

Major Science Education Policy Recommendations
Side- by- Side Abstract

	Rising Above The Gathering Storm	National Science Board STEM Commission	National Governors Association: Innovation America	America COMPETES Act	A Nation at Risk
<i>Date of Report</i>	<i>2006</i>	<i>2007</i>	<i>2007</i>	<i>2007</i>	<i>1983</i>
Professional Development	<p>Annually recruit 10,000 science and mathematics teachers</p> <p>Strengthen the skills of 250,000 current teachers at summer institutes, in master's programs, and in AP and IB training programs</p> <p>Scholarships for math and science teachers with bonuses for teachers who choose rural/urban districts</p>	<p>Compensate STEM teachers at market rates</p> <p>Provide resources for preparation of future STEM teachers</p> <p>Create national STEM teacher certification standards</p> <p>Prepare STEM teachers to teach STEM content more effectively</p> <p>Assist "informals" in professional development</p>	<p>Market and performance-based compensation for STEM teachers</p> <p>Develop accountability measures for providers of STEM teacher prep and training</p> <p>Create new models to recruit, prepare, and train STEM teachers</p>	<p>Establish summer teacher institutes (NSF)</p> <p>Amend IRS code to allow teachers refundable tax credit of their undergraduate tuition</p> <p>Award grants to "educational partnerships" to enhance master's degree programs in STEM for teachers</p> <p>Fund NSF Teaching Fellows (currently Noyce Program) to recruit STEM professionals to teach in high needs areas</p>	<p>Teacher salaries should be higher, market sensitive, performance based</p> <p>Experienced teachers should help train new teachers</p> <p>Non-teachers with math and science degrees should be trained to teach</p>

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Science Workforce Pipeline	Increase the number of students who have access to, and pass, AP and IB science and math	Improve linkage between high school, higher ed, and the workforce	Increase access to students' real world experiences in STEM through partnerships with scientific organizations	Expand Integrative Graduate Education and Research Traineeship and Graduate Research Fellowship programs	Create financial incentives for college students to enter teaching
	Increase number of specialty high schools	Develop programs that encourage student interest in STEM fields at all grade levels	Align STEM expectations with postsecondary pathways for knowledge-based economy	Establish a clearinghouse of programs related to improving the professional science master's degree	Teach students effective study skills beginning in grade school
	Increase opportunities for inquiry-based learning for middle and high school students	Support and grow programs that build bridges between p-12 and higher ed	Establish rigorous and relevant Career Technical Education	Supports a program that mentors women interested in pursuing degrees in STEM	Establish firm codes of conduct and attendance with clear sanctions
	Expand laboratory internship opportunities for high school and middle school students	Expand funding for programs for minority students pursuing STEM	Establish and expand specialty STEM in middle and high schools; "early colleges" and in charter, district, and other models Support STEM education outside the classroom (i.e., after-school, informal learning)	Award grants to states to establish or expand public, statewide specialty schools for math and science Award grants to outstanding early career researchers	

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Leadership and Systemwide Stewardship	Matching grants to postsecondary institutions to develop STEM teaching programs	<p>Creation of National Council for STEM Education</p> <p>Creation of Committee on STEM Education within the President's office of science and technology Policy</p> <p>Creation of new Assistant Secretary of Education at the Department of Education</p> <p>Charge the National Science Foundation with creating a national roadmap to improve p-16 STEM education (the roadmap should articulate priorities and provide info on best practices, scale-up, evaluations, etc.)</p> <p>Creation and strengthening of state P-16 councils</p>	<p>Align educators, policy-makers and the private sector to improve STEM education</p> <p>Create STEM Centers in states</p> <p>Build a STEM Agenda across business, academic and policy partnerships</p> <p>High school grading should reflect high academic standards</p>	<p>Tax credits for business to contribute property and services to STEM schools</p> <p>President should convene a National Science and Technology Summit (industry, not specifically K-12)</p> <p>Establish STEM Day in all elem/middle schools 2x year, federal employees and private sector participation</p> <p>Award grants to states to promote better alignment of graduate content requirements with workforce needs; statewide education data systems.</p>	<p>Longer school year and/or day</p> <p>High school students should take 4 years of English, 3 years of math and science, 3 years of social studies, and 1 year of computer science</p>

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Content, Standards, and Assessments		<p>Define national STEM content guidelines</p> <p>Develop metrics to assess student performance that are aligned with national content guidelines</p> <p>Coordinate assessments with NCLB</p> <p>Assess the effectiveness of federally funded STEM education programs</p> <p>Develop digital content (NSF)</p> <p>Assist “informals” in developing content (NSF)</p>	<p>Align state STEM standards and assessments to international benchmarks</p> <p>Align STEM expectations at elementary, middle, and high school levels</p> <p>Develop state-wide K-16 data systems to measure STEM prep</p> <p>Develop accountability measures for providers of STEM teacher prep and training</p> <p>Create specialty STEM middle and high schools</p> <p>Develop high-quality STEM curriculum aligned to state standards</p>	<p>Requires science assessments to determine AYP</p> <p>Establish science and math performance standards for Head Start</p> <p>Fund AP and IB programs</p> <p>Amend NAEP to require biennial national assessment of student achievement in 4th, 8th, and 12th grade science (in add to math and reading)</p> <p>Bonus grants to to each of three elem/secondary schools with low-income students that show the most improvement 2008-2011.</p>	<p>High School grading should reflect high academic standards</p> <p>Greater use should be made of standardized achievement tests for remedial intervention, credentialing, and tracking</p>

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Best Practices		<p>Provide a forum to share and disseminate information on best practices in STEM teaching and learning</p> <p>Database of opportunities for teachers to do summer research</p>	<p>Create State STEM Centers to coordinate efforts</p> <p>Establish P-20 Councils</p> <p>Build a STEM agenda that includes links to economic and workforce development</p>	<p>Identify, disseminate, and support promising practices in K-12 STEM teaching (NAS)</p>	
Communications		<p>Launch and sustain a public education initiative to raise awareness that STEM education is essential for the Nation's success</p> <p>Fund STEM media programs (NSF)</p> <p>Fund web-based resources (NSF)</p>	<p>Innovation America survey assessing Americans' attitudes toward innovation</p> <p>Support STEM education outside the classroom</p> <p>STEM Communications Toolkit</p>	<p>Host of recommendations for federal agencies to promote awareness within their sphere (NASA, NOAA)</p>	

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RESOURCES NEEDED	Scholarship incentives for teacher training and recruitment Incentives for student achievement in AP and IB classes	Database of grants and funding opportunities for STEM classroom resources Amplified research on effective educational practices (NSF)		\$33.6 billion for FY2008-2010 Promote use of federal resources (labs, personnel), for schools specializing in math and science	