

K-12 STEM Education Connecticut Center for Advanced Technology, Inc

Workforce development is at the backbone of every emerging industry, especially in the technology related sectors with energy and energy services fields being no different. As new technologies emerge and move towards commercialization, new skill sets are required to properly maintain and operate equipment. To achieve this, personnel will be needed at a wide variety of levels from maintenance to design, but almost all will require a technical background.

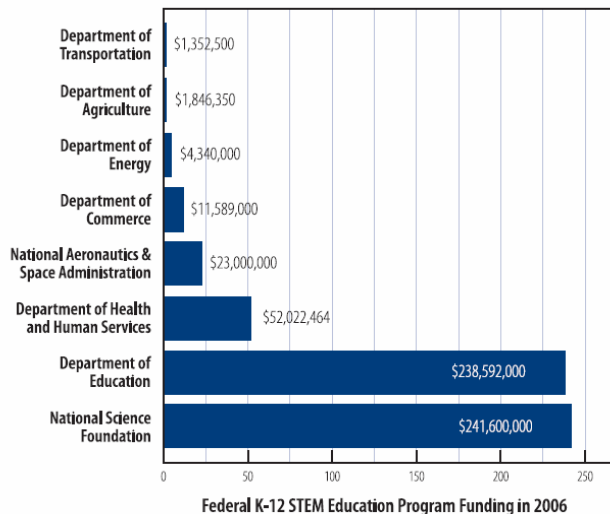
In order to reach potentials for growth, companies must have access to an educated and skilled employment base that can perform the duties and tasks related to product production. The first step to ensure a properly skilled workforce is to make certain that students receive a quality and pertinent education in the K-12 educational system which culminates in trade schools, colleges and universities. This step, although necessary, is not sufficient to meet the desired ends.

In coming years, the demand for workers with science and engineering backgrounds is expected to increase at a rate significantly higher than the demand for other skill sets inside the economy. However, today's students have shown relatively poor performance in the areas of math and science based on global standards, with fewer students pursuing degrees in the technical fields. These facts have caused a significant movement to increase the opportunities to improve the education pipeline for the science, technology, engineering and mathematics (STEM) courses of study.

Realizing the importance of a STEM education, there has been a significant movement to identify new core basics required for our education system. These core basic curricula must provide students the information they need to become interested and successful in the technical fields. After the identification of these core competencies, new standards and curricula will need to be reviewed and integrated into current content standards.

The responsibility of educating Americas youth's resides primarily at the state and local levels, but in order to achieve the level of competency needed to meet the needs of our evolving economy, a national effort will be needed to improve STEM education. Coordination amongst all stakeholders will be necessary to ensure long term improvement of

**K – 12 STEM Funding by Agency
2006**



Source: Department of Education, *Report of the Academic Competitiveness Council*, 2007

STEM education and help U.S. students become leaders in STEM related fields.

To help meet these goals, several funding opportunities exist with over \$500 million available for STEM education funding from organizations like the National Science Foundation, U.S. Department of Education, Connecticut Department of Education, NASA etc.

Looking forward into 2009, even with the significant budget deficits that the federal government and most state and municipalities are facing, the annual funding allocations for the recurrent STEM programs is not expected to decrease. As budget pressures continue and possibly become worse, expansion of the funding opportunities could be limited, but that is yet to be determined in the legislatures.

Currently there are a limited number of grants that are excepting proposals for projects, but expect several of those offered in 2008 to be reopened to accept new applications, as well as the posting of new request for proposals.

References

National Science Board, *Science and Engineering Indicators 2008*, Arlington, VA (NSB 08-01; NSB 08-01A), January 2008, web:
<http://www.nsf.gov/statistics/seind08/c8/c8.cfm>

Department of Education, *Report of the Academic Competitiveness Council*, Washington, D.C., May 2007, web: <http://www.ed.gov/about/inits/ed/competitiveness/acc-mathscience/report.pdf>

K-12 Related Funding Opportunities

[NASA](#)

[K-12 Competitive Grants Opportunity \(K12CG\)](#)

The program seeks ideas that will use NASA's unique contribution to STEM to improve academic experience for students.

[Workforce Coalition: Education Task Force](#)

The Coalition seeks to engage community stakeholders to improve the skills necessary for today's workforce.

[e-Education Program](#)

eEducation develops an infrastructure and deploys research-based technology applications, products, and services that enhance the educational process for formal and informal education.

[Elementary & Secondary Education Program](#)

NASA has established a series of innovative programs designed to stimulate student interest in order to motivate higher levels of study in science, technology, engineering and mathematics subjects.

[Informal Education Program](#)

NASA has a variety of educational opportunities outside the formal classroom, from exhibit programs to professional development opportunities.

[Environmental Protection Agency \(EPA\)](#)

[Environmental Education Grants](#)

The EPA is seeking projects that will improve public knowledge and skills to help people make informed decision on issues effecting the environment.

