

## ATE Evaluation Survey 2005 at a Glance: Centers

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 for *centers only* and an added breakdown of results for the top one-third of center spenders in each program activity category. The basis for this analysis is twofold. First, for NSF program officers, ATE center staffs, and others especially interested in centers, this center-specific analysis provides much greater clarity regarding the centers' work and productivity. Second, for four designated work categories the report provides additional information about the one-third of centers that allocated the most resources to that work. This added breakdown is provided because most centers work at multiple activities. By focusing on centers that allocate the most resources to each category the report provides a clearer perspective of what centers do and how productive they are when substantial resources are devoted to a targeted area.

Two additional fact sheets supplement this one: one for the entire ATE program and another for ATE projects, which parallels this analysis. A detailed 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.

At the time the survey sample was selected in November 2004, the NSF awards database showed that ATE had 248 active awards. Our survey sample was restricted to 171 projects, centers, and articulation partnerships that had been active for at least a year at the time of the survey and/or had received a precursor ATE award. One hundred sixty-seven directors (98%) responded, of which 25 (15%) were center directors. Responding centers accounted for 36 percent of the reported total award funding for the year. These centers report the length of their awards to be 4 years on average (SD= 1) and that they had completed an average of 2 project years at the time of the survey.

Table 1 provides the number and percentage of center responses to each survey section, the total allocation of center funding to the four ATE work categories (including administration and other allocations), and the total allocation of the top third spending centers in each ATE work category.

**Table 1. Survey Section Response Rates and Funding Allocations and Expenditures for Centers**

Total Center N = 25	Center Response Rate		Center Funding Allocation in the Past 12 Months		Top 1/3 of Centers Funding Allocation for the Past 12 Months		
	n	%	\$ (in thousands)	% of Total	\$ (in thousands)	% of Activity Spend	n
<b>1. Grantee Characteristics</b>	25	100%					
<b>2. Organizational Practices</b>	24	96%					
<b>3. Collaboration</b>	24	96%					
<b>4. Materials Development</b>	17	68%	\$2,208	16%	\$1,544	70%	6
<b>5. Professional Development</b>	23	92%	\$3,071	22%	\$1,907	62%	8
<b>6. Program Improvement</b>	19	76%	\$3,453	25%	\$1,728	50%	6
<b>7. Articulation Agreements</b>	17	68%	\$705	5%	\$486	69%	6
<b>Administration</b>			\$2,878	21%			
<b>Other<sup>a</sup></b>			\$1,573	11%			
<b>Unspecified<sup>b</sup></b>			\$0	0%			
<b>Total</b>			<b>\$13,888</b>	<b>100%</b>			

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 are \$0 because all centers provided a complete breakdown of their grant funding.

As shown in Table 1, centers reported allocating their funds in greatest amounts to program improvement and professional development. Both work categories show about a third more in allocations than that provided for

materials development. Articulation Agreements were allocated the funding for the year; all other categories were allocated at least three times more money by the centers. The top one-third of spenders in each activity category account for at least half, and in some cases two-thirds, of the spending in those categories. Eight centers were among the top spenders for just one category of work; three centers were in two categories, and four were among the top spenders in three of the four possible categories.

### Organizational Practices (n = 24)

Three practices that center directors can employ to obtain guidance from key stakeholders are reported here: (a) workforce needs analyses, (b) advisory committees, and (c) evaluators. Ninety-two (92) percent indicated having conducted at least one needs assessment; 100 percent indicated having at least one type of advisory committee; and 96 percent indicated use of one or more project evaluators. Table 2 provides additional information on these variables.

#### Collaboration (n = 24)

Center directors reported a total of 2,497 ( $M = 104$ ,  $SD = 131$ ) 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 collaborative contributions for the year investigated increased all centers' resources by 120 percent, from \$13.9 million to \$30.6 million for those surveyed. A slight majority of reported contributions (54%) occurred as in-kind support (\$9.1 million), with the remainder (46%) due to direct monetary contributions (\$7.6 million). The majority of center directors identified either business and industry (46%) or other educational institutions (29%) as the most effective collaborators in helping them attain their objectives. Collaborations with business and industry were most often for program improvement (42%), and collaborations with other education institutions were also most frequently for program improvement (38%).

#### Materials Development (n = 17, top 1/3 spenders n = 6)

Center directors were asked to report *only* on instructional materials being developed for national dissemination. Four facets of their materials development and use are described here: numbers and types of materials developed, groups targeted for receipt of the materials, numbers of materials distributed and to whom, and actions taken by centers to ensure good quality in their developed materials. For comparison purposes in each of these cases, parallel information is provided for all centers and the top third of center spenders for this category. [This comparison basis is carried through the remaining sections of the report.]

