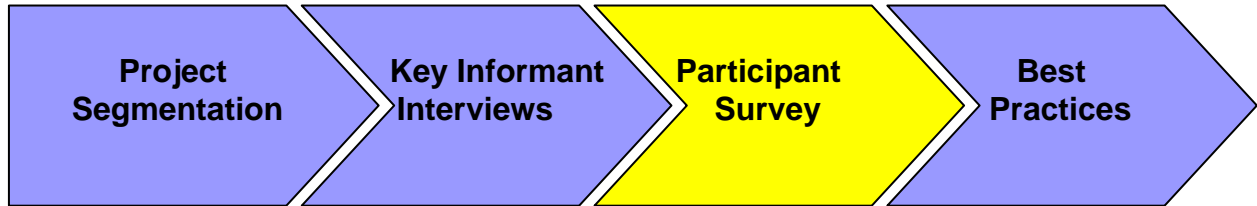


## Evaluation of Professional Development Efforts Of ATE Projects and Centers Phase III Report

This report details the results of Phase III: Participant Survey.



Phase III had four objectives: (1) Validate where possible select findings from the principal investigator interviews conducted in Phase II; (2) assess the extent and level of effectiveness that participants were able to implement the ideas and materials received via the professional development activities; (3) gauge the longer term impacts resulting from the professional development activities; and (4) assess the types and amount of support provided to participants to participate in professional development activities.

### ***Participant Survey Methodology***

We developed a 19 item Web-based survey and distributed it to the list of participants provided by the various projects as a component of Phase II (see Attachment 1 for a copy of the participant survey). Seven of the 12 projects provided e-mail addresses of participants that had attended one or more of their professional development activities. In total, 994 e-mail addresses were received. The survey was sent to those 994 addresses, and 168 were returned as undeliverable. Further investigation revealed that the undeliverable included a small percentage of the e-mail addresses that were no longer active and that the larger percentage of e-mails were being blocked by various firewalls and other screening devices employed by the various institutions to which the e-mails were being sent.

Participants who received the survey were informed that it was being sent to a sample of individuals who had recently participated in a professional development activity funded by the National Science Foundation through the Advanced Technological Education (ATE) program. We had received their names from the principal investigator for the grant that developed and delivered the program in which they were a part. We informed the participants that results from the survey will be used as one component of the larger program evaluation of ATE being conducted by The Evaluation Center at Western Michigan University and that the larger evaluation is primarily concerned with the effectiveness and impact of the ATE program in addressing its stated mission to increase the quality and number of technicians in the U.S. workforce. We also instructed the participants that their individual data would remain confidential and that results will only be reported in the aggregate. Furthermore, we informed participants that results will be reported to NSF, which may use the findings as part of its reports to Congress on the ATE program. In addition, the raw data, with all identifying information removed, may be used for further research purposes. By virtue of completing the survey, participants were agreeing to allow the data to be used for the various purposes described. All participants who submitted a completed survey were entered into a drawing for a \$100 gift certificate.

Overall, 178 of a possible 826 surveys were returned for a response rate of 22 percent. Upon review of the actual responses, we discovered that on 2 of the surveys two-thirds of the questions, including key demographic information, was left blank so we eliminated those surveys from any further consideration. Therefore, all analysis was based on the responses of 176 surveys.

### Validation of Principal Investigator Interviews

One of the first questions we wanted to answer was whether or not participants could actually remember and associate the professional development activity with its respective sponsor or organizer. All of the names in our sample were provided by one of seven projects. We were simply interested to see if participants could actually name the organization or college that sponsored or produced the professional development event that they most recently attended. Figure 1 presents the number of survey respondents that were successfully linked to a specific project.

