STEM Education Coalition

March 26, 2010

The Honorable George Miller
Chairman
Committee on Education and Labor
U.S. House of Representatives
2205 Rayburn House Office Building
Washington, DC 20515

The Honorable John Klein
Ranking Member
Committee on Education and Labor
U.S. House of Representatives
2351 Rayburn House Office Building
Washington, DC 20515

Dear Representatives Miller and Klein:

On behalf of the Science, Technology, Engineering, and Mathematics (STEM) Education Coalition and the organizations listed below, thank you for your strong leadership and continued support for STEM education. Past legislation such as the Higher Education Opportunity Act and the America COMPETES recognize how vital STEM education is to our nation's competitiveness.

The STEM Education Coalition looks forward to working with your committee and staffs this year to reauthorize the Elementary and Secondary Education Act. The STEM Education Coalition comprises a diverse range of organizations representing all sectors of the technological workforce – from knowledge workers, to educators and education researchers, to scientists, engineers, and technicians. Our Coalition works to raise awareness in Congress and throughout the Executive Branch about the critical role that STEM education plays in enabling the U.S. to remain the economic and technological leader of the global marketplace of the 21st century. According to the U.S. Labor Department, 15 of the 20 fastest growing occupations projected for 2014 require significant science and mathematics preparation.

We urge you and your colleagues to strongly consider the following recommendations to the existing ESEA bill that we believe will strengthen programs related to STEM education.

Key Recommendations:

- Include Science in the Accountability System
- Strengthen Title II B, Math and Science Partnerships
- Dedicate Funding for Teacher Professional Development under Title II A
- Authorize State and Local P-20 STEM Councils
- Establish K-8 Master Teacher Programs
- Authorize Math Now and Dedicate Funding for Elementary and Middle School Mathematics
- Strengthen Emphasis on STEM fields in After-School Programs

Include Science in the Accountability System

Strengthening student achievement in science will require that future ESEA legislation include science in any ESEA accountability system for schools and states.

As you know, under current law student scores in mathematics and reading count toward Adequate Yearly Progress. Science education is tested and science scores must be reported, but science scores do not count toward a school's accountability measures.

A recent Center for Education Progress (CEP) report found that as a result of the current ESEA, 44% of districts cut time on elementary science instruction (while approximately 62% of school districts increased the amount of time spent in elementary schools on reading/language arts and/or math.)

Science is a core subject that all students should learn and for which all schools should be held accountable. We urge that language that would include science scores as a required component of a school/state accountability system is considered during the reauthorization of this federal education law.

Given the nature of science instruction, we also urge you to consider language that would encourage states to adopt flexibility in how to assess student performance, skill, and knowledge in the sciences. These can include written assessments, performance based testing, project-based work, and portfolio projects

Strengthen Title II B, Math and Science Partnerships

First and foremost, technology and/or engineering teachers should be included alongside math and science teachers as allowed participants in all incentive programs enacted to recruit, train, mentor, retain and further educate K-12 teachers.

We also suggest including language to strengthen the Math and Science Partnership Program at the Department of Education by:

- Amending the existing program to make possible additional technical support and assistance to state education agencies with oversight of the program so that they can develop and support more state-based STEM reform projects;

- Directing that the two Math and Science Partnership programs at the Department of Education (DoEd) and the National Science Foundation (NSF) cooperate to ensure that the models and results derived from the NSF program are proliferated widely through the DoEd program;

- Authorizing at least $450 million per year as specified funding (current funding authorization is now “such sums as required”).

Dedicate Funding for Teacher Professional Development under Title II A

The revised federal education law should provide increased resources for professional development for all educators, including a dedicated funding stream in Title II A (Teacher Quality) that would go specifically to teacher professional development for science, technology/engineering, and mathematics educators.

Researchers agree that teacher quality is the most important factor affecting student achievement. Good teachers can make all the difference in closing achievement gaps for low-income and minority students.

Ongoing professional development for STEM teachers is critical to ensuring a quality teacher for every student. Under current federal education law states and districts can use Title II Teacher Quality funds for a variety of purposes. The reality is that even though state and local decision makers see the need for intense professional development, they often find themselves pushed to address other priorities, forcing these funds to be spent on efforts other than this congressionally intended investment.

An ongoing guarantee of professional development funding is critical to in-service STEM educators who face the challenges of using data to modify classroom techniques, research to inform instruction, and ongoing motivation and creativity to teach every child in every classroom. We encourage the inclusion of language in any future federal education bill stipulating that districts must spend a designated portion of their Title II Teacher Quality funds specifically on science and math education teacher professional development.

