

New Program Recognizes Exemplary Efforts in SMET Education

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In the first competitive cycle of a new recognition program, the Corporate and Foundation Alliance (CFA) has identified five exemplary efforts that are improving the teaching and learning of science, mathematics, engineering, and technology (SMET). All five projects selected for recognition in 2000 exhibit a plan for institutional or systemic change at the undergraduate level.

The Corporate and Foundation Alliance

Before describing the CFA Recognition Program, it is helpful to know a bit about the Corporate and Foundation Alliance. The CFA was established in 1996 with nine initial member organizations. Today it is composed of 39 corporations and foundations that support undergraduate SMET education. The Alliance strives to increase the number of well-prepared SMET professionals – including technicians and K-12 teachers – through improvements in the quality of undergraduate SMET education.

The CFA achieves this objective by sharing innovations, exploring leveraging opportunities, identifying exemplary faculty, and disseminating information about model programs and projects. While member organizations are independently active and engaged, the intent is to amplify the impact of their individual efforts through cooperation and collective action.

The CFA Recognition Program

This year the Alliance launched its first annual CFA Recognition Program as a means to identify and showcase innovative undertakings in undergraduate SMET education. The new program focuses on educational projects that (1) have achieved significant results, (2) are sustainable, (3) have potential to be replicated or adapted, and (4) could continue to increase in effectiveness over time.

While recognition of outstanding work is important, a major purpose of the program is to encourage the replication of these successes nationwide.

CFA Recognition Program goals include:

- Increasing the number of students working towards degrees in SMET education.
- Improving enrollment and graduation rates of groups who are traditionally underrepresented (minorities, women, persons with disabilities) in SMET.
- Improving SMET literacy and competence for all undergraduate students.
- Improving the SMET preparation of prospective K-12 teachers.

Eligibility Criteria

Nominations for the CFA Recognition Program may be submitted only by member organizations, with one nomination per CFA member organization accepted per year. Member organizations are also permitted to submit one joint nomination per year in cooperation with another CFA member. A nomination may or may not be affiliated with or supported by the nominating CFA member organization.

One assumption made by the new recognition program is that any project nominated by a CFA member organization will have undoubtedly undergone initial screening and scrutiny by and within that organization. In this way, nominations for CFA recognition will have already achieved a high level of regard and met some minimum set of assessment criteria set by the nominating organization.

Moreover, as part of the criteria for submissions, the CFA member organizations that submit a nomination are obliged to support their nominee through the nomination, selection, and recognition process. Such support can include, but is not limited to, preparing and submitting nomination materials; presenting the nominated project/program to the full CFA during the selection process; assisting the nominee, when possible, with

travel for the recognition event and/or dissemination events; and promoting replication/dissemination through CFA member organizations' internal and external networks.

The Five “Recognizees”

The first five projects recognized vary in approach, but all meet CFA objectives and all are achieving very positive goals. In order to receive CFA recognition, program nominations had to garner approval from two-thirds of the CFA membership in attendance at the spring CFA meeting.

The five projects include:

Global Wireless Education Consortium (GWEC) – GWEC seeks to increase the quality and quantity of graduates in the wireless technology field. Eleven wireless companies and 33 educational institutions that comprise the consortium are developing curricula that include “infotech” (incorporating media, telecommunications and computers) technology educational materials integrated with problem solving, communications, and teamwork skills. In addition to developing and distributing the curriculum to all member institutions, GWEC offers faculty annual training at industry locations to update their awareness of current technology. [<http://www.gwec.org>]

The Integrated Teaching and Learning (ITL) Program and Laboratory – This initiative, housed in the College of Engineering and Applied Science at the University of Colorado (CU) at Boulder, models the real world of engineering in which communication, teamwork, and leadership, as well as the ability and self-confidence to define and solve open-ended problems, are demanded. Throughout all undergraduate years, the ITL Program integrates hands-on learning experiences and engages students early-on in the design-and-build process key to engineering. The first-year design experience has resulted in a significantly

higher retention rate in the undergraduate program.

