PROJECT LEAD THE WAY: MIDDLE COLLEGE PARTNERSHIP BETWEEN ORANGEBURG CONSOLIDATED DISTRICT SCHOOL DISTRICT FOUR AND ORANGEBURG-CALHOUN TECHNICAL COLLEGE

Summary

The Middle College Partnership between Orangeburg Consolidated School District 4 and the Orangeburg-Calhoun Technical College aims to increase college retention and completion rates by providing high school students with effective preparation and greater access to college coursework. One of the fastest growing programs within the Career and Technology focus group is the Project Lead the Way® Pre-Engineering Institute (PLTW). Hosted by the Orangeburg District 4 Cope Area Career Center (OCSD4/CACC), the Pre-Engineering Institute currently serves students from rural areas within a 33-mile radius. The target group of students served in the PLTW Program represents four of the five surrounding high schools in three different school districts and two counties at Cope Career Center. Students who enter the Pre-Engineering Institute in the ninth grade and remain until completion of their senior year will graduate with 32 college credits comprised of engineering and general education coursework. The program enables students to develop critical thinking skills through hands-on projects incorporating computer-aided drafting, math, and science.

Demographics

- *Target Settings*: Rural (approximately. 33 sq. mile radius)
- *Target Groups Served*: Grades 9 - 12; the poverty level is 78.1% with the racial make-up of 47.2% white and 47.6% African American.
- *Districts Served*: Orangeburg Consolidated District 4; Bamberg 1

Research and Evaluation

What national or other research was considered during the development of this program/initiative? Describe the evidence that shows the program/initiative works.

South Carolina and the nation face a shortage of STEM professionals with either the A.A. or the baccalaureate degree, especially those who are “workplace ready.” In addition, the engineering and science education lag by minorities and women is also an issue.This lag has both state and national education leaders worried over whether engineering schools can attract and retain minorities at a rate consistent with their growth in the larger student population (Roach, 2004). A 2003 report states that while the absolute numbers have been increasing among both women and underrepresented minority engineering freshmen, the numbers for men and non-minority freshmen have been increasing at a greater pace (Chubin and Babco, 2005). In 1995, women represented 19.9% of the freshmen class; in 2001, they represented 18.3%. In 1995, minorities constituted 17.4% of the freshmen engineering class; in 2004, they represented 15.8%” (Chubin and Babco, 2005). Complicating the issue is that it remains difficult to attract Americans into science and technology disciplines. Despite American society’s growing reliance on science expertise and technology, the percentage of college-bound high school graduates pursuing engineering careers has consistently ranged around 9% over the past 30 years, with only 6% of college-bound high school students choosing to pursue science degrees (Chubin and Babco, 2005). This national dilemma is a critical issue for the counties served by Cope Area Career Center and its higher education partner, Orangeburg-Calhoun Technical College (OCtech), where local demographics, high school preparation, and college readiness issues exacerbate this national issue. New and major manufacturing announcements, such as Boeing and GKN Aerospace, have certainly heightened the critical nature of STEM preparation for the counties served by Orangeburg-Calhoun Technical College and Cope Area Career Center. Without an aggressive recruitment, preparation, and support program that spanned K-14 and even K-16 education, the many women, minority and under prepared students who could help to fill area technician positions may not be able to take advantage of the many STEM cluster educational programs and employment opportunities available in the region.

The project sought to:

- increase both the number and diversity of students entering associate degree programs in the computer engineering, instrumentation, and other engineering technology disciplines through the implementation and articulation of high school STEM cluster majors (programs of study);
- improve success rates and professional advancement opportunities for transitioning students from high schools and industry through a formal articulated K-16 STEM Career Pathway designed to provide transition courses in science, mathematics and engineering technology;
- improve science, mathematics, and technology workplace skills, and
- improve employer satisfaction with graduates in core competencies and workplace skills.

Project success was to be defined by:

- a 10% annual increase in the number students enrolled in the PLTW and other STEM programs;
- a 10% annual increase in the number of women and enrolled in the PLTW and other STEM programs;
- a 10% annual increase in STEM graduates;
- an increase in postsecondary and secondary faculty and student curriculum-based collaborative learning activities;
- a 5% annual increase in the number of employers who report satisfaction with graduate competencies; and
- a 10% overall increase in the number of students who transfer from the two-year college or who return from engineering technician positions to four-year colleges.

Since the beginning of the Project Lead the Way Program in 2008, enrollment has increased from 15 students in 2008 to 102 students in 2012 having served a total of 356 students. Minority and non-traditional interests have increased in the field of engineering. During this time 9% of enrollees were African American, Hispanic, and other; 6% were female. According to the 2012 Southern Regional Education Board (SREB) National Assessment of Educational Progress Assessment (NAEP), reading proficiency scores for completers increased by 4%; math proficiency levels increased by 33%, at which time the math scores were 11% higher than all other sites tested in 2012; and science proficiency levels increased by 3%. In 2012, Orangeburg District 4 non-traditional Perkins Indicators were met and exceeded the state's goal by 4% in non-traditional participation and 25% in non-traditional retention. 2012 is our first year for graduates completing the program. Surveys and evaluations of the 2012 graduates will take place 10 months after graduation for post-secondary placement, military, or employment.

Resources

- *Annual Cost:* $96,450 ($52,000 for instructor; $1200 for consumable materials and equipment; $1700 presentation software; $19,000 computer upgrade; $6350 software renewal; $15,000 community lab)
- *Funding Sources*: $5000 grant from SME Education Foundation (Society of Manufacturing Engineers); Education and Economic Develop Act (2005); Industry partners; Lottery, tuition; Perkins; EIA State Equipment, and local funds
- *Staffing Needs*: $40,000 One additional instructor
- *Infrastructure/Equipment Needs*: $4200 electrical wiring and data drop upgrade
- *Partner Organizations:* Orangeburg-Calhoun Technical College Middle College Division, Cope Area Career Center, Orangeburg Consolidated School District Four and Bamberg One School District, Lower Savannah Educaiton and Business Alliance, SCE&G Cope Plant, Tobul Industries

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