

## ATE Develops Student Recruitment and Retention Strategies

**C**ultivating people's interest in science, technology, engineering, and math and encouraging their pursuit of advanced technology careers helps the nation compete in the global economy.

The Advanced Technological Education (ATE) projects and centers featured in this issue of *TECHcitement* adeptly use an array of new technologies and effective practices to recruit students, to develop their technical skills, and to retain incumbent technicians. The entire ATE program aims to deliver more and better qualified technicians to high-tech workplaces that are of strategic importance to the nation.

The ATE program is the National Science Foundation's (NSF) premier community college initiative. Its competitive grants support innovative technician education programs at undergraduate institutions, particularly community colleges, and secondary schools. ATE grants also support professional development for the educators who teach prospective technicians. Technicians are the highly-skilled workers who carry out the processes that either directly create products or facilitate the work of others in fields such

as manufacturing, biotechnology, agriculture, engineering, information, chemical, and process technologies.

Educators from community colleges—the public associate degree-granting institutions attended by nearly half of the nation's undergraduates and the main educational resources for technicians in the United States—have leadership roles in ATE initiatives. Secondary school educators, university researchers, and industry partners serve integral roles in the ingenious efforts that enhance technical career pathways.

Since its creation by Congress in 1992, the ATE program has awarded more than 800 grants. ATE project grants generally focus on improvement of particular technical education programs, curriculum or educational materials development, professional development for educators, or preparation of new secondary school teachers. ATE centers of excellence use grant support to enhance national and regional technician preparation efforts for specific fields. In 2007, targeted research in technician education was added as a third program track.

Linda L. Slakey, director of the NSF's Division of Undergraduate Education, calls the ATE program "enormously dynamic and effective."

Slakey especially appreciates the quality of the partnerships ATE initiatives generate in their communities and among their partners in industry. "It seems to me to be a genuinely transformative agent in higher education," she said at the 14th Annual ATE Principal Investigators Conference in October 2007. All of the curricula and other educational materials developed with ATE grant support are freely available for others to implement in academic and industry settings.

Noting the push for accountability throughout education and government, Slakey told the principal investigators that she uses their innovative efforts as examples of the NSF's effectiveness. "The ATE PIs [principal investigators]. I see as key elements in responding to the public loud and clear. 'Yes, we are being effective.' We point to the work that you do all the time when we're asked to demonstrate that our investment of the public's funds is truly effective."



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## Digital Bridge Academy Gets At-Risk Students on Paths to Knowledge-Based Careers

The Digital Bridge Academy (DBA) at Cabrillo College accelerates the academic and personal management skills of underprepared, low-income minority students.

For the majority of students enrolled in the program at Cabrillo's center in Watsonville, California, the DBA's two-week Foundation Course and Bridge Semester is unlike any previous educational experience. It resets their learning patterns, personal habits, and career horizons. The students who complete the credit program—and most of those who start the DBA complete it—move into regular community college classes and begin on pathways toward knowledge-based careers.

The project's independent evaluator, Norena Norton Badway, reported in 2007 that “the lowest-performing cohort of DBA surpassed other Cabrillo students in successfully passing courses by 10%, and other DBA cohorts surpassed other Cabrillo students in passing courses by 30% or more.” She praised the initiative, noting, “These findings alone commend the WDBA [Watsonville Digital Bridge Academy] program: underprepared, at-risk students make progress toward academic, career, and personal goals.”

An ATE grant supported pilot testing and revision of the DBA's student persistence model, as well as Badway's evaluation of its



Digital Bridge Academy students gather around an open computer to learn the function of its hardware components at Cabrillo College.

implementation. A second ATE grant supports the addition of a numeracy course to the one-semester program, and the development of a two-semester, science-intensive curriculum.

The DBA's results are particularly remarkable because of the academic progress made by the large number of ultra at-risk students, which the DBA defines as those not considered sheltered, protected, or innocent. Many of these people, in other educational settings, would likely spend one or more semesters in noncredit, remedial courses, then drop out.

“Remedial education doesn't really work well because it is not really designed for adults; it's not designed for the adult brain and for

what its capacity is,” says Diego James Navarro, the director of the DBA.

The DBA curriculum attempts to tap the capacity of its adult students' brains in two significant phases. Its two-week, three-credit Foundation Course uses an intense, multi-modal process that helps students create the conditions to learn more effectively and motivate themselves. “[When] they come out of this program, they are on fire. They know where they want to go,” Navarro says, explaining that what follows not only stretches students academically; it helps them change their behaviors so they can accomplish their goals. The students move on to the Bridge Semester as a cohort that becomes a support system.

## Successful Practices for Sustaining Technical Education Programs

Educators involved in the Advanced Technological Education program offer the following suggestions for sustaining technical education programs.

- Use effective communication strategies to inspire, motivate, and empower students to develop and achieve career goals.
- Inform parents about the importance of math and science education, and the value of technical education programs.
- Educate high school guidance counselors and teachers about advanced technology career opportunities for their students.
- Build relationships with employers by listening to them and responding to their workforce needs.
- Align your technical education program's goals with the college's mission.
- Take the initiative to keep your college president and other administrators informed about your program's activities.
- Supply the president and other administrators with data about your students' achievements and your program's community outreach.
- Present information about your program to the faculty senate.
- Teach other faculty about your technology in formal and informal faculty development programs.

### For more information on the ATE program, please see:

National Science Foundation  
[www.nsf.gov/ate](http://www.nsf.gov/ate)

ATE Centers Impact  
[www.atecenters.org](http://www.atecenters.org)

ATE Projects Impact  
[www.ateprojectimpact.org](http://www.ateprojectimpact.org)

American Association of Community Colleges  
[www.aacc.nche.edu/ateprogram](http://www.aacc.nche.edu/ateprogram)

Writer: Madeline Patton  
Editor: Ellen M. Hause

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The American Association of Community Colleges (AACC) is the primary advocacy organization for the nation's community colleges. The association represents 1,200 two-year, associate degree-granting institutions and more than 11 million students. AACC promotes community colleges through five strategic action areas: recognition and advocacy for community colleges; student access, learning, and success; community college leadership development; economic and workforce development; and global and intercultural education. Information about AACC and community colleges can be found at [www.aacc.nche.edu](http://www.aacc.nche.edu).