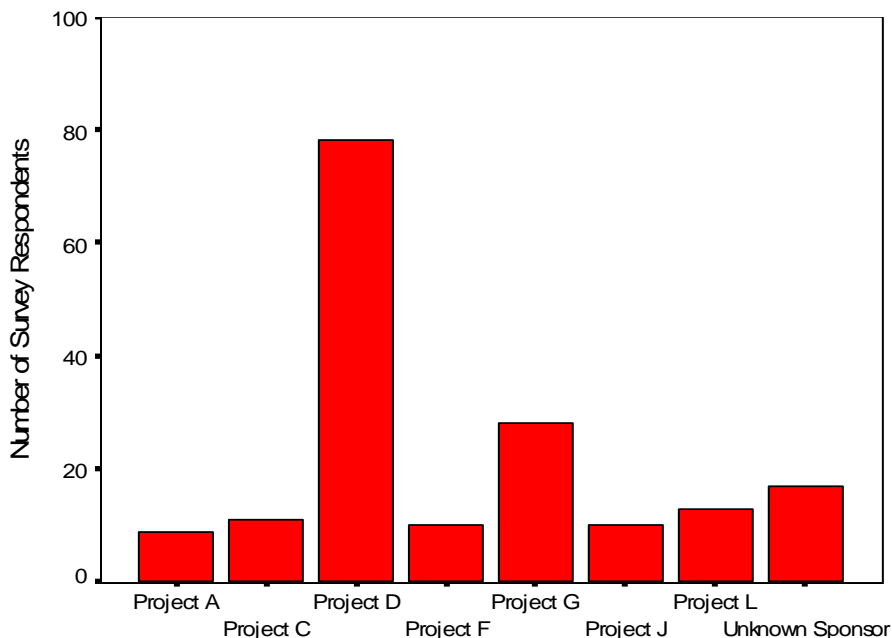


Figure 1: Number of Survey Respondents by Project

The largest number of survey respondents were associated with Project D ( $n = 78$ ; 44%). This is not surprising given that 650 of the 994 e-mail addresses (65%) were supplied by Project D. These 650 names were supplied as a result of hosting more than 50 workshops. Twenty-eight participants (out of a list of 74 names) had attended an activity sponsored by Project G. As shown, the third largest bar was Unknown Sponsor ( $n = 17$ ; 10%). For this group of respondents, the project sponsor was either unknown or not able to be linked to one of the 12 targeted projects. A sample of the sponsor names provided that were not readily aligned with one of the 12 projects included New Mexico State University, University of North Carolina at Charlotte, University of Alabama, NASA, American Association of Physics Teachers, and KATE. We requested that the survey participants respond to the survey based on their **most recent** professional development activity. It is plausible that some of the respondents attended more than 1 professional development activity (including 1 sponsored by 1 the 12 target projects) and the most recent

activity was sponsored by another (non-ATE) organization. However of the 17 participants in this Unknown Sponsor group, 6 respondents (35%) left the question entirely blank indicating that they had no recall of the sponsoring organization.

In addition, as shown in Table 1 below, 82 (of 174, or 47%) of the respondents had attended professional development activities in the last 6 months. The fact that about half of the participants attended their respective activities in the last 6 months is true for all the projects with the exceptions of perhaps G and L where the majority attended in last 6–12 months.

Table 1: Length of Time Since Most Recent Professional Development Activity by Project

		How long has it been since you participated in the most recent professional development activity?					Total
		Less than 6 months	6-12 months	13-18 months	19-24 months	More than 2 years	
		Count	Count	Count	Count	Count	Count
Professional Development Sponsor	Project A	4	4		1		9
	Project B	8	2	1			11
	Project C	44	25	5	1	2	77
	Project D	6	2		1	1	10
	Project E	5	14	5	4		28
	Project F	4	2	3			9
	Project G	3	10				13
	Unknown Sponsor	8	5		1	3	17
<b>Total</b>		82	64	14	8	6	174

Half of the Unknown Sponsor group attended an activity in last six months. Therefore, it is unlikely that their ability to identify the sponsor is a function of time.

### ***Validation of Professional Development Activity Target Audience***

Another question that came of out Phase II was whether the actual attendees at the various activities meet the desired target audience for an ATE-sponsored project. Table 2 below presents a comparison of the target audiences based on the interviews with principal investigators (in Phase II) and the survey results. The numbers from the interview represent the number of individual projects that identified that specific target audience. The number from the survey represents the number of projects that actually had participants from that respective population.

Most projects are reaching their target audience. For example, in the interviews 75 percent (9 of 12 projects) stated that their target audience was community college and 2-year technical school personnel. The survey revealed that participants were indeed community college and 2 year technical school personnel for 6 of the 7 projects (86%) from which we received survey data. However, one could question whether or not a couple of primary target populations are appropriate targets for ATE-funded professional development activities. Specifically, the last 3 (future primary/secondary teachers, individuals in the technology workforce, and college students) are especially suspect. These three target audiences were identified in the interviews in Phase II and represent a broad definition of “professional development.” In future research, it may be appropriate to provide an operational definition of “professional development” to ensure that all

interviewees and survey participants are responding to the same concept. In this particular case, this may not be a major concern since only 8 of the 176 survey respondents (less than 5%) would be considered questionable.

Table 2: Target Audience by Populations

Population	Target Audience*	
	Interviews with Principal Investigators	Participant Survey
Elementary School Faculty	1	1
High School Faculty	2	4
Community College and 2 Yr Technical School Faculty	9	6
4 Yr College/University Faculty	1	5
Future Primary/Secondary Teachers	1	2
Individuals in Technology Workforce	2	1
College Students	2	2

\*Note. The number of primary audiences exceeds 12 because some projects have more than 1 primary audience.

We next examined the specific events that were sponsored by the various projects. The types of events included

- Conferences
- Workshop only
- Workshop with follow-up activities
- Internship
- In-service
- Online classes
- Blended activities
- Other

Table 3 presents participation (in terms of frequency and percentage of survey respondents) in each type of professional development activity.

Table 3: Participation in Professional Development Activities

Type of Professional Development Activity	Frequency	Percent
Conference	34	19.3
Workshop only	71	40.3
Workshop with follow-up activities	47	26.7
Internship	1	.6
In-service	6	3.4
Online course	2	1.1
Blended activity	6	3.4
Other	9	5.1
Total	176	100

Workshops (either alone or with follow-on activities) were the most common, with 67 percent of the respondents indicating that they attended this type of activity. Conferences were second with 19 percent followed by the remaining 14 percent spread across internships, in-service activities,

online courses, blended activities, and other activities (including summer institutes and software certification).

For analysis purposes, we next combined conferences, workshops only, and other into a group that were generally “one-time events” and labeled that group “Events.” The remainder of the activities were considered multitime events or multiple points of contact and was labeled “Process Driven.” Table 4 presents the results of these new classifications.

Table 4: Recoded Activity Classifications

	Frequency	Percent
Event	114	64.8
Process driven	62	35.2
Total	176	100.0

As shown, most participants (65%) attended some type of event.

These new (recoded) classifications will be used throughout the remainder of the report when referring to the type of professional activity attended.

### **Validation of Professional Development Activity Goals**

Survey participants were asked to indicate all the goals for their respective professional development activity plus supply any additional goals not previously stated. Table 5 below presents the results of that activity.

