

## ATE Evaluation Survey 2005 at a Glance

The 2005 survey is the sixth annual survey of the National Science Foundation (NSF) Advanced Technological Education (ATE) program conducted by The Evaluation Center at Western Michigan University. This survey is conducted annually to describe the program characteristics, work activities, accomplishments, and impacts. This fact sheet presents selected survey indicators of the overall program.

At the time the survey sample was selected in November 2004, the NSF awards database showed that ATE had 248 active *projects* (i.e., projects, centers, and articulation partnerships). We restricted our sample to 171 *projects* that would have been active for at least 1 year at the time of the survey and/or were continuation projects, having received a precursor ATE award. The Web-based survey was administered to *project* directors from February 25, 2005, through April 1, 2005; 167 directors (98%) responded to at least 1 survey section.<sup>1</sup>

The ATE program guidelines for 2003 and before call for funded entities to engage in one or more of the following program efforts: (1) developing instructional materials for national dissemination; (2) providing professional development to increase the capabilities of STEM educators; (3) improving instructional programs at the secondary, associate, and baccalaureate levels; and (4) establishing articulation agreements with other institutions. The 2005 survey addressed these efforts via seven sections: three (grantee characteristics, organizational practices, and collaboration) were required for all respondents; and four (materials development, professional development, program improvement, and articulation agreements) were "optional," that is, required only for those entities significantly engaged in the specified work activity.

For this brief report, selected program summary information is couched in the context of these program emphases. A detailed technical report and online data displays will be available at the "evaluation products" link at the [ate.wmich.edu](http://ate.wmich.edu) Web site in early summer 2005.

Table 1 is a brief matrix that provides response rate and funding descriptors of the program. Since virtually all project directors in the sample responded to the survey, the response rate information in data columns one and two provide good estimates of the relative emphasis given to the various work activities.

The final 2 columns show directors' allocations of their grant funds in the primary work categories and other expenditures over the past 12 months. *Projects*, not a part of this sample, account for the remainder of the program's total annual funding of \$46.8 million (the approximate annualized funding amount for all active projects). Results show that the 3 primary work activities—materials development, professional development, and program improvement—each use approximately one-fifth of program funds invested *in the past 12 months*. The Administration and Other categories also claim significant amounts of funds including, for example, travel, indirect costs, evaluation, and advisory committees. Specific proportions allocated for evaluation and advisory committees are shown in Table 2.

**Table 1. Survey Response Rates and Directors' Estimates of Total Award Allocations of Funds**

	Survey Section Response Rate		Program Funding Allocation for the Past 12 Months	
	<i>n</i>	%	%	\$ (in thousands)
<b>Sample N = 167</b>				
<b>1. Grantee Characteristics</b>	167	100%		
<b>2. Organizational Practices</b>	164	98%		
<b>3. Collaboration</b>	164	98%		
<b>4. Materials Development</b>	111	66%	19%	\$7,213
<b>5. Professional Development</b>	139	83%	22%	\$8,567
<b>6. Program Improvement</b>	117	70%	22%	\$8,343
<b>7. Articulation Agreements</b>	100	60%	3%	\$1,273
<b>Administration &amp; General Operations</b>			18%	\$6,796
<b>Other<sup>a</sup></b>			14%	\$5,252
<b>Unspecified<sup>b</sup></b>			2%	\$651
<b>Total</b>			100%	\$38,095

*Note.* Funding allocations represent the annualized funding (total award divided by length of project in years) multiplied by the percent allocated for a specific category.

<sup>a</sup>Other expenditures include, for example, equipment, evaluation, indirect costs, and travel.

<sup>b</sup>Unspecified expenditures include projects that did not provide a breakdown of their grant funds and, where their breakdowns did not total 100%, it is the difference between their stated expenditures and 100%.

<sup>1</sup> One hundred sixty-four *projects* completed all 3 required survey sections, while another 3 completed 1 or more survey sections, but not all 3 required sections, for a total sample of 167. Thus, the *n* referred to in any given section is for that section itself rather than the overall sample *N*.

## Organizational Practices (n = 164)

Three facets of organizational practices are reported in Table 2. These facets focus on practices that project directors can employ to obtain guidance from key stakeholders: workforce needs analyses, advisory committees, and evaluators. Nearly all directors (96%) reported use of at least 1 of those practices. Seventy-six percent indicated having conducted at least 1 needs assessment; 85 percent indicated having at least 1 type of advisory committee; and 85 percent indicated use of 1 or more project evaluators. Table 2 provides more specific information on these variables.

