STEM Education: A National Imperative

Submitted to the Trump Transition Team for Education

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From: National Science Teachers Association (NSTA), National Council of Teachers of Mathematics (NCTM), American Association of Physics Teachers (AAPT), Computer Science Teachers Association (CSTA),American Chemical Society (ACS), American Society for Engineering Education (ASEE), National Association of Biology Teachers (NABT), the International Technology and Engineering Educators Association (ITEEA) and the STEM Education Coalition

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In this era of global competitiveness, it is clear that America's 21st-century workforce—students in classrooms today—will be critical to ensuring that the United States remains a world leader in the years ahead. It is similarly clear that the pervasiveness of technology in our society demands that our students receive a sound education in Computer Science, Science, Technology, Engineering and Mathematics (STEM including Computer Science) knowledge and skills.

The nation's STEM educators are working diligently to prepare this future workforce and the next generation of scientists, engineers, innovators, and entrepreneurs critical for future economic growth and prosperity.

Our organizations—National Science Teachers Association (NSTA), National Council of Teachers of Mathematics (NCTM), American Association of Physics Teachers (AAPT), Computer Science Teachers Association (CSTA),American Chemical Society (ACS), American Society for Engineering Education (ASEE), National Association of Biology Teachers (NABT), the International Technology and Engineering Educators Association (ITEEA) and the STEM Education Coalition —represent educators who provide instruction to every student in this country. We therefore believe the federal government has a responsibility to ensure the following:

- Equitable access to high-quality STEM learning experiences for all students and their communities;
- The promotion of STEM literacy and competencies for all students;
- Funding for innovation and technologies to implement STEM initiatives;
- Quality leadership and support for STEM in-service teachers and preservice providers (through discipline-specific and integrated STEM programs) that promote innovation and superlative STEM teaching and learning that includes integrated changes in research-based curriculum, technology, teacher professional development, and assessment, as well as strong school leadership;
- School- and state-defined strategies for achieving scale for STEM learning, and STEM school experiences that foster long-term sustainability; and
- Engagement in STEM education by multiple stakeholders from the business, professional, informal, research, and education communities and from elected officials—all of which are vital to the success of STEM schools.

To achieve these goals, the *new Administration must propose—and strongly encourage Congress to provide—the highest possible funding for the STEM-related programs outlined in the Every Student Succeeds Act.* These programs are primarily in Title II (Preparing, Training, and Recruiting High Quality Teachers and Principals) and Title IV-A (Student Support and Academic Enrichment Grants), which will provide funds for STEM instruction and supports to high-need students in targeted districts and schools.

We also call upon the new Administration to consider these suggestions during the presidential transition:

1. Appoint a high-profile STEM education coordinator at the White House Domestic Policy Council whose role will be to drive a K–12 STEM agenda across the federal government among the mission federal agencies, the National Science Foundation (NSF), and the Department of Education, and to work with state stakeholders.
2. Ensure that the President's Science Advisor (who is also the Director of the Office of Science and Technology Policy) has a demonstrated public record of commitment to STEM education. We also strongly suggest the creation of a senior-level position in OSTP that deals specifically with K–12 STEM education.
3. Appoint leading STEM educators 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 to other senior federal agency policymaking positions.
4. Direct the Secretary of Education to implement the STEM Master Teacher Corps to enhance teacher leadership and service to the nation, as authorized in Section 2245 of the Every Student Succeeds Act.
5. Sustain and increase investments in STEM education programs at the mission agencies and STEM-related educational research and innovation at the NSF, and direct NSF to pilot implementation strategies resulting from that research.
6. Direct the Secretary of Education to publish an annual report assessing the degree to which states are using the new authorities provided under the Every Student Succeeds Act to support and prioritize STEM education activities and student success.
7. Publish an online guide of federal resources available to support STEM education that highlights research on best practices in teaching and learning and areas such as STEM competitions, informal learning, and ways to increase the participation of women and minorities in STEM learning.

While the creativity that drives STEM literacy, scientific discovery, engineering design, technological problem solving, and innovation starts at home, it is nurtured in the K–12 STEM classroom. STEM experiences help students develop critical-thinking skills, encourage innovative thinking, and foster perseverance. All stakeholders—including the federal government—must work together to nurture and support the teachers on the frontlines of Computer Science, Science, Technology, Engineering and Mathematics education and ensure they receive what they need to succeed in the classroom and provide our children with a world-class education.