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## The Upside of an Annual Survey in Light of Involvement and Use: Evaluating the Advanced Technological Education Program

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### Abstract

In 1999, the National Science Foundation (NSF) awarded funds to the Evaluation Center at Western Michigan University to conduct an external evaluation of the Advanced Technological Education (ATE) program. ATE, a federally mandated program designed to increase the number and quality of skilled technicians in the U.S. workforce, has funded over 346 projects and centers across the nation. This case study describes the relationship between project-level involvement in the ATE program evaluation and the use and influence of the evaluation on project primary investigators and evaluators. Although this large, multisite program evaluation employed numerous evaluative data-collection and dissemination techniques, project leaders and evaluators associated the program evaluation primarily with an annual Web-based survey. The NSF's expectation that projects would complete the annual survey contributed to feelings of involvement and, in many cases, promoted use and impact. © Wiley Periodicals, Inc., and the American Evaluation Association.

Working under a Congressional mandate, the National Science Foundation (NSF) created the Advanced Technological Education (ATE) program in 1992 to improve technological education. The NSF aimed to increase the number and quality of skilled technicians in

the workforce, thus improving U.S. competitiveness amidst growing global competition. Viewed as a conduit for preparing technicians, community colleges received most of the ATE funds to strengthen scientific/technical education and training capabilities in biotechnology, environmental technology, global information systems (GIS), manufacturing, and telecommunications.

This Congressional charge resulted in a large diversity of high-budget projects and centers. For example, between 1994 and 2005, the ATE program funded 674 projects and centers, making grants to 345 unique institutions of which more than 200 were 2-year colleges. The cost of the program totaled approximately \$350 million. The ATE program funded large Centers of Excellence (up to \$5 million for 4 years) and smaller-scale projects (up to \$300,000 for 3 years). ATE projects focused on improving technical education materials, enhancing technical instruction, and providing professional development to faculty and teachers. Grantees established partnerships with high schools, 2- and 4-year colleges, businesses, government agencies, and professional societies to improve the nation's advanced technology workforce.

### **ATE Evaluation Background**

The diversity of ATE projects in terms of scope, stakeholders, organizations, and project or center practices created unique challenges to understanding program-level effectiveness. Nevertheless, NSF remained committed to both project-level and program-level evaluation. Therefore, in 1999 NSF funded the Evaluation Center at Western Michigan University (WMU) to conduct an external evaluation of the entire ATE program. The evaluation budget was appropriately large. Arlen R. Gullickson, principal investigator (PI), received two consecutive NSF grants: an initial grant of \$1.3 million covered 1999–2002, and a subsequent grant of \$1.8 million covered 2002–2006. Although some components of the ATE program evaluation (primarily the annual Web-based survey) and the ATE program itself are still ongoing, the scope of this case study is limited to the years 1999–2005. Consequently, ATE program and evaluation activities that have occurred since 2005 are neither considered nor commented upon, despite their potential impact on involvement and use/influence.

The WMU evaluation focused on program-wide productivity, with the primary audience being NSF staff. It is important to understand that the evaluators structured the evaluation in a manner that would allow them to provide feedback to NSF, so that NSF could use the evaluation information for programmatic decisions and accountability reports to Congress. Consequently, the evaluation was not intentionally designed to influence the projects and centers. With that said, program-level feedback was regularly disseminated to projects in hopes of improving project-level processes and outcomes.

Principal evaluation activities included collecting descriptive data, developing an annual Web-based evaluation survey to collect data over time,

conducting site visits, drafting targeted reports on various aspects of the program, and providing formative evaluation information to NSF staff and to the projects and centers. The annual Web-based surveys collected primarily quantitative, but also some qualitative data on the activities, accomplishments, and effectiveness of ATE projects and centers for general accountability purposes. The series of 13 extensive site visits to centers and projects validated and illuminated survey findings and allowed evaluators to gather detailed information about project operations and outcomes. The sites were selected with the use of a purposive sampling technique based on survey data and NSF program officer input to be representative of the diversity of the ATE projects. Teams of trained site visitors included evaluators, industry representatives, and education experts. Finally, the evaluators conducted four targeted studies on different program components: (a) the value added by ATE projects and centers to business and industry, (b) the development of materials for ATE project use, (c) the professional development provided by the ATE projects, and (d) the sustainability of ATE projects' impacts.