Authorize State and Local P-20 STEM Councils

Policymakers should incorporate the Alignment of Education Programs in the America COMPETES Act (SEC. 6401 of P.L. 110-6) as part of ESEA reauthorization. Through a statewide partnership, the program awards competitive grants to states to promote better alignment of elementary and secondary education with the knowledge and skills needed to succeed in academic credit-bearing coursework in institutions of higher education, in the 21st century workforce and in the Armed Forces. The program also awards competitive grants to support the establishment or improvement of statewide P–16 educational longitudinal data systems. Statewide partnerships consist of various stakeholders from government entities, early childhood, K-12, higher education, and business.

The alignment and longitudinal database components of this grant program were referenced as requirements of the American Recovery and Reinvestment Act's State Fiscal Stabilization Fund (SEC. 14005 of P.L. 111-5). Similarly, the Department of Education's Race to the Top grant application is also tied closely to P-20 councils. The Department gives priority to applications that address P-20 coordination. Specifically, the Department is interested in receiving applications in which states plan to address how early childhood programs, K-12 schools, postsecondary institutions, and workforce organizations will coordinate to improve all parts of the education system and create a more seamless P-20 route for students.

Provide Incentives to Establish K-8 Master Teacher Programs

ESEA should authorize resources specifically so that districts can hire and/or train Master Teachers (also known commonly as science or math specialists) at the K-8 level. Master teachers would provide mentoring to other teachers, develop model lessons or co-teach lessons, provide oversight of hands-on inquiry materials, and offer in-service professional development or provide avenues for teachers to obtain professional development. Master teachers could also facilitate more high quality pre-engineering and technology instruction into the K-8 classroom. Since elementary teachers are generally generalists, many feel underprepared and may be lacking in STEM content preparation.

Authorize Math Now and Dedicate Funding for Elementary and Middle School Mathematics

Include Math Now in the reauthorized ESEA and ensure dedicated funding for this program. Math Now programs would provide resources to help schools improve instruction and develop strategies to increase student achievement in mathematics and prepare for more rigorous high school mathematics coursework.

Strengthen Emphasis on STEM fields in After-School Programs

The after-school setting presents a unique opportunity for the hands-on minds-on learning that is key to developing STEM skills. Science programs in the after-school setting can teach students problem solving skills, help them understand the scientific process, and excite them about science and STEM careers. Several prominent scientists point to their encounters with science in museums or after-school programs as the experience that sparked their lifelong passion for science.

With this in mind, we urge you to develop programs to support structured after-school activities, in conjunction with local museums, universities and/or businesses, which would enhance student interest in STEM careers. After school programs should include activities such as exposure to computer programming,

robotics, computer art or design software, building materials, design challenges, and other technologies and apprenticeships.

If we can provide you additional information or assistance, please do not hesitate to contact James Brown at (202) 872-6229 or Jodi Peterson at (703) 312-9214.

Sincerely,

Altshuller Institute for TRIZ Studies
American Association of Physicists in Medicine
American Association of Physics Teachers
American Association of University Women (AAUW)
American Chemical Society
American Statistical Association
ASME Center for Public Awareness
Association of Science-Technology Centers
ASTRA, The Alliance for Science & Technology Research in America
Baltimore Washington Corridor Chamber
Battelle
Center for Excellence in Education (CEE)
Creative Learning Systems
EAST Initiative
Engineers Without Borders-USA
INSPIRE, Institute for P-12 Engineering Research and Learning, Purdue University
Knowledge Alliance
Maryland Academy of Sciences at The Maryland Science Center
Math for America
McGraw-Hill Education
Museum of Science and Industry
NASA STEM School Administrators Association
National Alliance for Partnerships in Equity
National Alliance for Partnerships in Equity Education Foundation
National Council for Advanced Manufacturing (NACFAM)
National Council of Teachers of Mathematics
National Science Education Leadership Association (NSELA)
National Science Teachers Association
REVOLUTIONARY DESIGNS
Rochester Area Colleges' Center for Excellence in Math and Science
SACNAS
SAE International
Science Teachers Association of New York State (STANYS)
Siemens Corporation
Society of Naval Architects and Marine Engineers
Society of Women Engineers

STEMES
Technology Student Association (TSA)
The Ohio State University
The University of Pittsburgh at Johnstown
TIES, Teaching Institute for Excellence in STEM
Vernier Software & Technology