Table 5: Goals of Professional Development Activities by the (Recoded) Types of Activities\*

Recoded Activity		Goals of Professional Development							Total Responses
		Improvement of teaching skills	Improvement of general technology skills	Improvement of specific technology skills	Preparation for teaching a specific curriculum	To increase numbers of professionals in a specific field	Not sure of the goals	Other goals	
Event	Count	46	39	48	46	17	1	17	113
	Row Percent	40.7%	34.5%	42.5%	40.7%	15.0%	.9%	15.0%	100%
Process driven	Count	43	18	22	40	11		6	62
	Row Percent	69.4%	29.0%	35.5%	64.5%	17.7%		9.7%	100%
Total Responses	Count	89	57	70	86	28	1	23	175
	Row Percent	50.9%	32.6%	40.0%	49.1%	16.0%	.6%	13.1%	100%

\* Percentages sum to more than 100% due to multiple response format of question

Improving teaching skills, preparing to teach a specific curriculum, improving specific technology skills (such as a specific software or rapid prototyping), and improving general technology skills were the four most common identified goals. Only one respondent indicated that he/she was not sure of the goal for the workshop that they attended. Thirteen percent of the goals were labeled “other.” They included these:

- Information dissemination and increased awareness
- Curriculum development
- Classroom materials development
- Grant writing
- Benchmark with other programs and schools
- Networking
- Obtain software certification
- Economic development and workforce training

Overall, respondents' recognition of the respective goals is consistent with the stated goals as represented by the principal investigators in Phase II, and they are not specific to any type of activity (event or process driven).

### **Validation of Faculty Development Skills**

In Phase II, all but two projects indicated that their professional development activities included some type of faculty development skills. The following list includes these non-content-specific skills:

- Teaching how to successfully conduct on-line classes
- Teaching hands-on approaches to using curriculum materials
- Teaching faculty how to successfully teach via the “inquiry mode” approach (5 E’s – Engage, Explore, Explain, Extension, Evaluate)
- Understanding team dynamics
- Teaching communication skills in mathematics including listening, questioning, and reflecting
- Teaching how to effectively facilitate learning
- Classroom management
- Encouraging peer mentoring
- Encouraging cooperative learning

Survey respondents were asked to indicate which of the list above (if any) were taught at the professional development activity they attended. Table 6 presents the results of that question.

Table 6: Faculty Development Skills Taught by (Recoded) Types of Activities\*

Recoded Activity	Faculty Development Skills Taught											Total Responses
	Conducting online courses	Using hands-on approaches	Teaching via the inquiry approach	Understanding team dynamics	Teaching communication skills in math	Teaching how to effectively facilitate learning	Classroom management	Encouraging peer mentoring	Encouraging cooperative learning	Faculty development skills were NOT part		
Event	Count 13	67	22	16	12	33	12	12	30	28	110	
	Row % 11.8%	60.9%	20%	14.5%	10.9%	30.0%	10.9%	10.9%	27.3%	25.5%	100%	
Process driven	Count 10	50	24	13	23	31	8	8	30	7	60	
	Row % 16.7%	83.3%	40%	21.7%	38.3%	51.7%	13.3%	13.3%	50.0%	11.7%	100%	
Total Responses	Count 23	117	46	29	35	64	20	20	60	35	170	
	Row % 13.5%	68.8%	27.1%	17.1%	20.6%	37.6%	11.8%	11.8%	35.3%	20.6%	100%	

\* Percentages sum to more than 100 percent due to multiple response format of question.

All of the faculty skills were recognized as being taught by both types of activities. An unintended outcome is that the development of faculty skills is going well beyond just improving one's technology skills; it is focusing on becoming a better teacher. The 3 most common faculty development skills taught (in order) were using hands-on approaches, teaching how to effectively facilitate learning, and encouraging cooperative learning. Furthermore, additional analyses revealed that these 3 skills were selected as being taught by participants attending activities sponsored by all 7 projects represented in this Phase. Finally, only 35 times was it indicated that no faculty skills were taught as a part of the professional development activity, the majority of times this occurred at activities offered by Project D.

### Effectiveness of the Professional Development Activity

For purposes of the interviews in Phase II, effectiveness was defined as how well a particular project or program was implemented. In this phase, we tried to link perceived effectiveness on the part of survey participants with perceived effectiveness on the part of principal investigators. Specifically, participants were asked to indicate what they considered to be the **most** effective component of the professional development activity in which they participated. The list of activity components was derived from the principal investigator interviews conducted earlier in which the investigators indicated the components they thought were the most effective for their respective project. Figure 2 displays participants' selections of the most effective components of their professional development activity.