In terms of involvement in the evaluation process, the process of creating the survey framework and the question wording engaged NSF program officers and an evaluation advisory group. The evaluation advisory group, comprised of individuals who worked directly with ATE projects and centers, helped conceptualize the survey and contributed to item development. Individual ATE grantees had relatively little participation or input, primarily because the evaluation focused more on NSF's needs, not on the needs of individual funded projects.

## Method

This chapter presents empirical data to describe what involvement in the program evaluation activities meant to project staff and their subsequent use and influence of the evaluation process and findings. Data for this research were collected through five distinct sources of information:

- An on-line survey of ATE project leaders and evaluators about their involvement in and use of the ATE program evaluation ( $n = 188/409$ , 46% response rate). This survey should not be confused with the program evaluation's annual Web-based survey.
- Follow-up interviews of ATE project leaders and evaluators ( $n = 9$ ) who also responded to the on-line survey on involvement and use.
- An interview with one of multiple NSF program officers responsible for the ATE program at the time.
- Review of archival documents, publications, and reports produced by the ATE program and the program evaluation.
- Reflections provided by the ATE program evaluation principal investigator Arlen R. Gullickson, a coauthor of this chapter.

## Findings

### Involvement

Results from the survey respondents and interviews suggest that, overall, involvement in the program evaluation was generally low to moderate, centering primarily on the annual Web-based survey that was expected of all projects by their second year of funding. For example, survey respondents reported at least a little involvement in all stages of the evaluation, such as discussions that focused on planning the evaluation, data collection and interpretation, and communication of the results. Means in each of the 13 activities ranged from 2.2 to 2.7 on a 4-point scale (1 = *none*, 2 = *yes, a little*, 3 = *yes, some*, 4 = *extensively*); however, each activity had at least one-third of respondents reporting that they were not at all involved (37.1–47.7%). The means and percentages for each activity showed little variation, perhaps a reflection of the evaluator-directed program evaluation. The interview data supported the survey results related to low to moderate feelings of involvement. When asked about the ways in which they were involved in the program evaluation (if any), all of the interviewees mentioned completing the annual Web-based survey. However, the submission of the survey by itself did not engender feelings of involvement. For example, one PI explained that she had no involvement in the program evaluation except for filling out the survey, which she did only because she felt it was required. Consequently, the PI qualified her level of involvement as only “a little.”

Results from the interviews also suggested that perceptions of involvement appeared to be stronger for interviewees who also provided input on question development or were asked to make a presentation at a meeting. Almost all interviewees mentioned attendance at annual meetings as involvement. It is interesting to note that attendance or participation at the annual meetings did not typically include any activities related to the program evaluation. One interviewee explained that she completed a questionnaire about the program evaluation (response to questions, timing, and so on) during the annual conference; however, the other interviewees’ experiences only indirectly related to the evaluation. Other involvement reported by the interviewees included volunteering to pilot test or to serve on a committee and studying or reporting results to others. Overall, respondents who reported higher levels of involvement seemed to interact more with the program evaluation, its staff, and the data collection associated with the annual Web-based survey from the program evaluators.

### Use by Project PIs and Evaluators

Somewhat surprisingly, the reported levels of involvement did not translate into equally low levels of use. In general, results from the survey and the interviews suggest that the evaluation did affect project leaders and evaluators, in some cases extensively. Despite the fact that means for each area of

use never exceeded 2.7 on a 4.0 scale, as was the case with the involvement questions, there were more use items on the survey that had means of 2.6 and 2.7, whereas the involvement items hovered more around 2.1 and 2.2. In addition, interviewees provided more examples of use than of involvement. Despite the tedium and time often associated with the annual Web-based survey, the majority of interviewees acknowledged that completing the annual Web-based survey for the program evaluation was, in general, useful and had an impact on their projects. Interviewees offered specific examples of use and influence such as:

“It helped me to figure out how to evaluate the program.”

“We [the project] look at it [the survey] to see how to move ahead.”