## Collaboration (n = 164)

Collaboration was defined as an ongoing relationship with another institution, business, or group that provides monetary and/or other types of support to *projects*. *Project* directors reported a total of 5,134 ( $M=32$ ,  $SD=63$ ) collaborations with business/industry, host institutions, other education institutions, public agencies, other ATE *projects*, and/or other organizations. Three elements of collaboration are addressed here: monetary support, in-kind support, and the types of collaborators viewed as most effective. The reported collaborative contributions for the year leveraged ATE funds to provide a total working capital amount for the program almost double the NSF funds. These contributions increased the program's resources *in the past 12 months* by 90 percent, from \$38 million to \$72 million for those surveyed. Fifty-three percent (\$18 million) of this increase is due to direct monetary contributions and 47 percent (\$16 million) is due to in-kind support. Implicitly, collaborations serve project and program objectives. Explicitly, the majority of project directors identified either other educational institutions (31%) or business and industries (29%) as the most effective collaborators. Collaborations with other education institutions were primarily for professional development (21%), while collaborations with business and industry were for general support (33%).

## Materials Development (n = 111)

*Project* directors were asked to report *only* on instructional materials being developed for national dissemination. A total of 1,226 materials were reported in various stages of development including 411 (33%) in draft stage, 353 (29%) being field tested, and 462 (38%) completed during the past 12 months. Regarding previously completed materials, directors reported 1,405 courses, modules, and other materials with 39 percent in use locally, 56 percent elsewhere, and 5 percent published commercially.

**Table 2. Indicators of Organizational Practices**

Indicator	%	Total
Never conducted a workforce needs assessment	22%	100%
Conducted a workforce needs analysis in the past 12 months	41%	
Conducted a workforce needs analysis more than 12 months ago	35%	
Missing data (did not report)	2%	
Have an advisory committee	85%	100%
Do not have an advisory committee	15%	
Have a National Advisory Committee	40%	Multiple Response Item
Have a Regional Advisory Committee	26%	
Have a Local Advisory Committee	45%	
Have another advisory committee	10%	
Proportion of grant funds allocated to advisory committees	1%	
Have an evaluator	85%	100%
No evaluator	14%	
Missing data (did not report)	1%	
External evaluator only	67%	Equal to % that has evaluator
Internal evaluator only	6%	
Both internal and external evaluators	12%	
Proportion of grant funds allocated to evaluation	4%	

*Note.* For the proportion of grant funds allocated for advisory committees and evaluation, the total amounts (\$4 million and \$1.4 million respectively) were divided by total program dollars (\$38 million).

*Note.* Types of advisory committees are not mutually exclusive, that is, *projects* could report more than one type.

**Table 3. Numbers of Materials Developed for Target Audiences**

Education Level	Type of Material			Total
	Course	Module	Other	
Secondary School	48	284	49	381
Associate/2-Year College	370	496	104	970
Baccalaureate/4-Year College	41	179	21	241
Other <sup>a</sup>	7	82	508	597

<sup>a</sup>Other types of materials include, for example, professional development guides and laboratory kits.

verification of alignment with workforce needs (72%), pilot testing (78%), and internal (76%) or external (45%) field-testing. Fewer directors reported assessing student success relative to industry standards (31%), assessing student success in comparison with nonproject students (29%), and/or assessing student performance in the workplace (29%) “each time” or “most of the time.” Finally, directors, on average ( $M=3.3$  on a scale of 1 to 5 [2=marginaly successful, 3=somewhat successful, 4=successful]), indicated that they were somewhat successful in achieving the goal of national dissemination of materials developed.

### Professional Development (n = 139)

*Project* directors were asked to report their professional development activities if they were engaged significantly in providing professional development opportunities for current and/or prospective college faculty and/or secondary school teachers. They reported offering a total of 2,414 professional development opportunities that were attended by more than 28,000 participants: 15,648 (56%) at the secondary level, 9,649 (34%) at the associate level, and 2,765 (10%) at the baccalaureate level. Secondary level participation for this year increased markedly from previous years, with participation at other levels remaining stable.