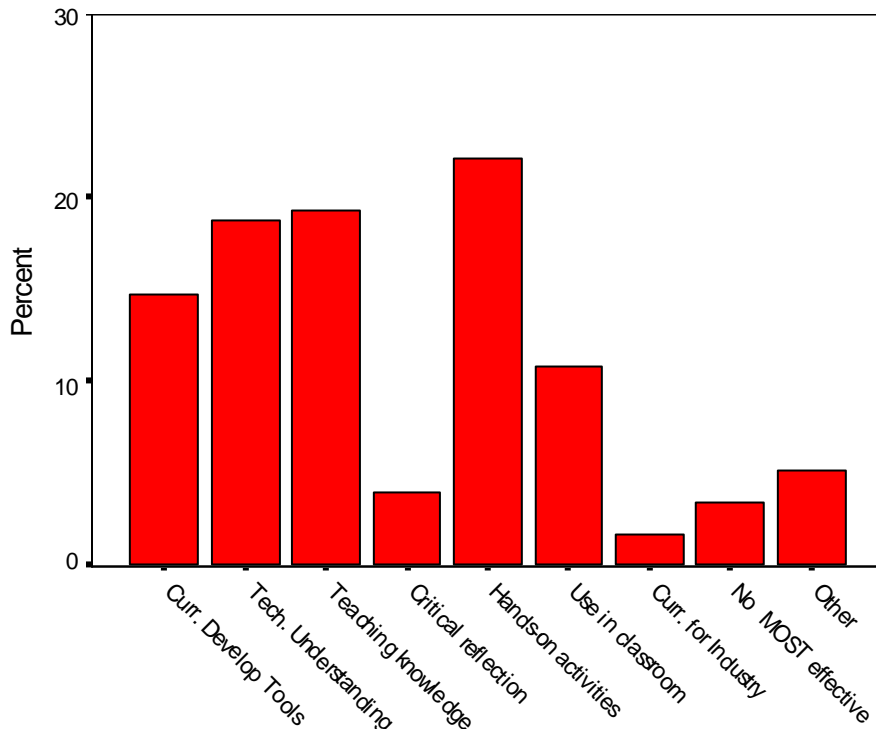


Figure 2: Most Effective Component of Professional Development Activity

As shown, the opportunity to experience hands-on activities was viewed by participants across the projects as the most effective component of the professional development activities. This 22

percent is very consistent with the 28 percent of the principal investigators who also viewed hands-on activities as the most effective component of their professional development activity. Providing hands-on opportunities was also a stated goal of several projects, and the principal investigators who indicated that hands-on was most effective were the same investigators whose offerings were exclusively or primarily workshops.

The fact that participants viewed hands-on as the most effective component is consistent with the types of faculty skills being taught. As shown in Table 7 below, the most common faculty skill being taught is how to use hands-on approaches.

Table 7: Faculty Skills by Type of Activity

Type of Professional Development Activity	Faculty Development Skills Taught										Total
	Conducting online courses	Using hands-on approaches	Teaching via the inquiry approach	Understanding team dynamics	Teaching communication skills in math	Teaching how to effectively facilitate learning	Classroom management	Encouraging peer mentoring	Encouraging cooperative learning	Faculty development skills were NOT part	
Conference	5	17	6	8	2	14	6	6	11	7	32
Workshop only	8	44	14	7	9	18	6	5	17	18	70
Workshop with follow-up activities	6	42	20	11	21	26	5	7	26	2	46
Internship		1					1	1			1
In-service		3	4	2	2	3	1		3	1	5
Online course	1	2								1	2
Blended activity	3	2				2	1		1	3	6
Other		6	2	1	1	1		1	2	3	8
Total	23	117	46	29	35	64	20	20	60	35	170

For those projects whose objective is to provide hands-on opportunities, there definitely is a relationship between what is intended (the objective) and what is actually occurring.

### Impact of the Professional Development Activity

The key focus of impact is determining how the program is making a difference. Once again, for purposes of this study, the list of potential impacts was derived from the Principal Investigator interviews conducted in Phase II in which the investigators indicated what impacts they thought had been achieved as a result of their respective project. Table 8 presents the top five identified impacts as recognized by the participants.

Table 8: Top 5 Impacts by (Recoded) Activity



		Top 5 Impacts of Professional Development Activities					Total
		Improved teaching through the use of new approaches and technologies	Establishment of new projects using new technologies	Establishment of new curriculums	Incorporation of new topics and content (such as science) into the classroom	Raising of teaching standards	
Recorded Activity	Event	49	45	39	39	29	91
	Process Driven	45	35	40	33	29	63
Total		94	80	79	72	58	154

The most common impact was general faculty development in terms of improved teaching through the use of new approaches and technologies. This was true across types of activities. The second most common impact was the establishment of something new (i.e., projects, curriculums, or topics). Improved faculty development and raising the standards of teaching were both more common than enabling faculty to teach a specific curriculum (not in the top 5).

We asked participants to provide evidence that the impact they believed occurred actually happened. Of the 176 survey participants, 140 offered what they believed to be evidence of a program impact. Figure 3 below displays the 10 most commonly suggested evidences of professional development impact.

