

Cite

Center for Innovation in
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Center for Innovation in Technological Education
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CITE Mission: Support and accelerate implementation and practice of proven contextual teaching and learning methods, connecting education with careers and technology to meet the needs of the 21st Century Workforce.

National Science Foundation Awards Nashville State Technical Community College

INSIDE THIS ISSUE

- 1 NSF *Innovation in Teaching and Learning for Technological Education* Grant
- 2 Ford PAS
Problem-based Case Learning Workshops
- 3 Milestones and Current Activities
- 4 Resource Centers as Responsive Learning Environments

On August 30, 2007 The National Science foundation awarded Nashville State Technical Community College (NSCC) a \$1.7 million grant to support a new project. In partnership with WGBH Educational Foundation in Boston, NSCC will begin a four-year large scale materials development project, *Innovation in Teaching and Learning for Technological Education* (ITLTE).

This project will impact the way community college faculty select their content, organize instruction, and implement instructional strategies in a broad range of technological, math and science disciplines. Problem-based Case Learning (PBCL) has been adopted and adapted by over 400 faculty from participating ATE programs in fourteen states across the nation. Problem-based Case Learning (PBCL) is an effective practice for producing changes in teaching strategies and subsequent redesign of courses into integrated, assessment-driven, learning experiences set in a business context. PBCL is based on yet unsolved problematic local industry situations that require learners to build on their knowledge, engage the situation to build a depth of competence, and reflect on their own thinking and process. The approach facilitates development of complex communication, expert thinking essential in a global economy and advancement in adaptive expertise.

Over 400 faculty from participating ATE projects have implemented PBCL resulting in improved student learning and professional development of faculty. Building on what was learned in previous NSF-funded projects and the ideas and input of John Bransford at the LIFE Center at the University of Washington, Nashville State Community College in partnership with WGBH, will produce and disseminate video, web-based and print resources for professional development of faculty and for use in classrooms. Training teams of experienced practitioners will be established at Nashville State Community College and the Midwest Center for Information Technology in Nebraska to extend the effectiveness of PBCL by making the fundamental principles more easily accessible to a wider audience of practitioners. The effect of the instruction on student performance and employer satisfaction will be measured. The project will also evaluate the changes in colleges due to the development of a community of PBCL practitioners.

Located at:



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Ford PAS Mini-Professional Development Institute

By Donna Gilley, CTE Coordinator, Metro Nashville Public Schools

“The “pillars” of Ford PAS are the key skills that students learn and the key teaching strategies that teachers employ throughout the curriculum”

Approximately 60 teachers from Metro Nashville Public Schools (MNPS) participated in the annual Ford Partnership for Advanced Studies Professional Development Institute June 4-6, 2007 at McGavock High School. With the additional 60 teachers, MNPS currently has approximately 250 high school teachers trained to use the Ford PAS curriculum in their classrooms.

The curriculum consists of 15 modules (each approximately 6-8 weeks of instruction) that link classroom learning with the challenges students will face in post-secondary education and the workplace of the future. The curriculum integrates academically rigorous, standards-based content with realistic applications in areas such as design and product development, information systems, environmental sustainability, global economics, business planning and marketing. Ford PAS is dedicated to preparing

all students to succeed as citizens and workers in the 21st century global economy. To achieve this success, high school students must engage in learning that develops and uses both knowledge and skills, and teachers must employ strategies that encourage the active, self-monitored learning that will yield these results. The hallmark of the Ford PAS approach is to match what and how students learn with what and how teachers teach—because the two are inextricably linked. The “pillars” of Ford PAS are the key skills that students learn and the key teaching strategies that teachers employ throughout the curriculum.

Learning Pillars: Critical thinking, problem-solving, teamwork, and communication
Teaching Pillars: Inquiry-based, project-based, real-world (authentic), performance-based and technology integration

During the three-day Nashville workshop, teachers had opportunity to explore the core teaching and learning pillars of Ford PAS in depth in the context of module activities and reflective practices. The highlight of the week involved a company visit to either Dell Computers or Nashville Electric Service where teachers were able to see first-hand how important these teaching and learning pillars are to succeed in the workplace. Many teachers reported a renewed understanding of the challenge for educators to help prepare young people for life after high school. Each of the teachers will convene again in the fall for a one-day follow-up to share with their colleagues about the use of the Ford PAS curriculum and to build on their learning. The Ford PAS curriculum and professional development have been an integral part of the reform movement of MNPS high schools. A special thanks to David McNeel and CITE for the continued support, collaboration, and dedication of high school reform for Metro Nashville Public Schools and the use of Ford PAS materials.

Problem-based Case Learning Workshops: UPDATE

Since June 2007 teams of faculty from Nebraska, Maryland and Nevada participated in workshops to learn the Problem-based Case Learning (PBCL) approach to designing, developing and implementing experiences based on authentic, unsolved problematic situations from workplace contexts. Faculty teams learned through immersion in highly interactive workshop settings attended by business partners who offered actual business situations for development into PBCL experiences. Faculty developed multimedia “hooks” to introduce the situations to students who would use the Learning Cycle to “work the case.” CITE staff anticipates that capacity for transferring concepts and skills in STEM areas will increase as teachers negotiate with business partners to identify real-time issues that need solutions. Over the next months students will use the cases developed by the NE, NV and MD teams of faculty. Impact on student engagement and student competency will be documented and reported. Faculty who participated reported satisfaction with the workshop environment, process and content. “This (workshop) really was one of the best I’ve been in at the last year. I got it and I can (could) teach it.” “We had direct instruction and organized management of time and content. I appreciate that we were given a great deal of time to work on our own lessons.” Contact CITE for more information about PBCL workshops.

