

Current STEM Education Initiatives in the U.S. Congress

The 110th 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 Committee, Chaired by Senator Kennedy (D-MA) and the House Education and Labor Committee chaired by Congressman Miller (D-CA). There has also been some activity in the Senate Commerce Science, Transportation Committee, Chaired by Senator Inouye (D-HI) and the House Science and Technology Committee chaired by Congressman Bart Gordon (D-TN) which has oversight of the National Science Foundation as well as several Federal Agencies with strong commitments to STEM education and careers.

Perhaps the biggest issue is the reauthorization of the No Child Left Behind Act. Both Senator Kennedy's HELP committee and Congressman Miller's Education and Labor committee have held several hearings to solicit input from the public as well as experts in the education field, including a joint hearing between the two committees.

Below is a summary of the key STEM legislation introduced so far in the 110th Congress. In addition to these individual Bills there are numerous other instances of STEM education and American Competitiveness being addressed in legislation from Agriculture to Homeland Security.

The U.S. Senate STEM Legislation

The America COMPETES Act

Senators Reid and McConnell the Democrat and Republican leader of the U.S. Senate jointly introduced S. 761, the bipartisan, America COMPETES Act in early March. Many elements of S.761 were found in last years National Competitiveness Investment Act, NCIA, which failed to gain traction in the last days of the 109th Congress.

The Bill outlines a number of steps to maintain American competitiveness in the fields of math, science, and engineering/technology. Like so much of the STEM legislation being introduced it builds on the recommendations of the National Academies report "Rising Above the Gathering Storm."

- The bill would nearly double the funding of the National Science Foundation by 2011, going from a proposed \$6.8 billion in FY 2008 to \$11.2 billion in FY 2011.
- It would increase the Department of Energy's Office of Science budget by \$1.6 billion, and increase funding for both NASA and NOAA.
- Increase the National Institute of Standards and Technology budget by \$234 million over the next 4 years.

- The bill would authorize funds to be used to create more graduate fellowship and traineeships, and further expand programs that encourage students to earn master's degrees in the critical areas of math and science.

S 761 would also address topics in education as well as innovation. It would create more specialty schools for science and mathematics, provide funds for grants to train teachers in mathematics, sciences, as well as critical foreign languages, and expand advanced placement and international baccalaureate programs. It would provide \$150,000 million in funding for the Math Now program but also expand it to include grades 4 through 8. Many of these elements are found in the President's American Competitiveness Initiative and are being considered in other legislation including the renewal of No Child Left Behind.

The SUCCESS Act

Introduced by Senator Kennedy (D-MA), Chairman of the Senate Health, Education, Labor, and Pensions Committee, the **SUCCESS or States Using Collaboration and Coordination to Enhance Standards for Students Act** would amend the National Assessment of Educational Progress Authorization Act to require a biennial national assessment of student achievement in reading, mathematics, and science in grades four and eight, and grade 12. (Currently, science is not included in such assessments and grade 12 assessments need not be biennial.)

The SUCCESS Act would require 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.

The A-PLUS Act

U.S. Senators. John Cornyn (R-Texas) and Jim DeMint (R-S.C.) introduced the **Academic Partnerships Lead Us to Success (A-PLUS) Act (S. 893)**. The bill would make modifications to the No Child Left Behind Act, providing states and schools with flexibility to improve student

achievement. U.S. Rep. Pete Hoekstra (R-MI) has introduced companion legislation in the U.S. House of Representatives.

The Bill provides states the flexibility to consolidate Federal education programs and funding and redirect those resources to the state's education reform initiatives. Currently the U.S. Department of Education, under NCLB, requires states to use federal education funds on specific programs. In exchange for the increased flexibility A-PLUS would require states to be transparent about academic results and states not making agreed upon progress under their own plans would be required to return to the NCLB formulas.

Under the A-PLUS Act:

- All states would have the option of establishing a 5-year Performance Agreement with the Secretary of Education.
- States could consolidate funds from a few or all of the federal education programs and redirect them to innovative programs created at the state level.
- In exchange for this flexibility, participating states would be required to meet their state performance objectives for improving student academic achievement and demonstrate a narrowing of achievement gaps.
- If a state fails to improve academic achievement, its Performance Agreement would be revoked and it would revert back to the NCLB system.
- Accountability and student achievement would remain a high priority with A-PLUS, but unlike NCLB, A-PLUS allows states to use a variety of innovative accountability programs.
- Transparency would be ensured by requiring states to submit annual reports on student progress to parents and taxpayers.

