D.
Associate Superintendent for Teaching and Learning
Township High School District 214, State of Illinois

Catherine Hill, Ph. D.
Director of Research
American Association of University Woman

## III. Background

In recent years, the private sector has increasingly focused on the lack of workers skilled in science, technology, engineering, and math (abbreviated jointly as STEM). There is a corresponding recognition among policymakers that a workforce skilled in STEM fields is

needed for the U.S. to sustain its global competitiveness and economic growth, as well as to mitigate our current and future unemployment problems.[1]

Although there is not a precise definition of what constitutes a STEM job, the Economics and Statistics Administration estimated there were 7.6 million STEM workers in 2010 based on 50 occupation codes.[2] Just as manufacturing jobs pay more than non-manufacturing jobs on average, STEM workers also command wage premiums of 26 percent over non-STEM workers. The wage premium is even more striking for STEM positions requiring less than a college degree; those workers command a 40 to 60 percent wage premium over their non-STEM counterparts. STEM workers also enjoy lower average unemployment rates.

The importance of these skills is demonstrated by the fact that STEM jobs grew three times faster than non-STEM jobs between 2000 and 2010.[3] While these higher wage STEM jobs are expected to continue growing at a faster pace than non-STEM jobs, the bad news is that companies report that they are unable to fill many of these jobs. Although some have argued there is no shortage of U.S. STEM workers–based, in part, on the number of STEM educated workers who are unemployed[4]–most stakeholders do see a deficit that will grow over time absent a reversal in direction of current trends. And the U.S. is not alone in this predicament: global competitors such as Germany are also experiencing a shortage of STEM-skilled workers.[5]

As a number of witnesses have testified in the Subcommittee's series of manufacturing hearings, businesses continue to have problems finding skilled workers with the requisite STEM skills. Many have described not only the lack of available STEM-educated workers, but they also expressed serious concerns about their ability to meet their future workforce needs.

The resulting shortfall is referred to as the "skills gap" and presents economic and public policy issues. Operating at less than full productive capacity can severely restrict a company's ability to grow and remain competitive. As that problem expands from a company or two to an entire industry, the economy at large likewise becomes less productive and less competitive.

In a survey of manufacturing executives, 67 percent reported a moderate to severe shortage of available qualified workers. For many manufacturers, the type of positions that are unfilled can range from skilled STEM positions–positions that require STEM education, but less than a four year degree, such as machinists and technicians–to graduate and post-graduate positions, such as computer scientists and mechanical engineers. In a survey of manufacturing executives conducted by Deloitte and The Manufacturing Institute, the number one category of workforce shortages or skills deficiencies negatively impacting their company's productivity was the shortage of skilled production workers, such as machinists and technicians (74 percent of

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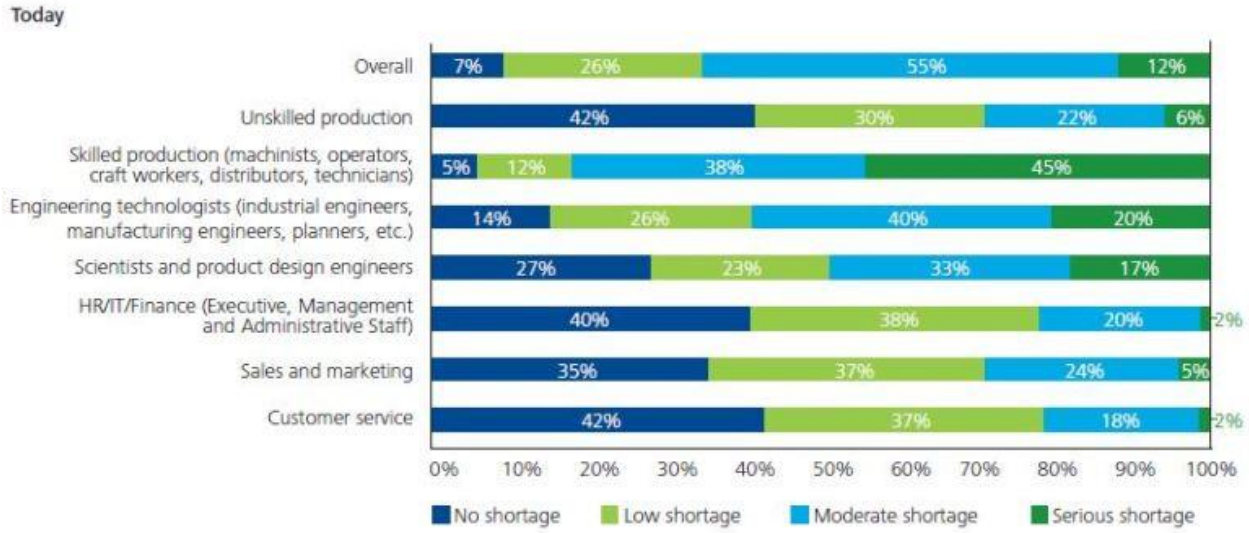
[1] "STEM: Good Jobs Now and in the Future," Economics and Statistics Administration, U.S. Department of Commerce, accessed October 28, 2013, available at http://www.esa.doc.gov/sites/default/files/reports/documents/stemfinalyjuly14_1.pdf
[2] Ibid.
[3] Ibid.
[4] Robert N. Charette, "The STEM Crisis is a Myth", August 30, 2013 IEEE Spectrum, accessed October 29, 2013, available at http://spectrum.ieee.org/at-work/education/the-stem-crisis-is-a-myth
[5] "Germany's skilled worker shortage is growing" accessed October 30, 2013, available at http://www.dw.de/germanys-skilled-worker-shortage-is-growing/a-15996135-1

