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## KEY STEM EDUCATION INITIATIVES IN CONGRESS

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The 110<sup>th</sup> Congress has been aggressively working on STEM education issues since taking office. The greatest portion of this activity has been divided between the Senate Health, Education, Labor and Pensions (HELP) Committee, Chaired by Senator Edward Kennedy (D-MA), and the House Education and Labor Committee, chaired by Congressman George Miller (D-CA). There has also been some activity in the Senate Commerce, Science and Transportation Committee, chaired by Senator Daniel Inouye (D-HI), and the House Science and Technology Committee, chaired by Congressman Bart Gordon (D-TN), which oversees the National Science Foundation (NSF), as well as several Federal Agencies with strong commitments to STEM education and careers.

One of the biggest issues at hand is the reauthorization of the No Child Left Behind (NCLB) Act. Both Senator Kennedy's HELP Committee and Congressman Miller's Education and Labor Committee held several hearings in 2007, and are expected to hold more in 2008. The aim of the hearings has been to solicit input from experts in the education field, along with the public. Potential funding levels for the America COMPETES Act, passed in the summer of 2007, is also a highly contentious issue, as is summarized below.

On the following pages is a summary of key STEM legislation introduced so far in the 110<sup>th</sup> Congress, broken into House and Senate-introduced bills. We also include an overview of two bills that have passed both houses—an overview which includes the landmark America COMPETES Act, which was signed into law in August of 2007. Above and beyond these bills however, there are numerous other ways STEM education and American competitiveness issues are being addressed in legislation from the Department of Agriculture to Department of Homeland Security.

## **Bills Passed by Both Houses**

### **The America COMPETES Act (PL 110-69)**

Senators Reid and McConnell, the Democrat and Republican leaders of the U.S. Senate, jointly introduced the America COMPETES Act in early March of 2007. On August 9, 2007, President Bush signed the bill into law. Many elements of the final bill originated in the “National Competitiveness Investment Act” (NCIA), which failed to gain traction in the last days of the 109<sup>th</sup> Congress.

The bill authorizes \$43.3 billion for science and technology programs over fiscal years FY2008-2010. In terms of funding authorizations, the bill:

- Sets NSF on a seven-year doubling path, along with the Education and Human Resources (EHR) Directorate at NSF
- Keeps the DOE Office of Science on a seven-year doubling track, as originally proposed in 2005
- Sets the National Institute of Standards and Technology (NIST) on a ten-year doubling path

This year will be particularly challenging as FY09 funding levels are set for the America COMPETES Act. The President has said that some education issues will be funded in COMPETES, but that the priority funding will be for basic research. An Administration representative also stated at a recent hearing on COMPETES funding levels for FY09 that COMPETES would not be fully funded this year. Conversely, Rep. Bart Gordon, Chairman of the House Committee on Science and Technology, among others, has called on the President to fully fund the bill. Please see the “America COMPETES Act Overview” document that follows this summary for more details on the many STEM education-related provisions in the bill, broken down by agency.

### **College Opportunity and Affordability Act (HR 4137) / Higher Education Amendments of 2007 (S 6142)**

These two bills represent the first comprehensive reauthorization of the Higher Education Act (HEA) since 1998. The House version, the College Opportunity and Affordability Act (HR 4137), was recently passed on February 7, 2008. The Senate version, the Higher Education Amendments of 2007 (S 6142), passed the Senate unanimously in July of 2007. The difference between the bills will have to be worked out in Conference Committee. More details about each bill can be viewed on the Triangle Coalition *Legislative News* website, however the reauthorization bills cover such areas as: increasing STEM teachers; improving STEM teacher quality and setting goals for teacher preparation programs; encouraging minority as well as general interest in STEM fields among young people and teachers; repaying interest on student loans for STEM teachers; and providing STEM college scholarships.

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## **U.S. House of Representatives STEM Education-Related Legislation**

*In order chronologically by bill number.*

### **The Science Accountability Act (H.R. 35)**

Congressman Vernon Ehlers (R-MI) introduced the Science Accountability Act, H.R. 35 in January of 2007. The act would amend NCLB to require states to require the use of science assessments in the calculation of adequate yearly progress. Specifically, it would: (1) establish challenging academic content and student achievement standards in science, beginning in the 2008-2009 school year; and (2) measure the achievement of students in grades three through eight against such standards, beginning in the 2009-2010 school year.

### **Standards to Provide Educational Achievement for Kids (SPEAK) Act (H.R. 325)**

The SPEAK Act was introduced by Congressman Vernon Ehlers (R-MI) in January of 2007, and would amend the National Assessment of Educational Progress (NAEP) Authorization Act to require the Commissioner for Educational Statistics to add science to the mandatory biennial national and state academic assessments of students achievement in grades four, eight, and twelve. The SPEAK Act would also amend NCLB to require states receiving school improvement funds to participate in such science assessments of students in grades four and eight, beginning with the 2008-2009 school year.