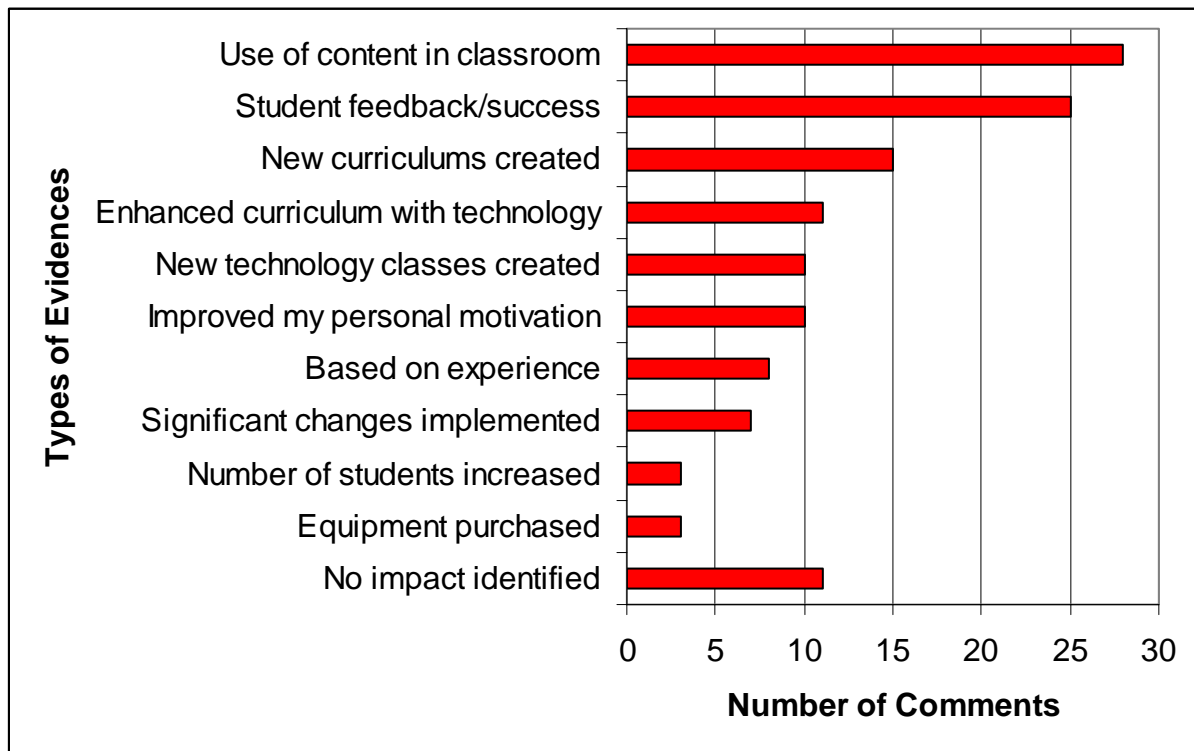


Figure 3: Evidences of Professional Development Impact

Stated use of the specific content presented during the professional development activities is the most commonly referenced impact from participating in various opportunities. This impact is closely followed by positive student feedback and success in terms of higher graduation percentages and college/work placement. In addition, there were a number of enhancements to school curriculums including new curriculums being created, new technologies being adopted in existing curriculums, and new technology classes being created and implemented. It should be noted that “No Impact Identified” was the fourth most common response.

### Overall Programs

In the following, professional development efforts are described regarding participant responses about the ability to implement ideas and materials, effectiveness in adopting ideas and materials, support to attend professional development activities, their satisfaction, and most and least helpful aspects of the professional development to their work.

#### ***Ability to Implement Ideas and Materials***

We asked participants to rate the extent to which they had been able to IMPLEMENT the ideas and materials that were presented in the professional development activity in which they participated. Participants responded to this question using a 5-point Likert scale (where 5= Very Much So and 1 = Not at All). We then performed a one-way ANOVA on their implementation ratings by the recoded activities (event versus process driven). Table 9 presents the descriptive statistics from this analysis, and Table 10 presents the actual ANOVA results.

Table 9: Descriptive Statistics from ANOVA on Implementation

			<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Ability to Implement Ideas and Materials	Recoded Activity	Event	103	3.50	.98
		Process Driven	70	3.96	1.03
		Total	173	3.69	1.02

Table 10: ANOVA on Ability to Implement Ideas and Materials by (Recoded) Activities

		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Ability to Implement Ideas and Materials	Between Groups	8.526	1	8.526	8.545	.004
	Within Groups	170.619	171	.998		
	Total	179.145	172			

There is a significant difference ( $F = 8.545$ ;  $p < .004$ ) between the ability to implement ideas and materials presented via an event versus those presented via a process driven approach. The average rating for Event was 3.5 (halfway between “Somewhat” and “For the Most Part”) versus 3.96 (or approximately 4.0, which equates to “For the Most Part”).

There is a disconnect between ability to implement ideas and the type of activity that participants are attending. As shown earlier in Table 4, 65 percent of participants are attending “events” but participants attending events are less able to implement the ideas or materials. Programs whose objectives and goals include improving participants' implementation of better teaching ideas and materials into their respective classrooms should be offering multitime or multiple points of contact events (i.e., process driven events).

### **Effective in Adopting Ideas and Materials**

We next asked participants to rate their effectiveness in ADOPTING the ideas and materials that were presented in the professional development activity in which they participated. Participants responded to this question using a different 5-point Likert scale (where 5= Excellent and 1 = Poor). We then performed another one-way ANOVA on their ratings by the recoded activities (event versus process driven). Table 11 presents these descriptive statistics, and Table 12 presents these ANOVA results.

Table 11: Descriptive Statistics from ANOVA on Adoption

			<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
How Effective in Adopting Ideas and Materials	Recoded Activity	Event	101	3.73	.86
		Process Driven	69	4.09	.87
		Total	170	3.88	.88

Table 12: ANOVA on Ability to Adopt Ideas and Materials by (Recoded) Activities

		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
How Effective in Adopting Ideas and Materials	Between Groups	5.145	1	5.145	6.901	.009
	Within Groups	125.260	168	.746		
	Total	130.406	169			

There is a significant difference ( $F = 6.901$ ;  $p < .009$ ) between the ability to adopt ideas and materials presented via an event versus those presented via a process driven approach. The average rating for Event was 3.73 (upper end between “Fair” and “Good”) versus 4.09 (“Good”) for Process Driven.

Consistent with the findings on implementation, participants attending process driven activities are significantly better at adopting the presented ideas and materials presented. Once again, programs whose objectives and goals include helping faculty adopt new teaching ideas and materials into their respective classrooms should be offering multitime or multiple points of contact events (i.e., process driven events).