The SPEAK Act

Senator Chris Dodd (D-CT) introduced the SPEAK (**S**tandards to **P**rovide **E**ducational **A**chievement for **K**ids) Act (S.224) which amends the National Assessment of Educational Progress 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 No Child Left Behind 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.

The SPEAK Act would amend the National Assessment of Educational Progress 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 which 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 provide additional funds to successful grantees for the enhancement of their student performance data systems.

The Secretary of Education is 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.

The COMPETE Act

Senator Norm Coleman introduced the “Competitiveness through Education, Technology, and Enterprise” or “COMPETE” Act in early March. The majority of the Bill deals with Research and Development, R&D, issues including the Research Tax incentives and Workforce Development issues including some pilot programs to encourage STEM Careers through Small Business Administration Grants. It does however also include a section intended to boost the Math and Science Partnership programs in states.

Under the COMPETE Act, the five elementary and five secondary schools in each state with the greatest improvement in math and science compared to the previous year, based on the state’s assessment of student performance, will receive a grant from the U.S. Department of Education. The grants, \$500,000 each, will be awarded each year beginning with the 2008-09 school year and continuing through the 2016-17 school year in mathematics. The program would begin in the 2011-2012 school year and continue through the 2016-17 school year in science.

The COMPETE Act also makes grants available for graduate students who pursue continuing education in science or mathematics and makes grants available to institutions of higher education to encourage this career path.

The Bill would also increase the annual PELL grant amount for each year beginning in the 2008-09 academic year and continuing through the 2012-13 academic year. The grants would grow from \$4600 in 2008 to \$5400 in 2012.

The ED 1.0 Act

Senator Mark Pryor of Arkansas introduced S 639 in February. The Bill would establish a pilot program requiring the Administrator of the National Telecommunications and Information Administration to award six-year grants to four minority-serving educational institutions, enabling them to develop digital and wireless networks for online programs of study within the institutions.

The Bill was referred to the Senate Commerce, Science, and Transportation Committee. The intent of the bill is to provide digital and wireless networks to advance online higher education opportunities for minority students. It would give grant priority to institutions serving counties: (1) that meet specified criteria of economic depression; (2) with less than 18% of whose residents have a higher education; and (3) at least half of whose residents are minorities. Grants would be made available to eligible educational institutions such as Historically Black

Universities, Hispanic-serving institutions and Native-American serving institutions as defined in the Higher Education Act of 1965. While there would only be four grants available they would have a six year life to allow adequate time for installation and deployment.

S 810 Laboratory Science Pilot Program

Senator Menendez (D-NJ) introduce S. 810 as the Senate companion bill to H.R. 524. The Bill would introduce a \$5,000,000 pilot program at the National Science Foundation to award grants to partnerships to improve laboratories and provide instrumentation as part of a comprehensive program to enhance the quality of mathematics, science, engineering, and technology instruction at the secondary school level. The program is a pilot and requires a 50% match to the Federal funds from state, local, or private funds

The U.S. House of Representatives STEM Legislation

The Ten Million Teachers, Ten Million Minds Science and Math Scholarship Act

Congressman Bart Gordon (D-TN) the Chairman of the House Committee on Science and Technology has introduced these bills, H.R. 362, the 10 Million Teachers, 10 Million Minds Science and Math Scholarship Act. The Bill would revise requirements for the Robert Noyce Scholarship program, which provides scholarships, stipends, and teacher training to science, mathematics, and engineering students and professionals in exchange for service as elementary or secondary school teachers. It would expand the use of funds to include summer internships for freshmen students. It would also increase the duration of the scholarships and stipends, and the minimum yearly scholarship amount. In addition, rather than eliminate the requirement that scholarship recipients serve in high-need areas, H.R. 362 would reduce recipient's service obligation for doing so. The Bill would also authorize the Director of the National Science Foundation (NSF) to accept private donations for the program in an effort to get industry investment into the program.

Congressman Gordon's Bill would also revise the requirements for the Mathematics and Science Education Partnerships program at NSF, which provides grants to institutions of higher education or nonprofit institutions for the improvement of elementary and secondary mathematics and science instruction. The would require: (1) prioritizing applications that focus on teacher training; (2) requiring the availability of master's degree programs for in-service teachers; and (3) allowing teacher training in the provision of advanced placement courses as well as set minimum and maximum grant amounts.