It would amend the NAEP Authorization Act to task the National Assessment Governing Board, NAGB, with creating or adopting voluntary American education content standards in mathematics and science for kindergarten through grade 12. According to the bill, these standards would reflect the knowledge students need to enter college or the workforce and compete in the global economy.

H.R. 325 would also require the Secretary of Education to establish the American Standards Incentive fund to award competitive four-year grants to states which agree to: (1) adopt such voluntary mathematics and science standards as the core of their own academic content standards in such subjects; and (2) align their teacher certification and professional development requirements to such standards. It would also provide additional funds to successful grantees for the enhancement of their student performance data systems.

The Secretary of Education would be authorized to extend by two to four years the date by which states that have adopted these new voluntary standards must meet or exceed the state academic performance standards established under NCLB.

### **National STEM Scholarship Database Act (H.R. 1051)**

Rep. Rush Holt (D-NJ) introduced the National STEM Scholarship Database Act in February of 2007. A companion version, S. 2428, was introduced by Sen. Barack Obama in December of 2007. The bills would direct the Secretary of Education to establish and maintain, on the public website of the Department of Education, a database of information on public and private

programs of financial assistance for the study of postsecondary and graduate science, technology, engineering, and mathematics (STEM). It would require that the database: (1) provide separate information for each field of study; (2) be searchable by category and combinations of categories; (3) indicate programs targeted toward specific demographic groups; and (4) provide searchers with program sponsor contact information and hyperlinks. The bills both authorize such amounts as are necessary for 2008 to 2012.

### **Global Warming Education Act (H.R. 1728)**

The Global Warming Education Act was introduced by Rep. Mike Honda (D-CA) in March 2007. In May of 2007, a virtually identical Senate version of the bill, known as the Climate Change Education Act (S.1389), was introduced by Sen. Barack Obama (D-IL). The bills would authorize the National Science Foundation to establish a climate change education program to: (1) broaden the understanding of human induced global warming, possible long and short-term consequences, and potential solutions; (2) apply the latest scientific and technological discoveries to provide learning opportunities to people; and (3) emphasize actionable information to help people understand and to promote implementation of new technologies, programs, and incentives related to energy conservation, renewable energy, and greenhouse gas reduction. The program would be required to include: (1) a national information campaign to disseminate information on and promote implementation of the new technologies, programs, and incentives; and (2) a competitive grant program to provide grants to states, municipalities, educational institutions, and other organizations to create materials relevant to global warming and climate science, develop climate science K-12 curriculum and supplementary educational materials, or publish global warming and climate science information. The bills both authorize such sums as are necessary.

### **No Child Left Inside Act of 2007 (H.R. 3036)**

Introduced by Rep. John Sarbanes (D-MD) in July of 2007, the No Child Left Inside Act would amend NCLB to encourage environmental education. A nearly identical bill, S. 1981, was introduced by Sen. Jack Reed (D-RI) in August of 2007. Each bill is authorized at "\$100,000,000 for fiscal year 2008 and each of the 4 succeeding fiscal years." Both bills would authorize states to use federal funds for the development of kindergarten through grade 12 (K-12) plans for environmental education and teacher training to ensure that high school graduates are environmentally literate. Both would also authorize the Secretary to award competitive matching grants to nonprofit organizations, states, LEAs, or IHEs for activities to improve and support environmental education that include: (1) advancing content and achievement standards; (2) developing or disseminating innovations or model programs; (3) research; and (4) creating new funding sources. Additionally, each bill would create an Office of Environmental Literacy to advance K-12 environmental education and administer the new grant programs. However, only the House bill would: (1) amend the National Assessment of Educational Progress (NAEP) Authorization Act to authorize the Commissioner for Education Statistics to include environmental education in any additional national assessment of student achievement; and (2) require the Secretary to give priority in providing magnet school assistance to LEAs creating or enhancing environmental magnet school programs.

### **The Strengthening America's Innovation and Competitiveness Act (H.R. 3242)**

Rep. Cathy McMorris Rodgers (R-WA) introduced the Strengthening America's Innovation and Competitiveness Act in July of 2007. The act amends NCLB to authorize the Secretary of Education to award competitive grants to local educational agencies (LEAs) and public or private entities to recruit and train individuals outside of the elementary and secondary education system who have expertise in core academic subjects, particularly mathematics, science, and critical foreign languages, to serve as adjunct secondary school teachers of such subjects. It also revises the Advanced Placement Incentive grant program to: (1) require nonprofit grantees to partner with educational agencies; (2) give priority to applicants that increase mathematics, science, or critical foreign language programs or target rural schools; and (3) require grantees to cover two-thirds of program costs and provide salary incentives for AP mathematics, science, or critical foreign language teachers. It would replace the Robert C. Byrd Honors Scholarship program with the Robert C. Byrd Mathematics and Science Honors Scholarship program awarding funds to a private nonprofit organization to administer, through a public-private partnership, such a program for postsecondary and graduate students who commit to five consecutive years of service in a science, engineering, or mathematics field (this program was incorporated into the HEA bill which recently passed the House).