**Support to Attend Professional Development Activities**

We asked participants to provide some information regarding the support they received from their respective organization to participate in professional development activities. We then recoded that information in order to compute a level of support score in the following manner:

- Each time full expenses were paid (for time or registration or expenses) = 3 points each
- Each time partial expenses paid (including time or registration or expenses) = 2 points each
- For each type of contextual support in terms of access to technologies and/or encouragement from one’s supervisor and/or some type of training requirement = 1 point each
- No monetary support = 0 points

We summed the scores for each participant. The range was from 0 to 12 points. We divided the scores into thirds and then assigned values of “High or Complete Support” to the upper third; “Some or Partial Support” to the middle third; and “Little or No Support” to the bottom third. Table 13 displays level of support by the most effective components of the activities.

Table 13: Level of Support by Most Effective Components

		Most Effective Component								
		Exposure to curriculum develop tools	Increased technical understanding	Expansion of teaching knowledge	Opportunity for critical reflection	Experience hands-on activities	Use in classroom	Curriculum for Industry	No MOST effective component	Other
Level of Support	Complete or High Support	8	13	8	1	9	4	2		3
	Some or Partial Support	9	12	11	2	14	11		1	6
	Little or No Support	9	8	15	4	16	4	1	5	

There is no relationship between level of support and what is viewed as the most effective component. The Chi-square was nonsignificant.

We next examined whether a relationship exists between level of support and types of impact. Table 14 displays that analysis.

Table 14: Level of Support by Top 5 Impacts of Professional Development

		<b>Top 5 Impacts of Professional Development</b>				
		<b>Establishment of new curriculums</b>	<b>Establishment of new projects using new technologies</b>	<b>Improved teaching through the use of new approaches and technologies</b>	<b>Incorporation of new topics and content (such as science) into the classroom</b>	<b>Raising of teaching standards</b>
Level of Support	Complete or High Support	23	24	26	23	14
	Some or Partial Support	28	40	34	28	24
	Little or No Support	28	16	34	21	20

There is no relationship between level of support and the top 5 identified impacts of professional development.

We also examined the most common types of support on an individual basis. The most common types of support are in terms of encouragement from one's supervisor to participate, paid time off and covering of expenses to participate in professional development activities. The sources of support in terms of dollars included the following:

- Department or College
- Conference Sponsor/Program Itself
- Industry
- School District
- Various Grants
- NASA
- Archdiocese
- Employer
- Biolink

Figure 4 presents the six most common sources of support.

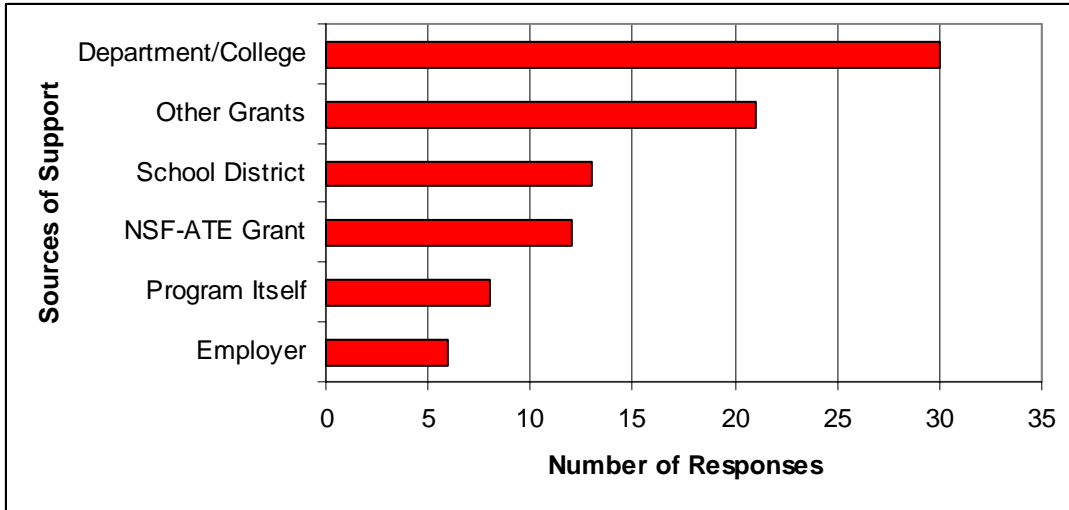


Figure 4: Most Common Sources of Support

The vast majority of support comes from either schools (colleges/districts) or from different grants. The amount of support in terms of dollars varied greatly. On average for those participants that supplied dollar amounts (n = 67), the average amount of support was \$362 with a standard deviation of more than \$300. The range was from \$0 to \$1500. Some participants did not provide dollar amounts but stated that their support included such things as tuition, registration fees, mileage, or reimbursement of all expenses.

The organizations of which the survey participants are a part are viewed as very supportive of professional development activities. In fact, more than 80 percent of the participants told us that they thought their organization is supportive or very supportive of professional development activities. In addition, no participants indicated that their organization is not at all supportive of professional development activities.

**Overall Satisfaction**

Finally, we asked participants to rate their level of satisfaction with the professional development program in which they participated on a 5 point Likert scale where 5 = Excellent and 1 = Poor. We then performed another one-way ANOVA on ratings of satisfaction by the recoded activities (event versus process driven). Table 15 presents these descriptive statistics and Table 16 presents these ANOVA results.

Table 15: Descriptive Statistics from ANOVA on Overall Satisfaction

			<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Level of Satisfaction	Recoded Activity	Event	102	4.33	.72
		Process Driven	70	4.61	.60
		Total	172	4.45	.69

Table 16: ANOVA on Overall Satisfaction by (Recoded) Activities

		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Level of Satisfaction	Between Groups	3.277	1	3.277	7.211	.008
	Within Groups	77.252	170	.454		
	Total	80.529	171			

There is a significant difference ( $F = 7.211$ ;  $p < .008$ ) between overall participant satisfaction with their professional development activities and their respective format (event versus process driven). The average rating for Event was 4.33 (“Good”) versus 4.61 (“Good to Excellent”) for Process Driven.