Center directors reported a total of 241 new materials in various stages of development including 41 percent in draft stage (98), 21 percent being field-tested (50), and 39 percent completed (93) during the past 12 months. As shown in Table 3, most materials were developed for use at the associate degree level. But, the most common types of materials developed vary by education level. For example, at the secondary, baccalaureate, and "other" levels, modules are prepared in greater numbers than courses or other materials. Conversely, greater numbers of

**Table 2. Indicators of Organizational Practices**

Indicator	%	Total
Never conducted a workforce needs assessment	8%	100%
Conducted a workforce needs analysis in the past 12 months	17%	
Conducted a workforce needs analysis more than 12 months ago	75%	
Have an advisory committee	100%	100%
Do not have an advisory committee	0%	
Have a National Advisory Committee <sup>a</sup>	86%	Multiple Response Item
Have a Regional Advisory Committee	46%	
Have a Local Advisory Committee	54%	
Have another advisory committee	21%	
Proportion of grant funds allocated to advisory committees	1%	
Have an evaluator	96%	100%
No evaluator	4%	
External evaluator only	75%	Equal to % that has evaluator
Internal evaluator only	0%	
Both internal and external evaluators	21%	
Proportion of grant funds allocated to evaluation	4%	

Notes. For the proportion of grant funds allocated for advisory committees and evaluation, the total amounts (\$1.16 million and \$0.51 million, respectively) were divided by total center funding for the past 12 months (\$13.9).

<sup>a</sup>Types of advisory committees are not mutually exclusive; that is, centers could report more than one type.

courses are prepared at the associate degree level, with 76 percent of this work conducted by the top third of spenders.

**Table 3. Materials Development by Type and Target Audience**

Education Level	Type of Material						Number of Materials Developed	
	Course		Module		Other		Total	
	All Centers	Top 1/3 Spenders	All Centers	Top 1/3 Spenders	All Centers	Top 1/3 Spenders	All Centers	Top 1/3 Spenders
Secondary School	18	1	69	9	15	8	102	18
Associate/2-Year College	130	99	97	30	32	25	259	154
Baccalaureate/4-Year College	10	3	19	3	2	0	31	6
Other	3	0	24	0	2	0	29	0
<b>Total</b>	<b>161</b>	<b>103</b>	<b>209</b>	<b>42</b>	<b>51</b>	<b>33</b>	<b>421</b>	<b>178</b>

Regarding previously completed materials, directors reported 268 courses, modules, and other materials in use locally (48%), elsewhere (40%), or published commercially (12%). In contrast, the top third of materials development spenders reported proportionally fewer of their 157 completed materials had been disseminated beyond the local level—32 percent were in use elsewhere and less than 1 percent had been published commercially. Across all centers, directors reported that 2,263 external institutions were using at least 1 of their materials.

**Table 4. Use of Information Gathering Activities “All of the Time” or “Most of the Time” in Materials Development**

	All Centers	Top 1/3 Spenders
Input from business and industry	100%	100%
Student & industry standards	88%	83%
Verification of alignment with workforce needs	76%	67%
Pilot testing	88%	83%
Internal field-testing	77%	8%
External field-testing	53%	33%
Assess student success relative to industry standards	29%	50%
Assess student success in comparison with nonproject students	18%	33%
Student performance in the workplace	24%	33%

All center directors reported using one or more modes of gathering input to guide development of materials “all of the time” or “most of the time.” Table 4 shows that as the data collection activities increase in complexity, fewer centers routinely conduct them, although the results also show that the top third of spenders reported giving more attention to gathering student success data than all centers. When viewed in total, 41 percent of all centers report applying at least one of the three student assessment strategies “all of the time” or “most of the time.”

Directors of all centers and directors of the top third of materials development spenders considered themselves equally successful (means of 3.9 and 4.0, respectively, where a rating of 4 is labeled successful) in meeting their goals of national dissemination.

**Professional Development (n = 23, top 1/3 spenders n = 8)**

Center directors were asked to report on their professional development activities if they were significantly engaged in providing professional development opportunities for current and/or prospective college faculty and/or secondary school teachers. All centers reported offering a total of 1,162 professional development opportunities, an average of 51 per center, that were attended by more than 12,000 participants. The large majority of participants (62%) were at the secondary level, with 30 percent at the associate level and 8 percent at the baccalaureate level.

The top third of professional development spenders accounted for 62 percent of the professional development spending by all centers. This top third offered 46 percent of all centers’ professional development opportunities, which were attended by 22 percent of the reported participants. In contrast to centers generally, the top third of spenders focused more on college-level participants, with 31 percent of their participants at the secondary level, 56 percent at the associate level, and 13 percent at the baccalaureate level.

Table 5 shows the proportion of all centers and the top third of spenders that “always collect” or “collect most of the time” follow-up data from professional development activities. These results show that all centers collect end-of-program data, but the top spenders are more likely to collect follow-up and impact data.

Table 6 shows that center directors view themselves as successful in all four categories of professional development effort. They view themselves as most successful in the two categories of STEM disciplinary skills and STEM faculty understanding of current technologies and practices.

