AC 2009-672: THE CALIFORNIA REGIONAL CONSORTIUM FOR ENGINEERING ADVANCES IN TECHNOLOGICAL EDUCATION (NSF ATE REGIONAL CENTER CREATE)

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The California Regional Consortium for Engineering Advances in Technological Education  
(NSF ATE Regional Center CREATE)

**Background**

The California Regional Consortium for Engineering Advances in Technological Education CREATE Regional Center is a joint effort between community colleges, universities, and high-tech engineering technology employers. Together the consortium members serve over 9,000 square miles of coastal and central California. The area served by the members represents a population of over one million. The Center is funded by the National Science Foundation’s (NSF) Advanced Technological Education (ATE) program. The Center’s goal is to address the needs of industry by producing, as a multi-county consortium, highly skilled and educated technicians to better meet national and State workforce demands in the engineering technology fields. The CREATE-ATE Regional Center focuses on utilizing a multi-college consortium to develop better approaches to faculty development, in pedagogy and content; industry partnership for improvement of curricula; 2+2 B.S. program development and articulation; and improving assessment.

CREATE has developed and implemented over 50 new engineering/manufacturing/electronics/information technology Associate degree and certificate programs. These new curricula have resulted in over 200 new courses that integrate academic and vocational subject matter with industry skill standards and/or competencies. Since CREATE’s inception in 1999-2000, over 25,000 students have taken at least one CREATE credit course and over 1,800 have successfully completed degrees or certificates. CREATE has facilitated more than a million dollars in additional funding to the colleges in the consortium through innovative industry and college partnerships.

This paper will provide a description of the center’s objectives and focus on its accomplishments over the past year.

**CREATE Center Objectives and Accomplishments**

The CREATE Center, which evolved out of Project CREATE’s successes, established objectives, activities, outcomes, and timelines designed to target five chief areas of need or goals that the CREATE project identified. These objectives along with the primary accomplishments of the past year (2008-2009) are given below.

**Objective 1:** Improve pedagogical skills of faculty in all areas of NSF ATE technical areas through teacher training.

- In previous years, an award-winning training program was adapted to improve the teaching abilities of new full- and part-time technical teachers (often recruited directly from industry jobs-who lacked any teaching backgrounds and to teach them skills to make their teaching pedagogically strong. This program is based on the principles of micro-
teaching and learning theory. Facilitators (full-time faculty from a variety of community colleges across the U.S.) are taught in a train the trainer model to offer the three workshops of the program at their campuses to full- and part-time faculty. In the past year additional facilitators were trained bringing the total number of trained facilitators over the period of the grant to 61 for the Facilitator Development 1 workshop and 29 for the Facilitator Development 2 Workshop. These facilitators have now provided workshops to a total of 135 faculty for the Teaching Skills Workshop (10 with the additional advanced Teaching Demonstration Workshop) and 37 faculty completing the Teaching in the Community College or the new Getting Results Workshop over the period of the grant. The workshops have now been offered in 15 states.

- CREATE faculty have continued to work with other faculty inside and outside of the consortium to broaden their technical background in the manufacturing and information technology areas.
- In 2008-2009, a series of technical focus meetings were held and included community college faculty from non-CREATE colleges. New emerging technology areas with high potential for technicians employment are being pursued including alternative energy programs in wind and solar technologies.
- A new adaptation of the Facilitator/Teaching Improvement model was piloted in cooperation with an Achieving the Dream community college in Pennsylvania in January 2009. A team of Master Facilitators conducted both an on-site FDW1 and an on-site TSW for 16 targeted faculty with rigorous pre and post testing of faculty and students to assess improvement in student learning.
- CREATE completed the Cisco Video on Demand series on teaching at the Cisco production studios. This online video series focuses on teaching improvement for information technology faculty and features CREATE Director Kathy Alfano and CREATE FDW Facilitator graduates who are Cisco Academy teachers at community colleges and high schools across the U.S.

