IMPROVING SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS (STEM) EDUCATION

Developing high-quality skills in the fields of science, technology, engineering, and mathematics (STEM) is increasingly important for student success at all levels of education. These same skills are also crucial for workforce success, as a growing number of jobs will be located in the STEM fields or require at least some STEM skills. And in the 21st century, our economy will be driven even more by contributions that come from discoveries and innovations in the STEM fields.

President Obama has identified an overarching goal to improve our STEM education compared to other nations, and identified three overarching priorities to ensure more students develop the skills needed to succeed in the STEM fields: improving the quality of math and science teachers so more students have opportunities for high-quality STEM learning and are motivated to pursue STEM degrees and careers; improving undergraduate teaching practices so more well-prepared STEM students persist to a degree in these fields; and expanding STEM education and career opportunities for underrepresented groups, including women and minorities.

The President's 2013 budget request for the Department of Education and *Blueprint for Reform of the Elementary and Secondary Education Act* will help to strengthen America's leadership in the 21st century by improving STEM education.

- **$150 million for Effective Teaching and Learning: STEM,** which would replace the current Mathematics and Science Partnerships program. This new program would support the transition to college- and career-ready standards by helping States improve teaching and learning in science, technology, engineering and mathematics, and it would be connected to the math-science partnership program at NSF. Funds would be used to support State implementation of comprehensive, evidence-based plans; professional development that aligns Federal, State, and local resources to promote high-quality STEM instruction; and for subgrants to high-need LEAs to support comprehensive STEM instruction in the grades and schools with the greatest needs.

- **The President has announced an ambitious goal of preparing 100,000 excellent STEM teachers over the next decade**. To move toward this goal, programs in the President's budget would support existing STEM teachers, improve the quality of STEM teacher preparation programs, and recruit the best STEM undergraduates to careers in teaching through investments such as:

    - **$80 million for the STEM teacher and leader training and professional development** set aside from the Effective Teachers and Leaders program. This program would provide competitive awards to create or expand high-quality pathways to teacher certification and other innovative approaches for recruiting,

training, and placing talented recent college graduates and mid-career professionals in the STEM fields in high-need schools.

- **A new Presidential Teaching Fellows program ($190 million)** to fund formula grants to States to support scholarships for talented students to attend top-tier teacher preparation programs and work in high-need schools and subjects, including STEM. Presidential Teaching Fellows would be selected on the basis of grade-point average, major in a high-need academic subject, and commitment to working in high-need schools, with a priority for low-income students.

- **Targeted support for STEM projects in the $150 million Investing in Innovation (i3) program,** which makes competitive awards to develop, validate, and scale up innovative programs, practices, and strategies that are effective in improving education outcomes for students. Funds within i3 will also be used to support the new **Advanced Research Projects Agency for Education**, which will foster breakthrough developments in educational technology and learning systems, support systems for educators, and tools that result in improvements in student outcomes.

- **$30 million for STEM innovation** from the Fund for the Improvement of Education to run an evidence-based grant competition focused on developing, evaluating, and scaling proven practices that can help increase student achievement in K-12 STEM. This competition, similar in structure to the i3 program, would also carry a priority for implementing college- career-ready standards that are common to a significant number of states in STEM subjects, particularly mathematics. A portion of these funds would support the joint development of joint evidence standards and frameworks around STEM education at the Institute of Education Sciences (IES) and the National Science Foundation (NSF).

- **$175 million across higher education programs.** From preparing more students to succeed in college-level courses to helping institutions increase their capacity and programs, the President's budget contains many investments to improve STEM in postsecondary education. This includes investments in students, such as $34 million through the Upward Bound Math-Science program to increase the number of high school students who are prepared to succeed in college-level STEM courses. It also provides investments in institutions to build their capacity and offerings through programs such as the $100 million Hispanic-Serving Institutions STEM and Articulation Program or the $9.5 million Minority Science and Engineering Improvement Program.

- **Race to the Top: College Affordability and Completion ($1 billion)** will support STEM investments by pushing States to better align standards between high schools and colleges and providing funds to institutions to improve the quality and success of their introductory

courses, particularly those like remedial mathematics that are roadblocks to completion.

- **An ambitious research & development effort,** led by IES, in mathematics and science education. Our budget request supports new investments in research to accomplish the following: expand our understanding of how students learn; promote the development of better mathematics and science curricula and assessments; provide more effective professional development for teachers in these areas; and enhance the use of technology to expand student access to, and achievement in, mathematics and science courses. Common evidence standards with NSF will bring clarity to the field and make it easier for entities to apply for different grants across agencies.

- **Funding for statistics on student achievement in mathematics and science**, including increased support for the IES National Center for Education Statistics, which will collect and analyze information on student achievement in mathematics and science, and help States participate in a pilot Program for International Student Assessment (PISA) study that will enable states to compare the academic performance of their students to the performance of students in other countries.