[National Science Foundation \(NSF\)](#)

[Advanced Technological Education](#)

The program focuses on the education of technicians for “high-technology fields.”

[Dynamics of Coupled Natural and Human Systems](#)

The program promotes “quantitative, interdisciplinary of relevant human and natural system processes and complex interactions among humans.”

[Informal Science Education](#)

The program seeks projects that will develop and implement informal learning experiences to help promote understanding and interest in STEM.

[Innovative Technology Experiences for Students and Teachers](#)

The program seeks solutions that will help improve the STEM workforce.

[National Science, Technology, Engineering, and Mathematics Education Digital Library](#)

The program seeks to establish a national network of resources for STEM education at all levels.

[Robert Noyce Teacher Scholarship Program](#)

The program seeks to encourage STEM majors and professionals to become K-12 STEM educators.

[Discovery Research K-12 \(DR-K12\)](#)

The program seeks to enable significant advances in preK-12 student and teacher learning of the STEM disciplines through the development, implementation, and study of resources, models, and technologies for use by students, teachers, and policymakers.

[GeoScience Teacher Training \(GEO-Teach\)](#)

The program will support projects designed to improve the quality of geoscience instruction, primarily at middle and high school levels.

[Information Technology Experiences for Students and Teachers \(ITEST\)](#)

The ITEST program responds to current concerns and projections about the growing demand for professionals and information technology workers in the U.S. and seeks solutions to help ensure the breadth and depth of the STEM workforce.

[Math and Science Partnership \(MSP\)](#)

The program is a major research and development effort that supports innovative partnerships to improve K-12 student achievement in mathematics and science.

[NSF Academics for Young Scientists \(NSFAYS\)](#)

The program creates, implements, evaluates, and disseminates effective models to attract K-8 students to, prepare them for, and retain them in science, technology, engineering, and mathematics (STEM) disciplines, leading to an increase in the pool of students continuing in STEM coursework in high school and considering careers in STEM fields.

[Research and Evaluation on Education in Science and Engineering \(REESE\)](#)

The program aims at advancing research at the frontiers of STEM learning, education, and evaluation, and at providing the foundational knowledge necessary to improve STEM teaching and learning at all educational levels and in all settings.

[Department of Energy](#)

[Energy Related Laboratory Equipment Grant Program](#)

The program provides equipment to educational institutions for the use in energy related educational programs.

[Department of Energy Academies Creating Teacher Scientists \(DOE Acts\)](#)

The program creates a cadre of outstanding science and math teachers with the proper content knowledge and scientific research experience to serve as leaders and agents of positive change in their local and regional teaching communities.

[Connecticut State Department of Education Grants](#)

[Connecticut Algebra I Model Curriculum Grant](#)

The goal of this grant is to develop a model Algebra I curriculum for the 9th graders.

[Training for Nontraditional Fields and Employment Program Development](#)

The goal of this program is to promote training for non-traditional fields and emerging professions.

[Department of Health and Human Services](#)

[Institutional Training Award](#)

The award is designed to help academic institutions to develop health service research opportunities.

[Independent Scientist Award](#)

The Independent Scientist Award provides specialized study support for research trained or clinically trained individuals.

[U.S. Department of Agriculture](#)

[Agriculture in the Classroom](#)

The program seeks to help students increase their knowledge on the role of agriculture in our economy and society.

[Secondary and Two-Year Postsecondary Agriculture Education Challenge Grants Program](#)

The program helps ensure the existence in the United States of a qualified workforce to serve the food and agricultural sciences system and encourages more young Americans to pursue and complete a baccalaureate or higher degree in the food and agricultural sciences.

[U.S. Department of Education](#)

[Math Now: Advancing Math Education in Elementary and Middle School](#)

The program seeks to improve the math education in elementary and middle schools.

[Mathematics and Science Partnerships](#)

This program seeks projects that will improve the knowledge of teachers and the performance of students in the areas of science and math.

[Advanced Placement](#)

This program provides grants to eligible entities to enable them to increase the participation of low-income students in both pre-AP and AP courses and tests.

[Fund for the Improvement of Education \(FIE\)](#)

FIE provides authority for the secretary of education to support nationally significant programs to improve the quality of elementary and secondary education at the state and local levels and to help all students meet challenging state academic content standards and student achievement standards.

[Fund for the Improvement of Postsecondary Education \(FIPSE\)](#)

This program seeks projects that promise to be models for improving the quality of postsecondary education and increasing student access.

[Research in Special Education](#)

The objective of this program is to support scientifically rigorous research contributing to the solution of specific early intervention and education problems associated with children with disabilities.

[Education Research Grant Programs for Math and Science Education](#)

This program aims to explore malleable factors associated with better mathematics or science outcomes; develop new curricula and instructional approaches; evaluate the efficacy of fully developed curricula and instructional approaches; evaluate the impact of curricula; and developing and/or validating assessments intended for use by practitioners.