**Program Improvement  
(n = 19, top 1/3 spenders n = 6)**

Centers that were significantly engaged in program improvement were asked to complete this survey section. For the survey, “program” was defined as a series of courses that led to a specific certificate or degree. “Courses” were components of programs. Table 7 provides a detailed summary of these results. As the table shows, the typical (average) center reported having created or improved 24 programs offered at 36 different institutions and serving 1,900 students across all 3 targeted education levels (secondary, associate, and baccalaureate) and on-the-job training, with the vast majority of students (69%) enrolled at the associate level.

The top third of program improvement spenders accounted for 50 percent of the program improvement spending by all centers. The top spenders appear to have a much narrower program improvement focus than centers generally. They address proportionally fewer programs (7%), involve fewer institutions (22%), and are creating or changing proportionally fewer courses (20%). They give their greatest attention to associate degree level programs and virtually no attention to “on-the-job” programs. They do report reaching approximately one-third of the students taught under ATE center auspices.

**Table 5. Follow-Up Data Collection From Professional Development Activities**

	All Projects	Top 1/3 Spendern
End-of-program reaction data	100%	100%
Follow-up data to determine implementation	52%	75%
Impact of professional development on student achievement	43%	50%

**Table 6. Professional Development Goal Achievement**

	All Projects M	Top 1/3 Spendern M
Improving STEM disciplinary skills	4.5	4.5
Educator teaching skills	4.0	4.3
Use of educational technology	4.1	4.1
STEM faculty understanding of current technologies and practices	4.5	4.6

*Note.* From 1 = not successful to 5 = highly successful; 4= successful.

**Table 7. Numbers of Programs, Courses Created or Changed, Institutions Using, and Students Reached by Education Level**

	Education Level									
	Secondary		Associate		Baccalaureate		On-The-Job Training		Total	
	All Centers	Top 1/3 Spendern	All Centers	Top 1/3 Spendern	All Centers	Top 1/3 Spendern	All Centers	Top 1/3 Spendern	All Centers	Top 1/3 Spendern
<b>Number of Programs</b>	222	9	200	19	15	4	15	0	452	32
<b>Number of Courses</b>	130	8	476	131	20	4	93	0	719	143
<b>Number of Institutions</b>	156	41	242	94	17	4	265	12	680	151
<b>Number of Students</b>	9,179	2,712	24,735	9,493	74	19	2,103	0	36,091	12,224

Table 8 shows the demographic breakdown for students who were served by ATE courses. Overall, the top third of spenders served a slightly higher proportion of female students than all centers. Similarly, the top third of spenders served a higher proportion of minority students than all centers.

**Table 8. Student Demographics**

	All Centers	Top 1/3 Spenders
Male	71%	68%
Female	29%	32%
Hispanic/Latino	8%	19%
American Indian/Alaska Native	1%	2%
Asian	1%	.5%
Black/African American	8%	11%
Native Hawaiian/Pacific Islander	2%	5%
Multiracial	1%	<1%
All Minorities	20%	38%
White	80%	62%
Total	100%	100%
ADA Students	<1%	0%

**Table 9. Average Success Rating in Developing Model Programs and Disseminating Programs**

	All Centers	Top 1/3 Spenders
Development of program models	4.2	4.2
Dissemination of program	3.8	3.8

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

Table 9 shows that center directors view themselves as slightly more successful in developing program models than in disseminating their programs.

### Articulation Agreements (n = 17, top 1/3 spenders n = 6)

Articulation agreements are specific agreements that enable students who complete a program or series of courses to matriculate to a higher level of education at specified institutions. Single agreements often 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.

On average, individual centers reported developing or improving 44 articulation agreements and involving 45 institutions. The nature of these agreements varies as shown in Table 10, but the large majority (75%) of agreements reported was between high schools and 2-year colleges. The top third of spenders accounted for 69 percent of center funds allocated to this activity. This group reported developing 81 percent of all agreements, involving 56 percent of the institutions, and yielding slightly more than half (53%) of the student articulations.

**Table 10. Number of Agreements, Institutions, and Students Who Articulated**

	Between High Schools and 2-Year Colleges		Between 2-Year and 4-Year Colleges		Teacher Preparation Between 2-Year and 4-Year Colleges		Total	
	All Centers	Top 1/3 Spenders	All Centers	Top 1/3 Spenders	All Centers	Top 1/3 Spenders	All Centers	Top 1/3 Spenders
Agreements	560	476	187	132	2	1	749	609
Institutions Involved	568	326	186	94	15	14	769	434
Students Who Articulated	815	421	390	221	0	0	1,205	642

Table 11 identifies some of the key benefits of articulation and proportion of centers providing each of the identified benefits. Each benefit is provided by a large majority of the centers. Consistently, the agreements made by the top spenders are more likely to provide the stated benefits.

**Table 11. Benefits to Students from Articulation Agreements**

	All Centers	Top 1/3 Spenders
Some or all of the general education credits transfer	65%	83%
Some or all of the technical education credits transfer	82%	100%
Program completion allows students to matriculate at specific institutions	77%	100%
Program completion allows students to matriculate at selected institutions with standing	71%	67%