Meeting National Needs for a Diverse, Multi-Sector IotF Workforce

Proposed Recommendations

PCAST Subcommittee on Meeting National Needs for STEM Education and a Diverse, Multi-Sector Workforce

June 30, 2020

Subcommittee on Meeting National Needs for STEM Education and a Diverse, Multi-Sector Workforce

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The Need for STEM Workers in the U.S. is Real and Growing

- Growth in science & engineering occupations is forecast to substantially outpace the U.S. workforce as a whole

- Especially computer and mathematical scientists, who will play a critical role in IotF like quantum information science and artificial intelligence

Expected Growth of Workforce Sectors, 2016-2026

7.4%
Entire U.S. Workforce

12.6%
Science & Engineering Occupations

14.9%
Computer & Mathematical Scientists
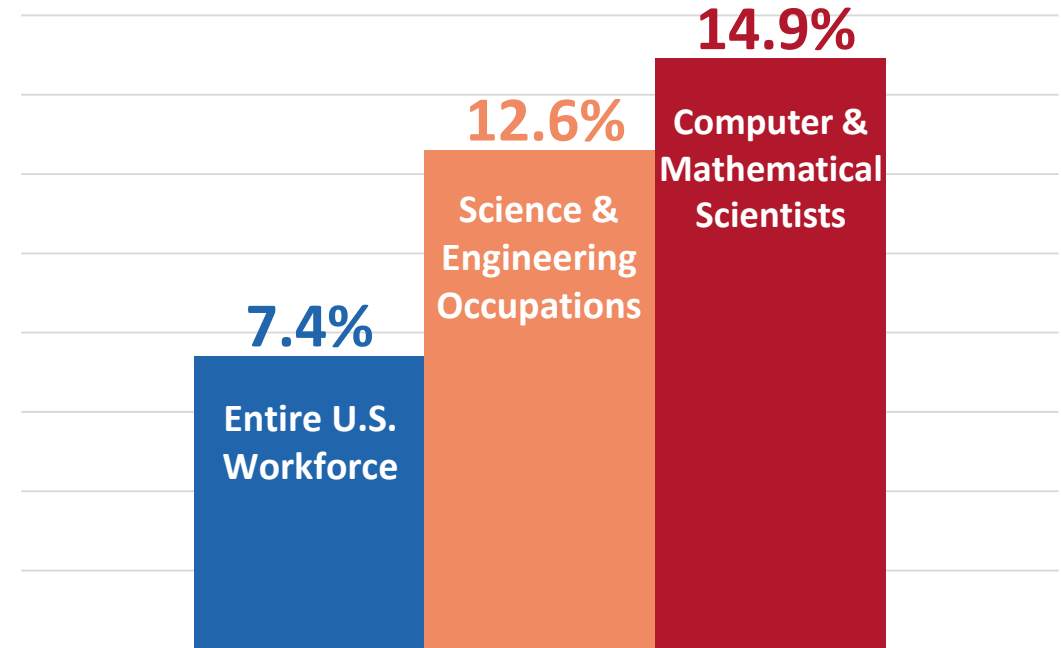
Soure: Bureau of Labor Statistics (BLS), *Employment Situation Summary: The Employment Situation – May 2020* (USDL-20-1140), June 5, 2020.
https://www.bls.gov/news.release/empsit.nr0.htm

Meeting National Needs and Competing in the Global Arena

- U.S. must leverage the full potential of its human resources by overcoming historical barriers that have limited inclusion of many underrepresented and underserved communities in STEM

- To meet anticipated growth of the science and engineering workforce, U.S. must expand the variety of career pathways into STEM and empower people to upgrade and renew their skills as the IotF continue to evolve rapidly

COVID-19: Challenges and Opportunities

- **Challenge:** The COVID-19 pandemic has disrupted the economy and led to significant loss of jobs.

- **Opportunity:** Investment in STEM and IotF will open opportunities for millions of new workers, *if they are trained and ready*.

COVID-19: Challenges and Opportunities

- **Challenge:** The COVID-19 pandemic has disrupted education at all levels, potentially leaving a generation of students behind.

- **Opportunity:** Educational institutions at all levels are discovering new modes of instruction and new ways of reaching students that will allow more Americans from all walks of life to have access to STEM education and training.

Objectives

- *Help to prepare the American workforce for the future by improving access to high quality education and training programs in STEM and by building the Nation's STEM capacity, especially in areas relevant to the Industries of the Future (AI, QIS, Advanced Communications/5G, Advanced Manufacturing, and Biotechnology).*

- *Complement and supplement the priorities and recommendations in the National Strategy for STEM Education*

- *Complement and reinforce recommendations made in the other two components of the PCAST report*

Priorities to Advance U.S. STEM

PRIORITY 1: *Build the Workforce of the Future by creating STEM training and education opportunities for individuals from all backgrounds, including underrepresented, diverse populations and individuals from non-STEM backgrounds.*

PRIORITY 2: *Create new curricula and universal skills-based licenses and certifications for Industries of the Future.*

Priority 1: Building the Workforce of the Future

Recommendation 1: Employers, academic institutions, professional societies, and other partners should develop programs to provide non-STEM workers with professional competencies that will grant them a role in the STEM workforce of the future.

- Recruit public- and private-sector employers to pledge support for hiring newly skilled STEM workers from non-traditional backgrounds into STEM positions.

Priority 1: Building the Workforce of the Future

Recommendation 2. NSF should establish a grant program to create and pilot multi-sector, workforce of the future, STEM retraining boards.

- Program should provide 50 competitive grants of up to $1M each for the initial formation of local/regional U.S. STEM retraining boards by 2022.
- Connect individuals to new or existing opportunities for continuing education, training, certification, and reskilling in STEM fields.
- Boards will be public-private partnerships between local governments, regional universities, community colleges, industry certification institutions, local employers, and trade groups.

Priority 2: Creating Curricula for Industries of the Future

Recommendation 3. *Commit Federal funds, matched by private-sector and university support, to create industry-recognized curricula and work-based learning and training programs in the IotF.*

- Focus on quantum information science, artificial intelligence, and advanced manufacturing.

Priority 2: Creating Curricula for Industries of the Future

__Recommendation 4.__ Through public-private partnerships, create universal skill-based licenses and certifications targeting the IotF.

- Industry-recognized credentials and standards would benefit both recruitment and retention into STEM at all stages of workers' careers.

- Once certification/licenses are established, employers would be well-positioned to pledge to aim for 50% of hires into suitable positions from the pool of licensed/certified individuals by 2025.