



# ATE PROJECTS IMPACT

Partners with Industry for a New American Workforce



National  
Science  
Foundation

**ADVANCED  
TECHNOLOGICAL  
EDUCATION  
PROJECTS**

**ATE PROJECTS IMPACT**  
Partners with Industry for a New American Workforce

The Advanced Technological Education (ATE) program endeavors to strengthen the skills of technicians, whose work is vitally important to the nation's prosperity and security. In ATE centers and projects, two-year colleges have a leadership role and work in partnership with universities, secondary schools, business and industry, and government agencies to design and carry out model workforce development initiatives.

[www.ateprojectimpact.org](http://www.ateprojectimpact.org)

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National  
Science  
Foundation

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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.

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For information about the ATE program, visit [www.nsf.gov/ate](http://www.nsf.gov/ate). For additional information about ATE centers and projects, visit [www.atecenters.org](http://www.atecenters.org), [www.ateprojectimpact.org](http://www.ateprojectimpact.org), and [www.aacc.nche.edu/ateprogram](http://www.aacc.nche.edu/ateprogram).



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One Dupont Circle, NW  
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Dear Colleagues,

It is my great pleasure to introduce this publication featuring 84 Advanced Technological Education (ATE) projects. The ATE projects and centers supported by the National Science Foundation (NSF) are among the most visionary initiatives in education.

*ATE Projects Impact* highlights the inventive ways educators at two-year colleges are leading efforts to resolve significant technical education issues. As you will see in this publication, some projects focus on ways to recruit students into science, technology, engineering, or mathematics fields, whereas others strive to enhance students' engagement in these core subjects. Some ATE projects test ways to give students authentic workplace experiences, and others experiment with virtual technologies to prepare students for the problems they will solve as full-fledged technicians. Some ATE projects bring professional development opportunities to community college campuses, and others facilitate faculty learning off campus with industry partners.

Although it focuses on community colleges—the primary sources for technician education in the United States—every aspect of the ATE program involves educators from multiple sectors and employers of technicians in fields of strategic importance to the nation. It is not surprising, therefore, that nearly every principal investigator lists collaboration as a priority activity in the 2007 annual survey of the ATE program by the Evaluation Center at Western Michigan University. Another Evaluation Center report noted that the typical institution to receive an ATE grant collaborated with five or more other non-ATE-affiliated institutions. “The majority of this country’s community colleges have been impacted in one or more ways by the program,” the researchers reported.

It is my hope that *ATE Projects Impact*, published by the American Association of Community Colleges with support from the National Science Foundation, will be an instrument of new collaborative activities. I encourage readers to look at all the projects highlighted here as potential resources for best practices that can be applied across academic disciplines and settings, as well as in workplaces. I urge readers to follow the Internet links listed with each project profile to obtain more detailed information about projects and to make direct contact with the principal investigators listed on projects' Web sites. ATE principal investigators willingly share the lessons they have learned. ATE materials and curricula developed with NSF support are disseminated free of charge.

I hope *ATE Projects Impact* impresses you and spurs your creative thinking.

Sincerely,

A handwritten signature in black ink that reads "George R. Boggs". The signature is written in a cursive, flowing style.

George R. Boggs  
President and Chief Executive Officer



OFFICE OF THE  
DIRECTOR

**NATIONAL SCIENCE FOUNDATION**  
4201 WILSON BOULEVARD  
ARLINGTON, VIRGINIA 22230



Dear Colleagues,

A strong and vibrant science and engineering workforce drives our nation's robust economy. Creating such a workforce has been a critical component of the National Science Foundation's (NSF) mission and vision since the agency's inception.

Technician education is an important part of the NSF's strategic approach for ensuring that our nation's employers have technologically savvy workers. The NSF's Advanced Technological Education (ATE) program supports the development of technicians in emerging fields, recognizing the need to inspire, motivate, and empower students to develop and achieve career goals. It also helps traditional industries respond to the rapid pace of change in global markets.

I invite you to explore the breadth and depth of ATE projects that this publication highlights. You will see that these innovative projects are on the frontier of technician education, and that they are generating changes across disciplines and education sectors. The ATE projects, along with the centers that are also part of the ATE program, serve as genuine transformative agents in higher education.

The NSF is proud to be part of the effort that produces excellent technicians, who are essential to the United States' continued leadership in technological innovation. We look forward to continuing this valuable investment in our nation's most precious asset—its people.

Sincerely,

A handwritten signature in black ink that reads "Arden L. Bement, Jr." followed by a stylized flourish.

Arden L. Bement, Jr.  
Director

# Introduction

Advanced Technological Education (ATE) projects focus on particular technical education challenges. These competitive grants from the National Science Foundation (NSF) provide educators with the resources they need to devise, implement, and test their ideas. ATE projects not only address regional or discipline-specific issues but also improve learning in all types of classrooms and increase efficiency in workplaces.

