



STEM Education, Good Jobs and American Prosperity

Recommendations to President-Elect Donald J. Trump and the Transition Team

November 2016

As you know, our nation's current and future prosperity is directly tied to excellence in science, technology, engineering, mathematics, and computer science education (the STEM fields). Advancing STEM must be a central element of a broad-based agenda to promote U.S. prosperity and innovation in an increasingly competitive, technology-driven world.

Excellence in STEM should be embraced as a bedrock element in conquering the challenges of today and tomorrow, including modernizing our infrastructure, improving health care, defending the homeland, or fostering future industries.

American greatness demands having a world-class education system, focusing on 21st century skills and preparing the best workforce in the world. Furthermore, the best, highest-paying jobs of today are nearly all in the STEM fields and these jobs demand problem-solving, teamwork, creativity, and out-of-the-box thinking – all skills that are best cultivated through high quality learning opportunities in STEM.

***In today's economy
every American needs
to have a strong
foundation in STEM in
order to succeed in
virtually any job – from
the shop floor to the
research lab to the
boardroom.***

As an alliance of more than 500 education, business, and professional organizations, the central mission of the STEM Education Coalition is to inform and guide federal and state policymakers on the critical role of STEM education. We appreciate the opportunity to share our views and recommendations with President-elect Trump and his transition team.

As a Coalition, we endorse the following:

- **A Strong Workforce Focus:** Work with business and industry leaders to identify key workforce issues and use federal resources to empower state and local education leaders and their communities with the resources they need to promote STEM as a priority and to drive change.
- **Bipartisan and Broad-based Policies:** Policies to promote STEM education as a national priority have been and should remain bipartisan and evidence-based. Such policies will be supported by a strong and united community of stakeholders and advocates in the business, professional, research, and education communities.
- **Full Funding and Support For the Every Student Succeeds Act (ESSA):** The Administration should propose - and ensure Congress provides-- full funding for the STEM-related programs outlined in the bipartisan and broadly supported Every Student Succeeds Act, which will empower states and districts to make key decisions about their own STEM priorities.
- **Inter- Agency Collaboration:** A STEM agenda must embody an “all hands on deck” approach to improving STEM that integrates workforce, K-12, higher-education, career and technical, informal and out-of-school learning, and research elements and effectively leverages resources across the federal government.
- **A Strengthening of the STEM Pipeline:** We must expand the capacity and diversity of the STEM workforce pipeline and prepare more students for the best jobs of the future by working to raise achievement in the STEM fields for all K-12 students both inside and outside the classroom, all across the country and in every community – we should leave no part of America behind.
- **A Focus on Educator Training:** We must strengthen educator preparation programs to ensure that teachers at all levels (PK-12) and afterschool educators are proficient in STEM instruction and invest in high-quality professional development, support, and resources to sustain successful teaching and learning.
- **Embracing Innovation:** Embrace emerging trends and best practices in STEM education such as hands-on STEM competitions, integration of classroom strategies with informal learning outside the classroom, state of the art educational technologies, and project-based learning.
- **Fostering Public-Private Partnerships:** Work with stakeholders to promote public-private partnerships, and effective business and industry engagement strategies in STEM education.

We Respectfully Submit the Following 100-day Policy Recommendations to the Trump Administration

Implementation of the Every Student Succeeds Act:

- In your first budget, provide full funding at the Congressionally authorized level of \$1.65 billion for the ESSA Student Support and Academic Enrichment Grants Program (SSAEG, Title IV, Part A), which would provide every state and district with needs-based funding that can be used at their discretion to support STEM-related learning activities.
- Encourage states to emphasize student performance in science, alongside reading and mathematics, when developing, evaluating and implementing the accountability provisions under the Every Student Succeeds Act.
- Direct the Secretary of Education to prepare an annual report to assess the degree to which states are utilizing the new authorities provided under ESSA to support and prioritize STEM education and workforce development activities under the new law.
- Utilize the authority provided to the Secretary of Education under ESSA to establish a STEM Master Teacher Corps (Section 2245 of ESSA) to propose a national initiative to support high quality STEM initiatives in 5-10 leading states.

