Women and Girls in Science, Technology, Engineering, and Math (STEM)

I always hear stories about how we can't find enough engineers, we can't find enough computer programmers…

And that's why we're emphasizing math and science. That's why we're emphasizing teaching girls math and science.

We've got to lift -- we've got to lift our game up when it comes to technology and math and science. That's, hopefully, one of the most important legacies that I can have as President of the United States.

President Barack Obama
May 2011

President Obama understands that increasing the number of women engaged in science, technology, engineering, and math (STEM) fields is critical to our Nation's ability to out-build, out-educate, and out-innovate future competitors. Jump-starting girls' interest in STEM subjects, boosting the percentage of scientists and engineers who are women – which rested at a mere 24% in 2009[1] – and giving greater prominence to strong role models is not just the right thing to do, but the smart thing to do.

Engaging girls in STEM

In 2009, President Obama set an ambitious goal: to move U.S. students from the middle to the top of the pack in math and science achievement over the next decade. The key to accomplishing this vision rests not only in raising the number and performance of students currently excelling in STEM subjects, but also engaging girls and other students who are historically underrepresented in these areas.

That's why the Administration's $4.35 billion Race to the Top competition focused not only on encouraging states to develop comprehensive strategies to improve achievement and provide rigorous curricula in STEM subjects, but also to broaden the participation of women and girls. To achieve this, states applying for these funds received competitive preference if they demonstrated efforts to address any barriers to STEM careers for women, girls, and other underrepresented groups.

Launched in November 2009, the President's *Educate to Innovate* campaign features among its three core pillars a commitment to "expand STEM education and career opportunities for underrepresented groups, including women." Working with teachers, businesses, philanthropists, foundations, non-profits, scientists, and engineers, the campaign has already attracted more than $700 million in financial and in-kind support and partnerships that will help prepare more than 10,000 new math and science teachers.

[1] *Women in STEM: A Gender Gap to Innovation,* U.S. Department of Commerce, Economics and Statistics Administration, August 2011

The President has also gone to great lengths to highlight the accomplishments of girls in STEM subjects. In early fall, 2011, he invited the winners of the first-annual Google Science Fair, all talented young women, to the Oval Office to share information on their award-winning projects and showcase their achievements.

Meanwhile, agencies across the Administration are taking their own steps to foster partnerships and programs that will specifically augment the number of girls involved in STEM activities. For instance, the National Aeronautics and Space Administration (NASA) and the Girl Scouts of the United States America (GSUSA) have developed a Memorandum of Understanding through which the two organizations work together to achieve common goals: motivating and encouraging girls to do their best. NASA's presence at the GSUSA annual convention provided an opportunity for 17,000 leaders and girls to experience fun, hands-on NASA STEM activities and inspire them to pursue careers in STEM disciplines.

Providing better conditions for women in the workforce

Women today currently earn 41% of PhD's in STEM fields, but make up only 28% of tenure-track faculty in those fields. Reducing the dropout rate of women in STEM careers is especially important in the quest for gender equality because women in STEM jobs earn 33 percent more than those in non-STEM occupations and the wage gap between men and women in STEM jobs is smaller than in other fields. These most recent conclusions were featured in the Department of Commerce's August 2011 report, *Women in STEM: A Gender Gap to Innovation*.

Addressing the challenges of women in the STEM workforce will require the creation and support of institutional environments that are attractive to women in all stages of their careers.

Program flexibility: Encouraging the propagation of family-friendly practices that allow women to remain in the workforce while balancing the demands of caring for their families is critical. An example of Administration efforts in this domain include:

- On September 26th, 2011, First Lady Michelle Obama hosted an event in the East Wing of the White House to announce the National Science Foundation's Career-Life Balance Initiative. This ten-year effort elevates several successful programmatic policies aimed at creating more flexible environments for grant recipients – including no-cost grant extensions, year-long deferrals for child birth or adoption, and increased opportunities for virtual panel reviews – to a Foundation-wide level. These measures seek to address existing barriers that force women to choose between caring for families and continuing their research.

Facilitating Re-entry: For many women who take time off to care for families, re-entering the STEM workforce can prove challenging but can be aided by programs specifically designed to address these barriers. For instance:

- National Institutions of Health (NIH) "re-entry" program designed for scientists who have taken time away from laboratory research to raise children or attend to other family

responsibilities. Though open to both men and women, over 90% of participants have been women.

Setting the Standard with Exceptional Role Models

The President recognizes the need for more women champions and role models in STEM fields – one reason why science and technology efforts across the Administration are led by a number of talented women. Environmental Protection Agency Administrator Lisa Jackson, National Oceanic and Atmospheric Administration Administrator Jane Lubchenco, and the Director of the Defense Advanced Research Projects Agency, Regina Dugan, are among the many female Federal scientists who stand out as exemplary sources of inspiration to girls and women across the nation.

Launched in the summer of 2011, the Obama Administration's Women in STEM Speakers Bureau brings role models like these top officials one step closer to their future successors, capitalizing on existing travel schedules to send these women into communities across the country to meet and inspire girls in grades 6-12.

Mentoring: Mentorship is an important key to increasing and keeping women engaged in scientific and technical careers. By connecting established role models with nascent STEM professionals, mentoring works to address the preconceived notions of these careers as inflexible or male-dominated that may discourage many girls from participating in STEM fields.

- Each year, the President recognizes extraordinary individuals outside the Federal government who have demonstrated remarkable abilities as mentors in the fields of science, engineering, and math. Among the chief qualifications of the roughly 15 annual recipients of the Presidential Award for Excellence in Science, Math, and Engineering Mentoring (PAESMEM) is demonstrated success in engaging underrepresented groups, including girls, in these technical fields.

- Launched in March 2011, the Department of Energy's Mentoring Program offers monthly mentoring activities that connect women engineers and scientists throughout the DOE with female undergraduates.

Training Programs: Along these same lines, in partnership with Spellman College, the Department of Transportation has committed to bringing undergraduates to its headquarters to learn more about engineering in the transportation sector. Programs like these go a long way to ensuring that women pursuing undergraduate degrees in STEM fields have the guidance and support they need to remain engaged and inspired.

Global Engagement

Increasing the representation of women and girls in scientific and technical fields is not only a national imperative, it's a global one. As science, technology, engineering, and math become ever more important in an increasingly interconnected global economy, the potential for progress

is enormous. However, the Administration can't be satisfied with more than half the world's population not participating in this progress.

- The Department of Energy's Clean Energy Education and Empowerment (C-3E) Women's Initiative aims to inspire women to pursue studies that will help them participate in the clean energy revolution. At the core of this initiative are university talks offered around the world by women leadiers in STEM fields. This partnership features commitments from seven nations in addition to private and non-profit partners.

- The State Department's Symposium on Changing Mindsets to Promote Women in Science, which took place in June 2011,was one of many efforts to facilitate a dialogue between women scientists from America and other nations. By bringing these women together, Changing Mindsets provided an opportunity for women scientists and policy makers from the United States and other nations to share best practices and build the skills necessary to support the global success of women in STEM fields.