respondents), followed by production support positions such as industrial and manufacturing engineers (43 percent of respondents).[6]

STEM jobs are projected to grow by 17 percent between 2008 and 2018, which likely explains why 56 percent of manufacturing executives believe their skilled workforce shortage will increase over the next 3 to 5 years.[7] Some predict that the inability to meet the future workforce needs could produce a shortfall of as many as 700,000 unfilled jobs by 2020.

**Figure 6: Please select the option that best describes the availability of qualified workers for the following workforce segments at your company today, and indicate if you anticipate the shortage to increase, decrease, or not change over the next 3-5 years:**




*Public and Private Sector Responses*

The attention has spurred a number of public policy prescriptions, as well as private sector responses. At the Federal level, the Congressional Research Service reports over 225 bills have been introduced regarding "science and education" in the past two decades beginning in the 102nd Congress (1991-1992).[8] Because STEM programs and activities are not always apparent or easily identified, estimates have varied widely over the four most recent inventories of Federal STEM programs conducted between 2005 and 2012. CRS has reported those findings, which identified between 105 and 252 STEM education activities or programs conducted by 13 to 15 Federal agencies. Not surprisingly, Federal spending on STEM-related activities catalogued in the reports also varied from $2.8 billion to $3.4 billion in annual spending on the identified programs. In May, 2013, pursuant to the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Act (America COMPETES ACT),

[6] "Boiling Point? The skills gap in U.S. manufacturing," A report on talent in the manufacturing industry, sponsored by Deloitte and The Manufacturing Institute, accessed October 31, 2013, available at http://www.themanufacturinginstitute.org/~/media/A07730B2A798437D98501E798C2E13AA.ashx

[7] "Boiling Point? The skills gap in U.S. manufacturing," A report on talent in the manufacturing industry Sponsored by Deloitte and The Manufacturing Institute, accessed October 31, 2013, available at http://www.themanufacturinginstitute.org/~/media/A07730B2A798437D98501E798C2E13AA.ashx

[8] Gonzalez, Heather B. and Kuenzi, Jeffrey J., "Science, Technology, Engineering, and Mathematics (STEM) Education: A Primer," Congressional Research Service, April 5, 2013, accessed October 30, 2013, available at http://crs.gov/pdfloader/R42642

the Administration released a 5-year strategic plan to address and coordinate STEM efforts across Federal agencies through the Office of Science and Technology (OSTP).[9] The plan proposes, among other things, to consolidate Federal effort to improve STEM education within three agencies:

- K-12: Department of Education
- Undergraduate and graduate programs: National Science Foundation
- Informal and public science initiatives: Smithsonian Institution

*Private Sector Initiatives*

While there are countless individual company activities to fund scholarships, partner with universities and community colleges, and provide their own workforce education and training programs, a few noteworthy examples include:

- Tapping America's Potential (TAP) Coalition: Spearheaded by the Business Roundtable in 2010, their goal is to increase the annual number of STEM bachelor's level degrees to 400,000. A list of individual member company activities is available at http://www.tapcoalition.org/about/business_comm.php

- National Association of Manufacturers Task Force on Competitiveness & the Workforce: Announced in October 2013, the Task Force will launch in January 2014 with the goal of developing proposals on how private sector and the government can work more effectively to ensure the U.S. has a globally competitive workforce. A list of task force members can be found at http://www.nam.org/Communications/Articles/2013/10/Manufacturing-Leaders-Launch-Task-Force.aspx

## IV. Questions for Consideration

- Which manufacturing industries are most affected?
- How does the skills gap hold back economic growth?
- Do we need to rethink our education and workforce model?

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*Please contact Brian McCullough, Gib Mullan, or Shannon Taylor of the Committee staff at (202) 225-2927 with questions.*

[9] http://www.whitehouse.gov/sites/default/files/microsites/ostp/stem_stratplan_2013.pdf