### **Improving Mathematics and Science Teacher Quality Act (H.R. 3313)**

H.R. 3313, the Improving Mathematics and Science Teacher Quality Act, was introduced by Rep. Vernon Ehlers (R-MI) in August of 2007. It would amend part B of Title II of NCLB to authorize the inclusion of informal science education centers and business consortia as partners in the grant program to improve the quality of elementary and secondary school mathematics and science teachers. It would require the inclusion of teacher training departments of institutions of higher education in such partnerships, but removes state educational agencies as partnership participants.

### **Science Museum and National Laboratory Partnership Demonstration Act (H.R. 3955)**

The Science Museum and National Laboratory Partnership Demonstration Act was introduced in October of 2007 by Rep. Daniel Lipinski (D-IL). The bill would authorize the award of up to five grants to partnerships between science museums, or consortia which serve at least 1,000,000 visitors annually, with one or more national laboratories, for the purposes of : (1) increasing public understanding of scientific work occurring at the national laboratories; (2) developing exhibits and informal education programs featuring advances in the physical sciences; and (3) increasing public understanding of science, technology, engineering, and mathematics disciplines. The bill disallows such science museums or consortia from receiving more than 60% of a grant award for any fiscal year, with the remaining funds allocated to National Laboratory partners. The bill authorizes “\$20,000,000 for each of the fiscal years 2008, 2009, 2010, and 2011.”

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## **U.S. Senate STEM Education-Related Legislation**

*In order chronologically by bill number.*

### **States Using Collaboration and Coordination to Enhance Standards for Students (SUCCESS) Act of 2007 (S. 164)**

Introduced by Senator Kennedy (D-MA), Chairman of the Senate Health, Education, Labor, and Pensions Committee, the SUCCESS Act would amend the National Assessment of Educational Progress (NAEP) Authorization Act to require a biennial national assessment of student achievement in reading, mathematics, and science in grades four and eight, and grade 12.

The SUCCESS Act would require the National Assessment Governing Board (NAGB) to ensure that its national academic content and student achievement standards are competitive with rigorous international standards and set at a level that prepares students for non-remedial higher education, participation in the 21st century workforce, and the Armed Forces. It would also provide that, if a state requests assistance, NAGB would work with the state to identify discrepancies between its standards and national standards, and provide aid in the aligning the various standards.

The Act would authorize the Secretary of Education to award competitive grants to states to establish pre-kindergarten through grade 16 (PK-16) student preparedness councils made up of public and private stakeholders that: (1) develop and implement measures to ensure that a state's academic content and student academic achievement standards and assessments meet the national benchmarks; and (2) establish a PK-16 longitudinal data system to track student progress toward such benchmarks.

In addition, the SUCCESS Act would direct the Secretary of Education to award competitive grants to consortia of states for the development of common performance standards and assessments that compare favorably with national and international standards and assessments. It would also require the Secretary of Education to make consortia assessments available to all states.

### **Standards to Provide Educational Achievement for Kids (SPEAK) Act (S. 224)**

Senator Chris Dodd (D-CT) introduced the SPEAK Act in January of 2007. For more details, see the overview of the almost identical House version above, H.R. 325.

### **Climate Change Education Act (S. 1389)**

The Climate Change Education Act was introduced by Sen. Barack Obama (D-IL) in May 2007. See the overview of the virtually identical companion bill above, H.R. 1728, for more details.

### **No Child Left Inside Act of 2007 (S. 1981)**

Sen. Jack Reed (D-RI) introduced this version of the No Child Left Inside Act in August of 2007. For more details, see the overview of the almost identical House version, H.R. 3036, above, which outlines the minor differences in the two.

**National STEM Scholarship Database Act (S. 2428)**

Sen. Barack Obama introduced the National STEM Scholarship Database Act in December of 2007. For more details, see the overview of the almost identical House version above, H.R. 1051.

## AMERICA COMPETES ACT OVERVIEW

### Department of Education

In the bill that originally passed the House, there were no provisions affecting the Department of Education, however there were in the Senate's, and the House generally accepted the suggestions. The COMPETES Act does not modify existing programs at the Department of Education.

