

By Alisha Hyslop

# A National Effort to Integrate Math and Science with CTE

NATIONAL ACTIVITIES FOCUS ON PRIORITY AREAS AND ARE OFTEN DESIGNED TO DEVELOP, IMPROVE AND IDENTIFY THE MOST SUCCESSFUL METHODS AND TECHNIQUES FOR PROVIDING CTE PROGRAMS UNDER PERKINS. ONE OF THESE PRIORITY AREAS UNDER THE 2006 PERKINS ACT IS THE INTEGRATION OF ACADEMIC AND TECHNICAL EDUCATION.



Perkins Implementation Spotlight Series

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## STATES AND SCHOOL DISTRICTS ARE NOT THE ONLY ENTITIES HARD AT WORK IMPROVING THE QUALITY OF CTE PROGRAMS

through the 2006 Perkins Act. While many people think of the federal government's role as more administrative in nature, through the "National Programs" section of the law, the U.S. Office of Vocational and Adult Education (OVAE) is supporting programs across the country that help to meet the goals of the new Perkins Act.

National Programs is funded at almost \$8 million, and is used for two primary activities: the National Research Center for Career and Technical Education and the National Assessment of Career and Technical Education. There is also some funding for activities that are left to the education secretary's discretion, such as demonstration programs and dissemination efforts. These national activities focus on priority areas and are often designed to develop, improve and identify the most successful methods and techniques for providing CTE programs under Perkins. One of these priority areas under the 2006 Perkins Act is the integration of academic and technical education.

Since the early 1990s, this has been a pillar of federal CTE legislation, and continues to be a major topic of discussion around the country. The recent attention to STEM issues and the declining U.S. performance in math and science have increased the importance of delivering curriculum to all students that is both rigorous and relevant. To address this, OVAE contracted

with the Center for Occupational Research and Development (CORD), in partnership with the League for Innovation in the Community College and the States' Career Clusters Initiative, to use fiscal year 2007 National Programs funds to conduct the STEM Transitions project.

The project is designed to highlight the importance of math and science within the six career clusters related to STEM careers: Agriculture, Food, and Natural Resources; Health Science; Information Technology; Manufacturing; Transportation; and Science, Technology, Engineering, and Math. Over the past few months, project leaders have been working to develop a set of context-based lesson plans, along with correlating instructional materials that demonstrate the convergence of technical and academic concepts within these STEM-related clusters.

Thirty-nine community college faculty participated on cluster teams to develop the resources. Each was comprised of instructors from math, science, and the identified career pathways within the specific career cluster. The teams first looked at the embedded math and science within the career cluster knowledge and skills statements, and then dug deeper to identify areas where there were opportunities for additional infusion, especially of skills that serve as roadblocks for students pursuing STEM careers. The teams were looking to develop an integrated approach to really help students better understand STEM topics and how they can be applied in the real world.

A total of 63 comprehensive "projects"



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were developed by the teams across the six clusters. Using a consistent structure, each includes all the materials that would be needed for an entire lesson, and resources that can be pulled out and used individually. Some of the information included in each project includes objectives, equipment and materials lists, discussion and research questions, activities, extension options and assessments.

While the target audience for the resources developed under this project is postsecondary faculty, most of the materials could easily be adapted for use at the secondary level. Hope Cotner, CORD's vice president, community college initiatives, says, "The STEM transitions project provides a rich menu of teaching resources that postsecondary and secondary faculty can extract from, in whole or in part, to enrich their current curriculum."

Topics range from "Nutrient Analysis of Selected Food Items" in the Agriculture, Food and Natural Resources cluster to "Power-Hungry Computers: Electrical

Needs for a Network Operations System" in the Information Technology cluster. They are designed to be used by both CTE and math and science teachers, with additional information included for different course needs, such as technical background for a math or science course.

Draft materials were posted online for public review in September and October, and comments and suggestions are currently being prioritized and incorporated. The project is scheduled to be complete by the end of the year when final versions of all of the integrated project materials will be posted on the project Web site—[www.stemtransitions.org](http://www.stemtransitions.org). In the meantime, the original versions are available for use in your classroom today. CORD hopes the project will provide new ideas for faculty to incorporate into current courses, or the foundation for the development of new integrated projects and courses as the lines continue to blur between academic and CTE instruction. **T**



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