As Table 4 shows, 83 percent of *project* directors reported “always” or “most of the time” collecting end-of-program participant reaction data. More than half (63%) reported “always” or “most of the time” collecting data to determine the extent of implementation. Fewer directors (45%) reported “always” or “most of the time” collecting data to determine the impact of professional development on student achievement.

Table 5 shows directors' ratings of how well they are achieving their professional development goals. Overall, directors indicated they were “successful” to “highly successful” in reaching their goals.

**Table 4. Frequency of Collecting Professional Development Follow-Up Data “Always” or “Most of the Time”**

End-of-program participant reaction data	83%
Follow-up data to determine implementation	63%
Data on the impact of professional development activities on student achievement	45%

**Table 5. Mean Achievement of Professional Development Goals**

Professional Development Goal	All Projects <i>M</i>
Improving STEM disciplinary skills	4.3
Educator teaching skills	4.2
Use of educational technology	4.1
STEM faculty understanding of current technologies and practices	4.4

Note. From 1 = not successful to 5 = highly successful.

### Program Improvement (n = 117)

*Projects* that were significantly engaged in program improvement were asked to complete this survey section. For this survey, “program” was defined as a series of courses that led to a specific certificate or degree. “Courses” were components of programs. *Project* directors report having created or improved a total of 690 programs offered at 1,143 different institutions and affecting all 3 targeted education levels (secondary, associate, and baccalaureate) and on-the-job training. Across all of these programs, nearly 2,000 courses were developed or improved and more than 65,000 students attended at least 1 course, of which nearly three-fourths were students at the associate degree level (see Table 6).

Table 3 shows the number and types of materials developed for specific education levels. Directors reported that 4,353 external institutions were using at least 1 of their materials.

Nearly all (93%) reported using 1 or more of the following modes of input “each time” or “most of the time” when developing materials: business & industry (72%), student & industry standards (80%),

**Table 6. Direct Student Impact**

	Education Level				Total
	Secondary	Associate	Baccalaureate	On-The-Job Training	
<b>Number of ATE- Funded Programs</b>	283	347	23	37	690
<b>Number of Institutions Where Offered</b>	288	521	33	301	1,143
<b>Number of Courses</b>	274	1,481	94	124	1,973
<b>Number of Students</b>	14,706	47,406	485	2,455	65,052

**Table 7. Student Demographics**

Male	64%
Female	36%
Hispanic/Latino	10%
American Indian/Alaska Native	2%
Asian	2%
Black/African American	10%
Native Hawaiian/Pacific Islander	1%
Multiracial	2%
All Minorities	27%
White	73%
Total	100%
Americans with Disabilities Act (ADA) Students	.5%

These directors view their program improvement efforts as successful in developing program models ( $M=4.1$  [3=somewhat successful, 4=successful, and 5=highly successful]) and somewhat successful ( $M=3.4$ ) at disseminating their program broadly.

Table 7 shows the demographic characteristics of students enrolled in ATE programs by gender, race/ethnicity, and students requesting ADA accommodations. These data show female and minority participation rates at levels similar to previous survey years.

**Articulation Agreements (n = 100)**

Articulation agreements are specific agreements that enable students who complete an education program or series of courses to matriculate to a higher level of education at specified institutions. Single agreements serve many students. They may exist between pairs of institutions, multiple institutions, or across entire college and/or university systems. The agreements reported in this year’s survey may be new agreements or existing agreements that have been improved or enhanced with ATE support.

Project directors reported that 973 articulation agreements were developed or enhanced with ATE support. These agreements involved a total of 1,508 institutions; and 2,334 students matriculated at higher level institutions through these agreements. The nature and effects of these arrangements vary as shown in Table 8.

**Table 8. Articulation Facts**

	Between High Schools and 2-Year Colleges	Between 2-Year and 4-Year Colleges	Teacher Preparation Between 2-Year and 4-Year Colleges	Total
<b>Number of Agreements</b>	666	254	53	973
<b>Number of Institutions Involved</b>	909	424	175	1,508
<b>Number of Students Who Articulated</b>	1,164	908	262	2,334

Secondary school agreements with community colleges account for the majority of articulation productivity. Across all types of articulation agreements, the following specific benefits to students were reported: 51 percent indicated “some or all of the general education credits for specific courses transfer,” 57 percent indicated that “some or all of the technical education credits for specific courses transfer,” half (51%) indicated that “program completion allows students to matriculate at specific institutions,” and/or just under half (47%) indicated that “program completion allows students to matriculate at selected institutions with standing.”