The program's hands-on curriculum required a facility that would serve 2,400 undergraduate students in six departments. The resulting 34,400-sq. ft. ITL Laboratory is considered a truly unique educational facility worldwide, functioning *itself* as a living laboratory and an integral part of the undergraduate engineering curriculum at CU. [<http://itll.colorado.edu>]

Learning by Industry-Driven Design: A Collaborative Team Project – This effort, conducted by Pennsylvania State University, represents new curricular initiatives that have been developed by a team of multi-disciplinary engineering faculty. These initiatives emphasize the synthesis of theory and industry-based practice and focus on industry-university partnerships as the mechanism to infuse systemic change.

The "First-year Design Experience" is a student design competition involving the federally funded Manufacturing Engineering Education Partnership in combination with The Learning Factory (a design and fabrication lab largely underwritten by the College and University). The initiatives involve first-year as well as senior students in faculty-student-industry collaborations, and impact over 2,500 students per year. One result of these efforts is a new Master's in Manufacturing Management, established jointly by the Smeal College of Business Administration and the College of Engineering. [<http://lfserver.lf.psu.edu>]

New Jersey Center for Advanced Technological Education (NJCATE) – Established in September 1995, NJCATE is a partnership of community colleges, four-year colleges and universities, high schools, private industry, and professional associations dedicated to the improvement of engineering technology education. NJCATE focuses on creating and disseminating innovative technical curricula and instructional materials, providing high-quality professional development programs for academic and industry personnel, and technical assistance services to the educational community. NJCATE offers a variety of workshops, conferences and seminars to post-secondary and secondary educators and indus-

try personnel, preparing them in: (a) development, testing and use of integrated technical curricula; (b) methods for incorporating ethical standards into technical curricula; and (c) recruitment, retaining and ensuring success for students from underrepresented populations. [<http://www.njcate.org>]

The NorthWest Center for Emerging Technologies (NWCET) – The charter of NWCET is to improve information technology (IT) education to meet the 21st century needs of employers; prepare skilled technology workers; and increase the supply, quality, and diversity of the IT workforce. A strong research component and industry-as-partners methodology has enabled NWCET to develop and deliver key educational components that have national influence, including: IT skill standards, IT curriculum products and services, new IT programs and degrees, IT tech-prep for high schools, and an institute for educators. Strong alliances have been built between the technology-rich/diversity-poor school districts and the diversity-rich/technology-poor schools to promote technology education and increase diversity. NWCET also works with the Women's Community Impact Consortium and the Technology Access Forum to bring together young people from disadvantaged areas and industry mentors to encourage and sustain an interest in technical competence and education. NWCET is based at Bellevue Community College in Bellevue, Washington. [<http://www.nwcet.org>]

Forms of Recognition

Principal Investigators (PIs) for the five recognized projects have been sent formal Certificates of Recognition on behalf of the full CFA membership, and summaries of the projects' activities will be posted on the CFA Web site. Additionally, a small booklet will further describe these collaborative efforts in SMET education and serve as a means for broader public distribution. The PIs from the various model projects/programs will be invited to attend future CFA meetings, held twice yearly, so as to present their work to the full membership, and small teams of CFA representatives may elect to conduct independent site visits, thereby

offering the recognizees their advice, mentoring, and possible support. Other recognition activities are expected to occur on a project-by-project basis.

Additional Information

The deadline for receipt of nominations for the second annual CFA Recognition Program is February 1, 2001. To request copies of the program guidelines, or for additional information on the Corporate and Foundation Alliance, contact Susan Sauer at: ssauer@nsf.gov.

Corporate and Foundation Alliance Membership List as of June 2000

AirTouch Communications
Bayer Corporation
Boeing Company
Business-Higher Education Forum
The Camille and Henry Dreyfus Foundation, Inc.
Casio, Inc.
DuPont
ExxonMobil Education Foundation
General Electric Fund
Global Wireless Education Consortium
GTE Foundation
The Phil Hardin Foundation
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The David and Lucile Packard Foundation
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Susan Sauer is employed by Oak Ridge Associated Universities and serves as Corporate/Foundation Relations Consultant to the National Science Foundation (NSF) and its Division of Undergraduate Education. Prior to her contractual placement with NSF, Sauer served as Instructor on the Faculty of Health and Public Policy at The Johns Hopkins University School of Hygiene and Public Health, and Associate Director of the

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