Resource Centers as Responsive Learning Environments

Today's community colleges are expected to respond quickly to change – change in technologies as well as change in global and local communities and economies. CITE has joined with the National Workforce Center for Emerging Technologies (NWGET) at Bellevue Community College and the University of Washington's Center Learning in Informal and Formal Environments (LIFE) Center in a two-year project to develop and confirm performance and design specifications for an alternative model for resource centers and clearinghouses.

This alternative model is one of an adaptive and responsive learning environment—rather than a static electronic repository for resources. The foundation of this model is the concept of a responsive learning environment and is a direct application of the results of research of Professor John Bransford and others at the LIFE Center into *How People Learn*. Its specifications were derived from a broad range of detailed interviews with strategically chosen individuals and project teams who had previous experience in the development and/or use of resource centers and others who represented the target audience for this alternative model. The new design will provide a virtual space where faculty members can learn from each other, students, and business, as well as contribute to the learning of others in the community – responding to changing workforce and community needs.

The three partner organizations have proposed a successor project to NSF, one that builds on the results of their current project; the goals of the proposed project are twofold:

- To advance the concept of this alternative model for resource centers and resource clearinghouses by conducting trials in the adoption and use of such a model by other ATE centers and projects. These trials will utilize a prototype facility and procedures specified by a design developed under the previous grant. The trials will be designed, conducted and assessed based upon use cases developed in the previous project and rooted in the aforementioned performance specifications.
- To disseminate the results and assessment of these trials and the subsequently revised specifications to present and future developers and maintainers of resource centers and clearinghouses. Specific attention will be paid to ensuring that strong lines of communication are maintained between this project and the ATE Resource Center initiative during the course of these trials.

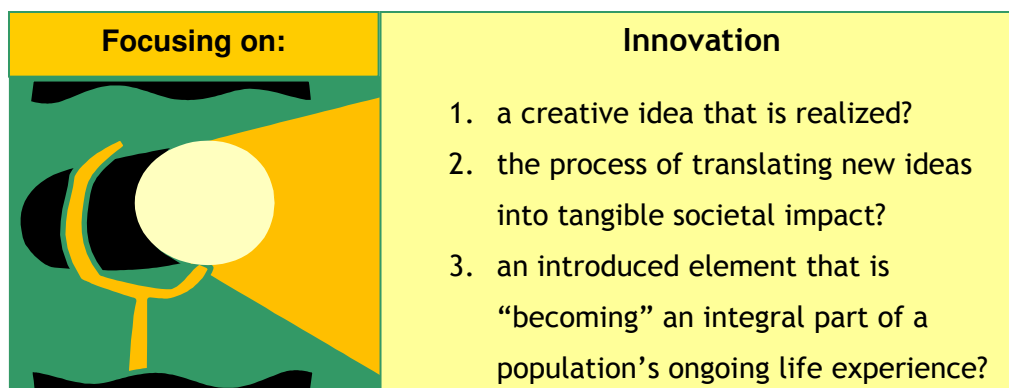
The efficacy of this model in enhancing the use and usability of resources by both faculty and students will be judged based on a variety of criteria which are set out in its Master Specifications. Based on current requirements analysis and synthesis, such a model will be

- continuously innovative,
- compelling,
- sustainable, and
- adaptive to variety and diversity.

In addition it will provide

- quality assurance of its contents,
- progressive levels of participation by all users, and
- personal resource organization and management.

In future editions, there will be more about this prototype, its specifications and implications for its broader use and adoption.



MILESTONES

CITE 5 year Anniversary- The originating Regional Center grant has been successfully concluded. One of the goals of this grant was to achieve sustainability of the programs of the center. This has been achieved by securing multiple funding streams from NSF, Ford Motor Fund, and other philanthropic organizations, as well as Nashville State Technical Community College and other educational organizations, and from the local and federal government. This past year, and even more so in the coming year, we continue to make progress toward achieving this goal on a recurring basis.

XXI Tech Skills-We have been successful in securing funding for the continuation of the XXI Tech Program. XXI Tech Skills and Careers focuses on developing the skills necessary for success in 21st Century careers and on keeping pace with changes in and the emergence of new career pathways. Building on new and existing CITE partnerships, our work benefits business and workforce development initiatives as well as the current and future workforce.

2007 ATE PI Conference-The American Association of Community Colleges with the support of the National Science Foundation will hold the fourteenth national ATE Principal Investigators Conference, "Keeping Technical Programs Viable and Sustainable" at the Omni Shoreham Hotel in Washington, DC October 17-19, 2007. The conference will bring together approximately 800 people to focus on the critical issues related to advanced technological education. CITE will participate in this year's center showcase sessions. In addition to leading the organization and delivery of a large concurrent session the morning of October 18th entitled "Promoting Student Engagement in the Classroom"; members of CITE will lead two workshop sessions: "Problem-based Learning: One foundation, two perspectives" and "Many Paths to the Same End -- Or Not? A Conversation about Problem-Based and Scenario-Based, and Case-Based Learning"

Want to learn more about CITE?

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CURRENT ACTIVITIES

- In partnership with Bellevue Community College and University of Washington's LIFE Center, developing specifications for an "alternative" resource center, one based on the model of a responsive learning environment which in turn is based on investigations into *How People Learn* (see related article-pg. 3)
- In partnership with the Ford Motor Fund and Educational Development Center, developing professional development models around the framework for 21st Century Teaching and Learning
- Working with Metro Nashville Public Schools in the 4-year roll-out of Smaller Learning Communities (SLCs) and Career Academies, building more effective transitions to post-secondary education and career and technical programs
- Providing Problem-based Case Learning workshops to groups of community college and high school faculty across the country (see related article-pg. 2)