Consistent with the findings on implementation and adoption, participants attending process driven activities are significantly more satisfied with process driven programs. This is particularly interesting when you consider that nearly 94 percent of the participants rated their level of satisfaction with their particular professional development activity as good or excellent. Events were good, but process driven programs were better.

### ***MOST Helpful in Work***

We asked participants to list what aspect of the professional development activity they found to be most helpful in their work. Figure 5 presents the eight most common items appearing on the lists. Consistent with earlier findings, participants indicated that hands-on activities were most commonly seen as the most helpful aspect in their work.

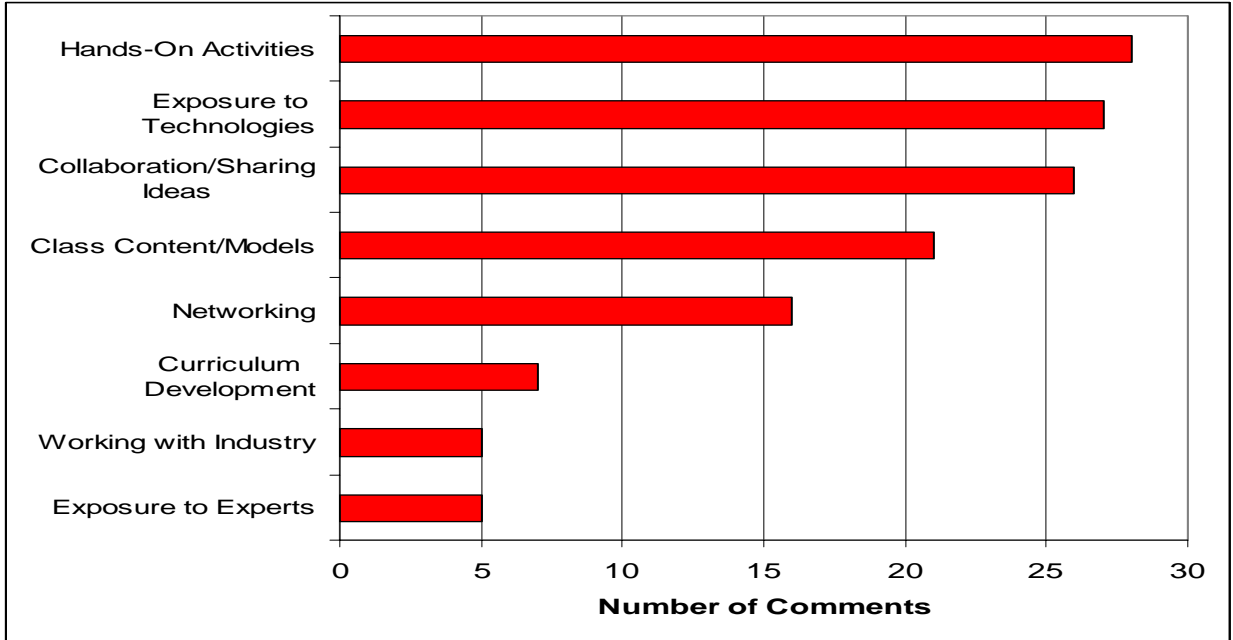


Figure 5: Eight Most Helpful Aspects (in terms of number of comments)

After hands-on, the second most helpful aspect was exposure to new technologies, closely followed by the opportunity for collaboration with colleagues and the opportunity to share ideas and concepts.

***LEAST Helpful in Work***

Finally, we asked participants to list what aspect of the professional development activity they found to be least helpful in their work. Participants found 30 different aspects that to be least helpful. Figure 6 presents the 9 most common items appearing on the lists.

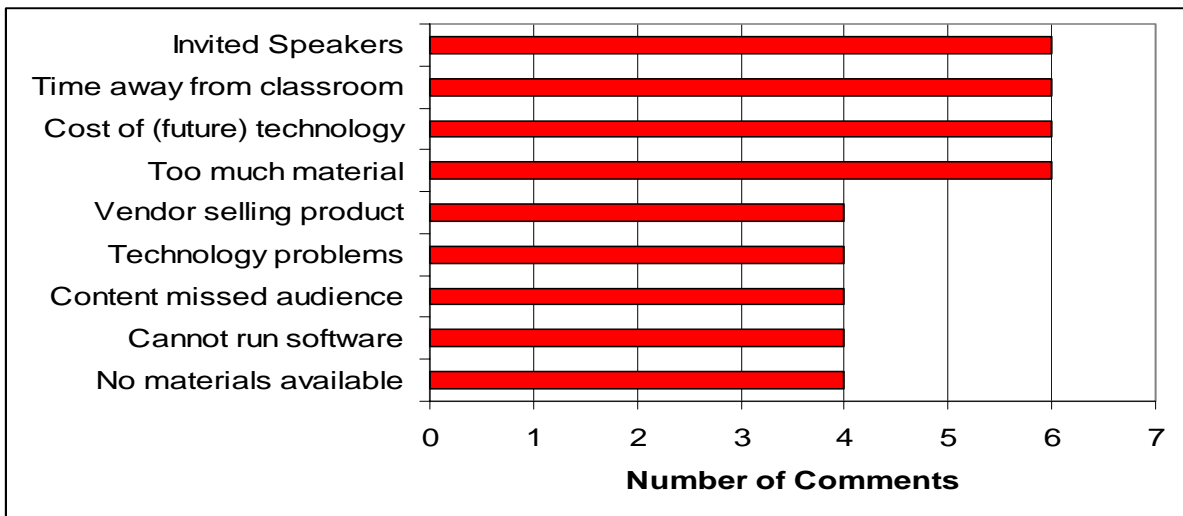


Figure 6: Nine Least Helpful Aspects (in terms of number of comments)