**Objective 2:** Improve articulation of 2+2+2 pathways in the fields of Information Technology and Manufacturing Technology

- The CREATE Center continues to work with its community college faculty to have their courses approved for transfer. Over the period of the grant, over 160 CREATE technology courses have been approved for California State University system transfer.
- In Fall 2005, California State University, Channel Islands began to offer the new CREATE-sponsored in-person/on-line hybrid 2+2 B.S. in Information Technology program. The program has produced seven graduates as of Spring 2008. The program has an impressive retention rate of over 85%.
- The center continues to articulate the B.S. in Information Technology program with community colleges in California.
• Students in the California State University, Fresno Industrial Technology online/hybrid program continue to progress. Over 80% of the initial 2005 cohort have graduated with their B.S. degrees.

• A feasibility study was conducted to access the need for a new four-year engineering technology program in the region.

Objective 3: Implement regional programs in Information Technology, Engineering Technology and Manufacturing Technology that reflects existing and emerging industry needs.

• CREATE has developed and implemented over 50 new engineering/manufacturing/electronics/information technology Associate degree and certificate programs. These new curricula have resulted in over 200 new or revised courses being taught at six community colleges that integrate academic and vocational subject matter with industry skill standards and/or competencies.

• CREATE faculty continue to work with local industry to revise their curriculum to meet industry needs.

• A new Mechatronics degree program was developed and implemented at Allan Hancock College.

• The consortium collaborated with the Los Angeles County Sheriff’s and Internal Services Departments to find a creative solution to their high unmet demand for electronics technicians.

• In 2008-2009, a series of technical focus meetings were held and included community college faculty from non-CREATE colleges and employers. New emerging technology areas with high potential for technicians employment are being pursued including alternative energy programs in wind and solar technologies.

Objective 4: Develop and implement a model assessment plan to measure longitudinally the success of the educational experience.

• A new adaptation of the Facilitator/Teaching Improvement model was piloted in cooperation with an Achieving the Dream community college in Pennsylvania in January 2009. A team of Master Facilitators conducted both an on-site FDW1 and an on-site TSW for 16 targeted faculty with rigorous pre and post testing of faculty and students to assess improvement in student learning.

• In cooperation with community college researchers, CREATE continues to follow the successes of students who have taken CREATE courses.

• Continuing studies have shown that since CREATE’s initial NSF funding in 1999-2000, over 25,000 students have taken at least one CREATE credit course and over 1800 have successfully completed degrees.

• Current students in CREATE courses are surveyed annually to determine their goals.
Objective 5: Develop and implement a plan to sustain and institutionalize CREATE partnerships and models.

- Over the last four years, CREATE has operated as the Cisco Academy Training Center (CATC) for California and Nevada and receives over $130,000/year from the Cisco Learning Institute to mentor faculty statewide as part of a sustainability plan.

- In the past year CREATE schools have collaborated with over 40 companies and public institutions, over 50 educational institutions including high schools, middle schools and universities. These collaborations provide monetary and in-kind support, internships, curriculum development, equipment, jobs, advisory committee support and other general support.

- CREATE maintains a website with resources for students, consortium members, and other interested in the CREATE Center. In the past year this website had over 282,524 visits and more than 100,000 pages were viewed.

- CREATE-ONLINE.NET offers online courses and other educational materials.

- CREATE faculty continue to make presentations on the accomplishments of the consortium at various conferences and technology showcases.

Summary

The CREATE consortium, a joint effort between community colleges, universities and high-tech engineering technology employers is current in its thirteenth year of operation. This paper highlights the accomplishments of the past year (2008-2009) as an NSF ATE Regional Center. Through its programs and commitment to partnerships, the CREATE consortium has had a significant impact on students, faculty and colleges in its region. The CREATE Center continues to operate in its sixth year as an NSF ATE Regional Center. Further information on CREATE can be found on our website at: http://www.create-california.org.