“I am working with so many groups and that tended to keep me focused on what I was doing rather than looking beyond. So, I really felt that when I went to the survey and went to the evaluation groups that it gave me a broader perspective.”

“I would say that I definitely learned some new evaluation skills.”

Survey results indicated that the highest percentages of extensive use were related to beliefs about the planning, implementation, and communication stages of an evaluation (as opposed to knowledge or skills). For those survey respondents who participated in another evaluation after the ATE program evaluations, over 80% reported using what they learned from planning and implementing the evaluation in another context. Survey results suggested that even the least-used aspect of the evaluation, the data-collection instruments, were used to at least a small extent by over 60% of the respondents.

Survey respondents and interviewees were asked to identify factors that may have either limited or enabled use. The most common limitation related to a lack of resources, either in terms of time or personnel. In addition, the generality due to the broad, national scope of the program evaluation created a feeling among some project staff that their project was not being represented favorably or meaningfully. Limitations aside, both survey and interview respondents mentioned that collaboration with other projects fostered by the program evaluation elicited gratitude and in many cases seemed to initiate use. Results indicated that the evaluation also increased awareness among project leaders and evaluators about the extent to which their project was meeting its goals. Interviewees explained that increased collaboration and awareness sparked ideas for project improvements.

### **Implications of an “Expected” Annual Survey**

As previously mentioned, the ATE program evaluation had several components beyond the most central feature, the annual Web-based survey. The evaluation team disseminated results from all of the activities by a variety of mechanisms, both traditional and creative, in an effort to promote use.

However, in terms of involvement and use, survey respondents and interviewees seemed to associate the program evaluation almost exclusively with the annual Web-based survey.

So, the question remains: Why did projects focus almost exclusively on the annual survey instead of the numerous other activities whose results were disseminated? The answer may be twofold. First, the annual Web-based survey was requested and expected of all of the projects, not just a few selected projects, as was the case with the site visits. It seems equally important that, despite it not being required of grantees, the clear expectation of survey completion by the WMU evaluation team and the NSF after the first year of funding created a strong impetus for projects to complete it. In fact, the NSF program officers asked the evaluation team to report names of persons who did not respond to the survey. This pressure proved to be an effective “big stick.”

Although project leaders and evaluators were most likely to report that their engagement in all of the stages of the program evaluation (planning, implementation, and communication) had been voluntary, a sizeable group (32–38%) also reported that they felt involvement was required. Survey respondents were most likely to report feeling required to be involved in the final stage of the evaluation: communication of the findings. This finding is possibly a reflection of the type of data required by the annual Web-based survey: detailed reporting of the project’s activities, especially in terms of the numbers of people served, activities, hours, etc. Project staff likely could have felt that communication of findings was required if they considered completing the annual Web-based survey a way of communicating their own project’s performance and activities.

PIs and evaluators also acknowledged during the interviews that they felt as if the survey was required and/or part of their responsibility. One PI explained that she felt that the learning about other projects and sharing details of her own was part of her responsibility to the program:

It’s part of our responsibility. We’re working within this grant and we need to be able to go out and share information with other people and learn things from other people so that we can make sure that our program is doing what it needs to do and get ideas to make it better and to be able to share what we’ve learned with other people.

Beyond the responsibility aspect, another PI offered that she felt the sharing provided some benefit to her project. She explained, “I’m pretty proud of the work we’ve done here and the progress we’ve made, and so it was nice to be able to fill out a survey that got some other recognition.” However, the reported involvement and use was not always perceived as positive, especially if the content of questions was not aligned well with project activities and processes. The more positive perceptions of involvement and use were associated with additional experiences either related to the

survey development (piloting questions, reviewing drafts, presenting at annual meetings) or the opportunity to promote or share positive project-level data as a result of the survey.

Given the goals of this national evaluation—to provide details on program-wide productivity and accountability to the NSF and Congress—the annual Web-based survey alone would not have adequately captured project-level activities. Consequently, the additional activities were critical to the evaluation, despite having a reportedly minimal impact on creating feelings of project involvement and project-level use. In summary, by creating a clear expectation that the annual survey be completed, the evaluators successfully pushed projects to complete the survey, which in turn generated feelings of involvement for many and promoted use of the results.

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