ATE projects transform students and educators as they help prepare exemplary technicians for successful careers. Technicians are essential workers. Their skills, learning capacities, and adaptability to changing technologies affect the viability of individual companies and entire industries. With advanced technologies fueling the global economy and accelerating interactions in the marketplace, U.S. technicians compete with technicians from all over the world.

In the strategic fields that ATE targets, the education of technicians is of vital importance to the nation. The quality of technicians' skills in traditional technical fields, such as manufacturing, agriculture, and transportation, affects when goods get to market and how much they cost. In emerging fields such as biotechnology, nanotechnology, and environmental technology, the availability of skilled technicians influences decisions about where new companies locate and what products they make. The competency of technicians in infrastructure fields such as information technology, cyber security, telecommunications, and civil and construction technology affects the productivity and security of millions of people. With faculty from public community colleges in leadership roles, all ATE grants directly influence activities at the associate degree-granting institutions where the majority of the nation's technicians go for postsecondary education.

ATE projects are just one aspect of the ATE program, which is the largest community college initiative in the NSF's portfolio of educational investments. Since ATE's first program solicitation in 1993, more than 792 ATE projects and centers have been awarded grants by the NSF. The map contained within the back cover shows the geographic spread of the grants.

In addition to the projects, ATE currently supports 33 centers and targeted technician education research. *ATE Centers Impact*, a companion to this publication, details the work of the centers. The publication may be viewed online at [www.atecenters.org](http://www.atecenters.org). In general, national centers focus on comprehensive reforms in particular technological fields. Regional centers focus on a technological field within a specific geographic area. Resource centers provide best practice materials, programming, professional contacts, and other resources for particular fields and, in some instances, across disciplines.

The 84 projects highlighted in *ATE Projects Impact* are a sampling of the initiatives that received NSF support between 2002 and 2007. The following profiles briefly summarize their improvements to technical education programs, enhancements to professional development for educators, or new curricula and educational materials. Detailed information about the projects and contact information for the projects' principal investigators may be obtained from the projects' Web sites. The appendixes list the featured projects' Web sites, summarize their activities, and sort them by state.

The multifaceted approaches of ATE projects, like those of ATE centers, involve industry partnerships and connect educators from various levels in highly collaborative efforts. The synergy of ATE initiatives frequently spark other innovative activities on college campuses and in communities.

## Digital Bridge Academy

Cabrillo College  
Aptos, CA

[www.cabrillo.edu/academics/wdba](http://www.cabrillo.edu/academics/wdba)

“In just two weeks, the foundation course changed the way I look at my strengths, my weaknesses, my possible challenges, the type of people I work with, and how I talk to everyone in my life.”

**Michael Guerra**

*2006 Digital Bridge Academy Student  
Cabrillo College  
Aptos, CA*



*A Digital Bridge Academy student explores the workings of a personal computer at Cabrillo College.*

## Transformative Digital Bridge Academy Readies Students for Technical Courses and Knowledge-Based Careers

Educating young adults who have not had successful academic experiences, particularly those from ethnic minority or economically disadvantaged backgrounds, challenges community colleges everywhere. The Digital Bridge Academy at Cabrillo College uses one full-time semester to connect underprepared students to regular community college courses. The transformative learning environment the college offers with its ATE grant is a highly integrated academic program. It includes literacy skills, digital management, basic software instruction, and career exploration. The teams of students also complete community research projects in preparation for knowledge-based careers.

By spring 2007, 180 students or 80% of those who began the Digital Bridge Academy completed the accelerated semester. The Digital Bridge Academy completers perform better than the average students performed in regular courses, according to external evaluators. By the summer of 2007, the project had provided summer professional development to 30 faculty members of 10 community colleges.

The ATE project is also assisting replication efforts at Merritt (CA) and Las Positas (CA) community colleges and the College of Alameda (CA). Three more community colleges will begin replicating the Digital Bridge Academy in 2008. Broader dissemination begins in 2010.

The Digital Bridge Academy has support from the William and Flora Hewlett Foundation, James Irvine Foundation, David and Lucille Packard Foundation, and the Walter S. Johnson Foundation. Four private foundation grants are funding the design, development, and testing of curriculum kits, programs, and methods for disseminating and replicating the Digital Bridge Academy.

“To say that the academy is meeting my expectations would be an understatement. The principles [learned] can be applied to ... professional relationships. They transcend many of the prejudices that our society often holds, such as gender, race, religion, age, class, and ethnicity.”

**Kyle Mather**

*2006 Digital Bridge Academy Student  
Cabrillo College  
Aptos, CA*



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