

AC 2008-517: THE CALIFORNIA REGIONAL CONSORTIUM FOR ENGINEERING ADVANCES IN TECHNOLOGICAL EDUCATION

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Sharlene Katz is Professor in the Department of Electrical and Computer Engineering at California State University, Northridge (CSUN) where she has been for over 25 years. She graduated from the University of California, Los Angeles with B.S. (1975), M.S. (1976), and Ph.D. (1986) degrees in Electrical Engineering. Recently, her areas of research interest have been in engineering education techniques, software defined radio and neural networks. Dr. Katz is a licensed professional engineer in the state of California.

Robert Alldredge, Allan Hancock College

Robert (Bob) Alldredge holds a B.S. degree in electronics from Chapman University and is a full-time instructor at Allan Hancock College in Santa Maria, California where he has worked and taught for the past thirty-seven years. He also has been involved in the design and manufacture of hardware training apparatus for the nuclear power industry and is a recipient of the NISOD Excellence Award from the University of Texas at Austin. He is a founding member of Project CREATE, serves as its Co-PI and is PI for a three-year NASA-CIPA (NASA Curriculum Improvement Partnership Award) grant. Mr. Alldredge has developed course work and contributed efforts to NSF SpaceTEC's National Aerospace Technical Education Center and currently contributes to a partnership with the California Space Authority on a Department of Labor grant.

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. This 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 22,000 students have taken at least one CREATE credit course and over 1,500 have successfully completed degrees. This year the first two students graduated from the new CREATE-sponsored in-person/on-line hybrid 2+2 program in Information Technology at CSU Channel Islands. 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 (2006/2007) 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 train part-time teachers without teaching backgrounds to be pedagogically strong. This program is based on the principles of micro-teaching. Facilitators are trained to offer the three workshops of

the program at their campuses to part-time faculty. In the past year an additional 28 facilitators were trained bringing the total number of trained facilitators over the period of the grant to 47. These facilitators provided workshops to 62 part time instructors over the past year for a total of 93 instructors trained over the period of the grant. The workshops have now been offered in 14 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. CREATE faculty have offered and participated in workshops in Electronics, Mechatronics, NIDA/Distance Delivery for Electronics, Network Security, IT Essentials, IP Telephony, and Rapid Prototyping.

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 past five years 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. Program in Information Technology program. After only two years the program produced its first two graduates in Spring 2007. The program has an impressive retention rate of over 90%.
- Students in the California State University, Fresno Industrial Technology online/hybrid program continue to progress. Over 50% of the initial 2005 cohort have graduated with their B.S. degrees.
- A feasibility study was conducted to assess 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 197 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 Information Technology degree program was developed and implemented at Cuesta College.
- A new Mechatronics degree program was developed and implemented at Allan Hancock College.
- A feasibility study to determine the need for a new 4-year B.S. in Engineering Technology degree to be offered in the region.
- The consortium collaborated with the Los Angeles County Sheriff's Department to find a creative solution to their high unmet demand for electronics technicians.

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

- 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 22,000 students have taken at least one CREATE credit course and over 3,000 have successfully completed degrees.
- In the past year over 1500 students have completed a CREATE degree or certificate program.
- 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.

- Part of the sustainability plan for the CREATE Center is its role as one of 17 Cisco Academy Training Centers (CATCs) nationally. CREATE acts as a mentor and training Center for credit, non-profit faculty and Regional Academies throughout the Western Region for specific Cisco curricula. Each year CREATE has been asked to increase its scope of training leadership: CCNA (starting 2004); Security and Wireless (2005); IT Essentials (2006). Cisco provides monetary support to the CREATE Center.
- In the past year CREATE schools have collaborated with over 90 companies and public institutions, over 35 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 14000 visits and more than 77000 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 twelfth year of operation. This paper highlights the accomplishments of the past year (2006/2007) 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>.