Among the other changes H.R. 362 also provides funding for: (1) teacher institutes or workshops and master's degree programs, under the Partnerships program; and (2) the Laboratory Science Teacher Professional Development program. It would also require the Director of the National Science Foundation to convene a panel of experts to identify, collect, and recommend the development of kindergarten through grade 12 mathematics and science teaching materials.

Lastly, the Bill would revise the Science, Mathematics, Engineering, and Technology Talent Expansion program to require NSF to issue grants for the creation of centers to develop and disseminate curriculum, teaching methods, and ways to better train professors and teacher assistants to increase the number and performance of undergraduate students in such courses.

The Partnerships for Access to Laboratory Science Act

In February Congressman Ruben Hinojosa (D-TX) introduced H.R. 524, the Partnerships for Access to Laboratory Science Act or PALS. The Bill would require the National Science Foundation (NSF) to establish a pilot program to award grants to partnerships to improve laboratories and to provide instrumentation as part of a comprehensive program to enhance the quality of mathematics, science, engineering, and technology instruction at the secondary school level.

In addition it requires that grants awarded under this program be made to a partnership that: (1) includes an institution of higher education or a community college; (2) includes a high-need local educational agency; (3) includes a business or eligible nonprofit organization; and (5) may include a state educational agency, other public agency, national laboratory, or community-based organization.

The Bill would authorize only \$5,000,000 for FY 2008 and funds as necessary for subsequent years. It restricts the Federal share of funds in any grant under the program to no more than 50% of the funds required for the activities contemplated.

The Bill is well supported in the House and a companion Bill, S. 810 has been introduced by Senator Menendez (D-NJ) in the Senate. While both pieces of legislation only fund a pilot program there is great interest in increasing hands on laboratory science among secondary students.

The SPEAK Act

Congressman Vern Ehlers introduced the SPEAK (Standards to Provide Educational Achievement for Kids) Act (H.R. 325) which amends the National Assessment of Educational Progress 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 No Child Left Behind 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 National Assessment of Educational Progress 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 which 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 provide additional funds to successful grantees for the enhancement of their student performance data systems.

The Secretary of Education is 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.

STEM Scholarship Database Act

H.R. 1051 Representative Rush Holt (D-NJ) introduced the National STEM Scholarship Database Act, H.R. 1051 in February. The Bill 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. 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 A-PLUS Act

In March, Congressman Pete Hoekstra (D-MI) introduced legislation (HR 1539) that would eliminate the compliance requirements of NCLB while maintaining the availability of federal funds. The main point behind this measure would be to give States and school districts maximum flexibility to determine how to improve academic progress and enact reforms to amend the process.

The A Plus Act, like the companion piece in the Senate (S.893) would permit states to bypass NCLB requirements if it was decided that the state could no longer meet accountability mandates. They would still receive the funding however, and could use this funding to any other programs that the state deemed useful to furthering education. In exchange for the increased flexibility A-PLUS would require states to be transparent about academic results and states not making agreed upon progress under their own plans would be required to return to the NCLB formulas. The states would be required to submit a declaration of intent to the Secretary of Education as to whether or not they would be making standards. In either case, they would still receive federal education funds.

Math and Science Incentive Act

Congressman Frank Wolf (R-VA) introduced H.R. 828, the Math and Science Incentive Act in February. The legislation would Direct the Secretary of Education to establish a program that would pay up to \$10,000 of the interest on certain types student loans under the Higher Education Act of 1965, for borrowers meeting specific criteria and who agree to serve for five years as: (1) teachers of science, technology, engineering or mathematics at an elementary or secondary school; or (2) mathematics, science or engineering professionals.

The Act requires that selection of program participants should be made from among eligible applicants be based on: (1) U.S. national security, homeland security, and economic security needs; and (2) the applicant's academic record or job performance, but it allows other factors to be considered in such selection.

The Science Accountability Act

Congressman Vern Ehlers (R-MI) introduced the Science Accountability Act, H.R. 35 in January. The Act would amend the No Child Left Behind to require states to: (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.

The Math and Science School Readiness Act

Introduced by Congressman Vern Ehlers (R-MI) the Math Science School Readiness Act H.R. 38 amends the Head Start Act to require the Secretary of Health and Human Services to establish additional scientifically-based education performance standards to ensure that children participating in the Head Start program develop and demonstrate pre-mathematics and pre-science knowledge and skills, including number concepts and operations, geometry and spatial concepts, classification, and time and measurement concepts. To accomplish this H.R. 38 would require each Head Start classroom in a center-based program to be assigned one teacher with the competency to impart such knowledge and skills.