

**U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY**

HEARING CHARTER

*STEM Education in Action:
Communities Preparing for Jobs of the Future*

**Monday, September 26, 2011
10:00 a.m. – 12:00 p.m.
Sullivan Performing Arts Center, Texarkana, Texas**

1. Purpose

On Monday, September 26, 2011, the Committee on Science, Space, and Technology will hold the third in a series of hearings to highlight Science, Technology, Engineering, and Math (STEM) education activities across the Nation, their role in inspiring and educating future generations, and their contribution to our future economic prosperity. The purpose of this hearing, *STEM Education in Action: Communities Preparing for Jobs of the Future*, is to highlight the role of community colleges, specifically the importance of their partnerships and contributions to the local economy, workforce, and other aspects of the community.

2. Witnesses

Panel 1

Dr. Cora Marrett, Deputy Director, National Science Foundation

Mr. James Henry Russell, President, Texarkana College

Dr. Brad Johnson, President, Northeast Texas Community College

Dr. C.B. Rathburn, President, Texas A&M University – Texarkana

Panel 2

Ms. Pam Kennedy, Vice President of Human Resources, CHRISTUS St. Michael Health System

Mr. Myron Barnett, Human Resource Manager, International Paper

Mr. Denis Washington, Chairman, TexAmericas

3. Overview

- An educated and well-trained workforce is essential to the economic prosperity of the United States. Today's employers are seeking specific skills and all levels of education

to meet their needs. Communities that successfully marry these education needs with community workforce needs help stimulate the local economies.

- Community colleges provide a tremendous service to the communities they serve. In many cases, they serve as the primary postsecondary education and training resource for the community. In all cases, they contribute to the community's economic prosperity, providing employers with an educated and trained pipeline of workers.¹
- The National Science Foundation (NSF) is an independent federal agency created by Congress in 1950 "to promote the progress of science". With an annual budget of about \$6.9 billion (FY 2010), it is the primary source of federal funding for non-medical basic research, providing approximately 40 percent of all federal support, and serves as a catalyst for science, technology, engineering, and mathematics (STEM) education improvement at all levels of education.
- Texarkana College is a two-year, comprehensive community college that offers educational opportunities in traditional academic studies, occupational/technical programs, and workforce development and community services.
- Northeast Texas Community College is a two-year community college that offers students the opportunity of academic studies, workforce programs, distance learning, and partnerships with 4-year universities.
- Texas A&M University-Texarkana is a comprehensive regional university that provides citizens a convenient opportunity to earn a four year, graduate, and/or a doctoral degree.
- The CHRISTUS St. Michael Health System serves the Texarkana region of Arkansas, Texas, Louisiana, and Oklahoma. The Catholic, faith-based health system, CHRISTUS St. Michael, was established in 1916 by the Sisters of Charity of the Incarnate Word. CHRISTUS St. Michael offers a full scope of expansive health care services.
- The Texarkana Mill, part of the International Paper Company, produces bleached board for packaging, and hot and cold drink cupstock and folding cartons. Through the International Paper Company Foundation the Texarkana Mill is very involved in the local community and its success.
- TexAmericas Center serves as a business and industry resource for expanding business needs by offering varied transportation, abundant natural and human resources, an adaptable infrastructure and a climate and culture that understands, appreciates and encourages growth on more than 20,000 acres.

4. Background

STEM Education and the Federal Government

A consensus exists that improving STEM education throughout the Nation is a necessary condition for preserving our capacity for innovation and discovery and for ensuring U.S. economic strength and competitiveness in the international marketplace of the 21st century. The National Academies *Rising Above the Gathering Storm* report placed major emphasis on the need to improve STEM education. This recommendation was embraced by the House Science,

¹ <http://www.aacc.nche.edu/AboutCC/Trends/Pages/communitycollegesintheircommunities.aspx>

Space, and Technology Committee following the issuance of the report and was included in the 2007 *America COMPETES Act*. The 2010 *America COMPETES Reauthorization Act* continues this emphasis.

In total, the FY12 Budget Request devotes \$3.4 billion to STEM education programs across the federal government.² The 2010 *America COMPETES Reauthorization Act* called for the creation of a National Science Technology Council (NSTC) Committee on STEM Education to coordinate federal STEM investments. The first-year tasks of the Committee are to create an inventory of federal STEM education activities and develop a 5-year strategic federal STEM education plan. The inventory, as well as a similar Government Accountability Office (GAO) survey requested by the Committee on Education and Workforce, is currently underway and results are expected before next year. These inventories should include community college investments.

President Obama has made strengthening community colleges a priority of his Administration. The American Recovery and Reinvestment Act provided more than \$3.5 billion in Pell Grants to low-income students at hundreds of community colleges across the country; over \$1 billion in workforce training programs at community colleges to prepare students for work in clean energy industries; health IT, and dislocated worker training; and \$40 million in work study funds to help community college students pay for their education through employment.

In addition, the FY12 Budget request identifies a number of new community college initiatives and existing programs at a number of federal agencies including the Departments of Labor, Education, and Veterans Affairs.