The bill:

- ...includes a new competitive grant program to enable partnerships to implement courses of study in STEM fields and critical foreign languages (high-need subject areas) that lead to a *STEM baccalaureate degree with concurrent teacher certification*. This is authorized at \$151 million per year. The provision's authors note that this program is based on the highly successful University of Texas program, "UTeach."
- ...establishes a similar program to implement two or three-year *part-time master's degree programs for in-service teachers* at \$125 million per year.
- ...authorizes grants totaling \$75 million per year with the goal of increasing by 70,000 over four years the number of teachers teaching *AP or IB courses in STEM fields*.
- ...authorizes "such sums as may be necessary" for grants to support *summer learning opportunities in STEM* for low income students.
- ...authorizes the President's *Math Now* for elementary and middle school students program at \$95 million and a *Math Skills* for secondary students program at \$95 million, each for one year with "such sums as may be necessary" for the following two years.
- ...authorizes \$120 million per year in grants for states to establish *P-16 councils and longitudinal data systems* to "assist states in improving the rigor and quality of content knowledge requirements and assessments, ensure that students are prepared to succeed in postsecondary endeavors, and enable states to have valid and reliable information to inform education policy and practice."
- ...creates *Math Science Partnership Bonus Grants*—\$50,000 awards to the three elementary and three secondary schools in each state whose students demonstrate the largest achievement in science and mathematics; this is authorized at \$15 million per year.

### National Science Foundation (NSF)

- *Math and Science Partnerships (MSP)*: Expands the MSP program at NSF. Authorizes grants for "*Teacher Institutes for the 21st Century*," which are to be multi-year programs with a minimum two-year commitment from teachers at two weeks per year. Requires that teachers' fees and travel costs be paid for, and that institutes provide follow-up training and evaluation. (Note that this program is separate from the similarly named *Math and Science Partnerships* program at the Department of Education.)

- *Robert Noyce Teacher Scholarship*: Significantly expands the *Noyce Scholarship* program, which provides grants to universities to fund scholarships for STEM majors to receive teaching degrees if they agree to teach in a high-need school for five years upon graduation. The bill requires early classroom experience in certification programs, and increases scholarships and stipends to at least \$10,000 per year for up to three years beginning in a student's junior year. Overlapping with the President's proposed "Adjunct Teacher Corps," this bill also creates a new program for attracting STEM professionals to teaching ("NSF Teaching Fellows") and creates a new program for preparing master teachers from among STEM teachers already with masters degrees. In the Conference report (the final version of the bill), it reads, "The Conferees anticipate that the Noyce program will grow to become a major source of effective STEM teachers, which is the reason for the large increases [in authorized funding]."
- *STEM Talent Expansion Program (STEP)*: Amends *STEP* to support the development of centers for training professors and graduate students to be more effective teachers for undergraduates. The bill also allows the program to support outreach programs for middle and high-school teachers and students, fund summer internships for STEM undergraduates, and provide programs that bridge the gap between high-school and college. The program currently funds both university programs aimed at increasing enrollment in STEM majors and research into undergraduate STEM education techniques.
- *Advanced Technological Education (ATE)*: Adds to *ATE* a program to establish and train mentors at 2-year colleges to increase the participation of women in STEM fields.
- *Partnerships for Access to Laboratory Science (PALS)*: Establishes a pilot *PALS* program at \$5 million per year to determine how best to integrate laboratory experience with STEM classroom instruction in secondary schools. The program will support teacher training and development of instructional programs.
- Authorizes the NSF to fund four year colleges and universities which are developing *Professional Science Master's Degree* programs for in-service teachers.
- Authorizes the NSF to contract with the National Academy of Sciences for a report on barriers to and strategies for increasing the participation of underrepresented minorities in STEM fields.

### **Department of Energy (DOE)**

The bill establishes a "Director of Science, Engineering and Mathematics Education" at the DOE to oversee all of the Department's education programs and to serve as an interagency liaison for K-12 STEM education. The new director will oversee a dramatically increased portfolio; the bill authorizes approximately \$50 million per year for K-12 STEM education. The FY07 funding level for STEM education at DOE was only \$8M.

The bill also:

- ...includes a three-year pilot program of *grants to specialty schools for mathematics and science*. The program will provide grants of up to \$2 million per

year for states to establish or expand public, statewide STEM specialty schools. The total authorization over three years is \$66.5 million.

- ...establishes a program to establish and expand hands-on, *summer internships for middle and high school students at DOE National Labs*.
- ...requires each National Lab to create and maintain a *Centers of Excellence in STEM* at one or more local, high-need high schools in order to develop and disseminate best practices in STEM education. The bill authorizes \$22.5 million over three years for this.
- ...creates two separate programs at DOE National Labs to (1) establish or expand on-site *summer institutes for STEM teachers* and (2) allow the use of DOE resources, including staff and equipment, to assist *professional development programs* run by other organizations such as universities or non-profits. These institutes will be designed to increase the content knowledge of K-12 teachers. It authorizes approximately \$20 million per year for this purpose.