

SCIENCE, TECHNOLOGY, ENGINEERING AND MATH: EDUCATION FOR GLOBAL LEADERSHIP

“... Leadership tomorrow depends on how we educate our students today—especially in science, technology, engineering and math.”

– President Barack Obama, September 16, 2010

The United States has become a global leader, in large part, through the genius and hard work of its scientists, engineers and innovators. Yet today, that position is threatened as comparatively few American students pursue expertise in the fields of science, technology, engineering and mathematics (STEM)—and by an inadequate pipeline of teachers skilled in those subjects. President Obama has set a priority of increasing the number of students and teachers who are proficient in these vital fields.

THE NEED

Only 16 percent of American high school seniors are proficient in mathematics and interested in a STEM career. Even among those who do go on to pursue a college major in the STEM fields, only about half choose to work in a related career. The United States is falling behind internationally, ranking 25th in mathematics and 17th in science among industrialized nations. In our competitive global economy, this situation is unacceptable.

THE GOALS

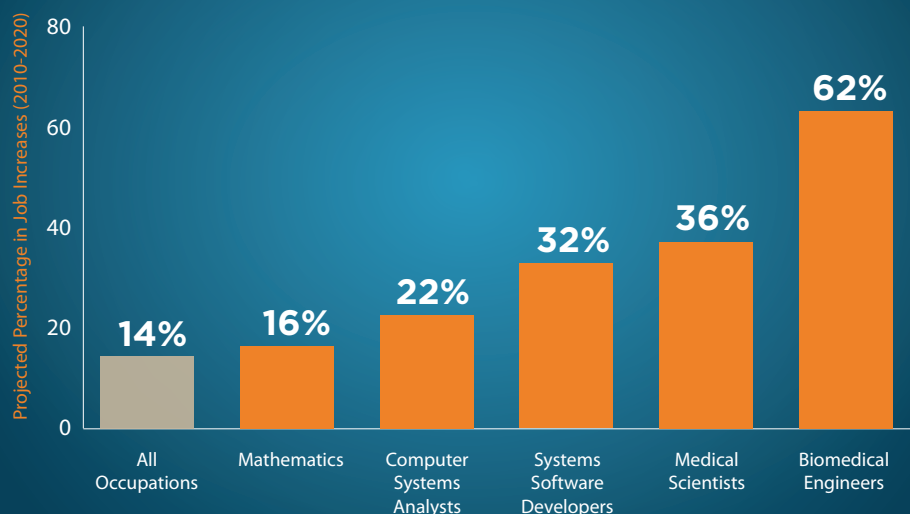
President Obama has articulated a clear priority for STEM education: within a decade, American students must “move from the middle to the top of the pack in science and math.” Specifically, he has called on the nation to develop, recruit, and retain 100,000 excellent STEM teachers over the next 10 years. He also has asked colleges and universities to graduate an additional 1 million students with STEM majors. These improvements in

STEM education will happen only if Hispanics, African-Americans, and other underrepresented groups in the STEM fields—including women, people with disabilities, and first-generation Americans—participate.

THE PLAN

The Obama administration will facilitate a cohesive national strategy, with new and repurposed funds, to reorganize STEM education programs and increase the impact of federal investments in four areas: K-12 instruction; undergraduate education; graduate fellowships; and education activities that typically take place outside of the classroom. The reorganization of STEM programs will consolidate or restructure 114 STEM education programs across 11 agencies, improving the delivery, impact, and visibility of STEM efforts. Nearly

PROJECTED PERCENTAGE INCREASES IN STEM JOBS: 2010–2020



\$180 million will be redirected from consolidated programs to the Department of Education, the National Science Foundation, and the Smithsonian Institution to implement initiatives in the four core reform areas. The administration will coordinate and streamline federal efforts to improve STEM education.

The Department of Education will lead several new initiatives, including:

- **STEM Innovation Networks (\$150 million):**

These networks of school districts, colleges, and other regional partners will improve STEM education in their communities by training future STEM teachers, supporting existing STEM educators, providing students with meaningful and engaging STEM learning opportunities, and involving current STEM professionals in educating the next generation of STEM leaders and creators. Approximately \$5 million of these funds would be set aside to establish a robust, largely online community of STEM educators, designed to promote the broad adoption of effective STEM education strategies.

- **STEM Teacher Pathways (\$80 million):** To support the President's goal of preparing 100,000 effective STEM teachers, this new program will provide competitive awards to high-quality programs that recruit and train talented STEM educators for high-need schools.

- **STEM Master Teacher Corps (\$35 million):** This program will enlist the country's leading science and



mathematics teachers to improve STEM education across America. The Corps will recognize and reward the most accomplished STEM educators by offering them membership in a national community of talented STEM educators, opportunities to serve as instructional leaders in their schools and communities, and additional pay in exchange for their leadership and service. The President's budget provides \$35 million to pilot the program before the program is taken to scale.

Together, these programs will identify and implement effective approaches for improving STEM teaching and learning; facilitate the dissemination and adoption of effective STEM instructional practices nationwide; and promote STEM education experiences that prioritize hands-on learning to increase student engagement, interest, and achievement in the STEM fields.

ADDITIONAL STEM PROPOSALS

Other important STEM investments are described in the Department's STEM crosscut document.



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