Within this Committee's jurisdiction, the FY12 budget request for community colleges at the National Science Foundation is \$100 million. This funding would be used to expand and strengthen efforts to engage community colleges through several core research and development programs, including the Advanced Technological Education (ATE); Transforming Undergraduate Education in Science, Technology, Engineering, and Mathematics (TUES); the Louis Stokes Alliances for Minority Participation (LSAMP); and the Tribal Colleges and Universities Program (TCUP).

While not specific to community colleges, other funding opportunities at the Foundation that will also contribute to enhancing community college programs are the Scholarship for Service program (SfS); the STEM Talent Expansion program (STEP), Teacher Learning for the Future (TLF), Math and Science Partnership (MSP), and Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM).

In the 112th Congress, the Science, Space, and Technology Committee will continue to hold oversight hearings and briefings on STEM education activities across the federal government and will closely monitor the scope and findings of both the NSTC and the GAO federal STEM education inventories.

² White House Office of Science and Technology Policy, *Innovation, Education, and Infrastructure: Science, Technology, STEM Education, and 21st Century Infrastructure in the 2012 Budget*, p. 2.

Communities and Jobs for the Future

Technology and innovation have kept the American economy strong in the face of increasing competition in the global marketplace. There is a significant role of American science and engineering graduates in helping this country's economy keep pace with this rapid change. As industry moves toward producing more high-tech products and employing technology intensive production methods, the need for technologically and scientifically literate individuals at all levels of the workforce will increase. Thus, the need for science, technology, engineering, and mathematics (STEM) training is now as important for the worker running the production process, as it is for the researcher who created that process.

Many reports find that there are not enough people with the requisite skills to fill the jobs that remain. Encouraging more high school graduates to get some form of postsecondary education is also important. Today, some high school graduates are lucky enough to land entry-level jobs in which they can get career skills through on-the-job training (for instance, machinists, carpenters, and executive assistants). Expanding opportunities for more high school graduates through vocational schools and community colleges is crucial. According to the *Job Creation and America's Future* report by the McKinsey Global Institute³, employers are having trouble filling some positions because they cannot find qualified applicants. Some 40 percent of survey respondents who say that they plan to hire in the next 12 months have had positions open for six months or longer because they could not find the right applicant. More broadly, nearly two-thirds report they routinely have openings that are difficult to fill. Of these, management was the most frequently cited type of position. The most difficult occupational categories to fill were in science and engineering, followed by computer programmers and information technology workers. The growing shortage of workers with sought-after skills is reflected in compensation. Wages for engineers and architects grew by 3.5 percent annually from 2002 to 2009, compared with an average of 2.9 percent for all occupations.

The importance for communities to work together as a whole to overcome this economic hurdle is becoming ever so evident. Community and technical college programs can produce the kind of graduates industry needs to fill the open positions. These institutions have long been involved in training technicians for the Nation's workforce, but there is now a growing awareness that community colleges can provide industry with the adequately skilled workers it needs. Serving as models for technology training, the National Science Foundation (NSF) Advanced Technology Education (ATE) centers at community colleges develop tech-training programs that prepare students for a wide variety of jobs in high-tech settings. This program funds 39 centers throughout the country that offer both training for local community college students and a research enterprise to develop and disseminate best teaching and curriculum practices for fields such as biotechnology, chemical processing, advanced manufacturing, and information technology. These programs rely on a partnership between the community college and industry, and throughout the country other institutions can look to ATEs as they develop their own training programs.

Feedback from both colleges and industry personnel on their partnerships, in general, and ATEs, specifically, is positive. Employers like and readily hire the graduates of these programs.

³ *Job Creation and America's Future*, McKinsey Global Institute, pg. 48
http://www.commerce.gov/sites/default/files/documents/2011/july/jobs_creation_and_americas_future.pdf

However, community colleges face many challenges in creating and developing tech-training programs. Perhaps the most vexing is that these programs often face low enrollment. Since community colleges typically incur a much greater expense in capital costs and maintenance for these programs, they can find it difficult to begin or continue a program without a large number of students, especially on their relatively tight operating budgets. Both community college personnel and industry representatives claim that careers in manufacturing are either unknown by or considered undesirable by students and their parents.

An issue very closely related to attracting large numbers of students to the program is the inadequate math and science backgrounds of many students enrolled in community colleges. Community colleges must attract students to these programs, while also taking measures to remediate basic skills, most commonly in math. Another challenge the community college must address is balancing its role as a “feeder” institution for four year programs with its ability to deliver specialized training for industry. Though articulation between tech-training programs and university is not always possible, community college administrators and tech-training faculty are increasingly embracing the need to endow their technology students with problem-solving skills and an ability and willingness to learn so as to enable them to navigate the inevitably changing skill needs of industry. Highly involved industry partners are a common theme among the most successful tech-training programs. Representatives from both industry and colleges claim that a willingness to devote time and resources to the partnership is crucial for the program to yield the most qualified graduates.