Supporting the STEM Pipeline:

- Adopt a balanced approach to supporting community colleges, technician trade schools, and other degree-granting and credentialing institutions of higher education through federal post-secondary workforce education and training programs.
- Integrate the goal of diversifying the STEM education workforce pipeline, especially students from under represented backgrounds, in the Administration's proposals for the reauthorization of the Higher Education Act.
- Propose robust, predictable, and sustained support for the National Science Foundation, including full funding of NSF's Education and Human Resources Directorate and other agency efforts to develop a rigorous education research base to inform innovations in teaching, learning, and educational materials development for both in-school and out-of-school programs.
- Continue and augment the U.S. Department of Education's investment in strengthening and reforming teacher preparation through the Teacher Quality Partnership grants which support diversity in the workforce and the teaching of high-need subjects like STEM in high-needs schools.

White House Actions:

- Appoint a STEM coordinator at the White House whose role will be to drive a STEM education, workforce, and jobs agenda across the federal government.
- Appoint qualified STEM education professionals to a wider range of federal advisory bodies, such as the President's Council of Advisors on Science and Technology and the National Science Board, and in White House and other senior federal agency policymaking positions.

Pending Federal Regulations:

- Work with the Congress to repeal the teacher preparation program regulations promulgated through the Higher Education Act, an unfunded mandate which intrudes on the states authority, including the authority to govern PK-12 education.
- Ensure that the FAA's pending rulemaking regarding aviation technician training (14CFR, Part 147) proceeds as scheduled and that the final rule supports a competency-based learning system that allows industry to freely meet already-mandated knowledge, skill and experience standards

10 Reasons Why STEM Education is Important

- 20 percent of all jobs require a high level of knowledge in any one STEM field and STEM workers earn 11 percent higher wages compared with their same-degree counterparts in other jobs.ⁱ
- Half of all STEM jobs are available to workers without a four-year college degree, and these jobs pay \$53,000 on average—a wage 10 percent higher than jobs with similar educational requirements.ⁱⁱ
- 60 percent of U.S. employers are having difficulties finding qualified workers to fill vacancies at their companies.ⁱⁱⁱ
- While the U.S. economy grapples with economic recovery, job postings in the STEM occupations outnumber unemployed workers by nearly two to one.^{iv}
- The top 10 bachelor-degree majors with the highest median earnings are all in STEM fields.^v
- Although most parents of K–12 students (93 percent) believe that STEM education should be a priority in the U.S., only half (49 percent) agreed that it actually is a top priority for this country.^{vi}
- Only one in five STEM college students felt that their K–12 education prepared them extremely well for their college courses in STEM.^{vi}
- Only 45 percent of U.S. high school graduates are ready for college work in math and 30 percent are ready in science.^{vii}
- Only one out of five households has access to and takes advantage of STEM-related after-school programming.^{vii}
- Fewer than 40 percent of students who enter college intending to major in a STEM field complete a STEM degree.^{viii}

ⁱ Thomasian, John. (2011, December 1). Building a Science, Technology, Engineering, and Math Education Agenda: An Update of State Actions. *The National Governors Association Center for Best Practices*. Retrieved from <http://www.nga.org/cms/home/nga-center-for-best-practices/center-publications/page-edu-publications/col2-content/main-content-list/building-a-science-technology-en.html>

ⁱⁱ Rothwell, Jonathan. (2008, June 10). The Hidden STEM Economy. *Brookings Institution*. Retrieved from <http://www.brookings.edu/research/reports/2013/06/10-stem-economy-rothwell>

ⁱⁱⁱ Council on Foreign Relations Independent Task Force. (2012). U.S. Education Reform and National Security. *Council on Foreign Relations*. Retrieved from <http://www.cfr.org/united-states/us-education-reform-national-security/p27618>

^{iv} Change the Equation. STEM Help Wanted. Retrieved from <http://changetheequation.org/stemdemand>

^v <http://www.nga.org/cms/home/nga-center-for-best-practices/center-publications/page-edu-publications/col2-content/main-content-list/building-a-science-technology-en-1.html>

^{vi} <http://www.microsoft.com/presspass/press/2011/sep11/09-07MSSTEMSurveyPR.msp>

^{vii} http://www.changetheequation.org/sites/default/files/CTEq_VitalSigns2011_National_0.pdf

^{viii} <http://www.whitehouse.gov/blog/2012/12/18/one-decade-one-million-more-stem-graduates>