There was a lack of consensus as to the least helpful aspect to the participant's work. However, the nine aspects presented above represented what consensus did exist. Participants did not value the invited speakers. They described them as "talking heads" and valued the hands-on approaches much more than lectures. Some participants questioned the value of being out-of-classroom, which reflects a lack of value for the respective activity they attended. Other participants commented that it was frustrating to be exposed to technologies and processes that their own school could not afford. Finally, a number of participants indicated that too much material was crammed into too little time, resulting in participants being overwhelmed with information.

### ***Summary of Key Findings***

1. Most projects are reaching their target audience.
2. Workshops were the most common professional development activity attended.
3. Improving teaching skills and preparing faculty to teach a specific curriculum are the most common goals of professional development activities.
4. Development of faculty skills is focused on becoming a better teacher, not just improving technology skills.
5. Opportunities to experience hands-on activities were viewed by participants as the most effective, had the most impact, and were the most satisfactory.
6. There is a strong relationship between the intention to provide hands-on opportunities and actually providing them.
7. Stated use of specific content is the most commonly referenced evidence of program impact.
8. There is a significant difference between the ability to implement ideas and materials, adopt ideas and materials, and satisfaction with professional development activities between event type activities and process driven activities.
9. There is a mismatch between the most effective format for professional development activities (in terms of ability to implement ideas and materials, adoption of ideas and materials, and satisfaction with programs) and the types of activities that the majority of participants are attending.
10. There is no relationship between level of support and the most effective components of professional development activities or their impact.

**Attachment 1**  
**Participant Survey**

# ATE PROFESSIONAL DEVELOPMENT PARTICIPANT SURVEY

## Demographics

1. Which organization/college sponsored or produced the professional development event that you most recently attended? (Open ended question – recoded to match the following)
  - Advanced Technological Education –ATE: Bio-Link: A National Advanced Technological Education Center for Biotechnology
  - Ag Knowledge: The National Center for Agriscience & Technology Education
  - Center for the Advancement of Process Technology
  - Collaborative Project: Kentucky Information Technology Center
  - Georgia Geospatial Technology Literacy Project
  - Maryland Articulation Partnership for Teachers
  - Midwest Center for Information Technology
  - Project Sun: Teacher Preparation at Brevard Community College
  - Teacher Preparation, Mathematics, and Technology: A National Dialogue
  - Technician Education in Rapid Prototyping and Virtual Manufacturing Technologies
  - The Montana Consortium Partnership for Educational Technology
  - Washington Center for Information Technology
  - I am NOT SURE who sponsored the program
  
2. Which of the following best describes your primary occupation at the time that you participated in the professional development activity?
  - Elementary School Faculty/Staff
  - Secondary School Faculty/Staff
  - Community College/Two Year Technical School Faculty/Staff
  - Four Year College/University Faculty/Staff
  - Future Primary/Secondary Teacher
  - Individual in the Technology Workforce
  - Attending a 2 Year College (not completing a teaching degree)
  - Attending a 4 Year College (not completing a teaching degree)
  - Industry Professional/Adjunct or Part-Time Professor
  - Other (please describe) \_\_\_\_\_
  
3. How long has it been since you participated in the Professional Development Activity?
  - Less than 6 months
  - 6–12 months
  - 13–18 months
  - 19–24 months
  - More than 2 years

## Professional/Faculty Development

4. Which of the following best describes the professional development activity most recently attended?

- Conference
- Workshop (only)
- Workshop with follow-up activities
- Internship
- In-service
- Online course
- Some type of blended activity
- Other

5. What were the goal(s) of the professional development activity in which you participated? (check all that apply)

- Improve teaching skills
- Improve general technology skills
- Improve specific technology skills (i.e. Rapid Prototyping)
- Preparation for teaching a specific curriculum
- To increase the number of professionals in a specific field
- I am NOT SURE of the goal(s) for the professional development activity
- Other (please specify) \_\_\_\_\_

6. Which of the following faculty development skills were taught? (check all that apply)

- Conducting online courses
- Using hands-on approaches for curriculum materials
- Teaching via the Inquiry Mode approach
- Understanding team dynamics
- Teaching communication skills in mathematics including listening, questioning, and reflecting
- Teaching how to effectively facilitate learning
- Classroom management
- Encouraging peer mentoring
- Encouraging cooperative learning
- Faculty development skills was NOT part of the professional development activity
- Other (please specify) \_\_\_\_\_

### **Effectiveness of the Professional Development Activity**

7. Which of the following would you consider to be the most effective component of the professional development activity in which you participated? (check only one)

- Exposure to curriculum development tools/processes
- Increased understanding of technology
- Expansion of your teaching knowledge base
- Learning to construct your own theories of teaching
- Given an opportunity for critical reflection
- Opportunity to experience hands-on activities
  
- Exposure to other disciplines using technologies
- Planning how to use in my classroom what was taught
- Being asked by industry to develop curricula

- NO specific aspect of activity was most effective
- Other (please specify) \_\_\_\_\_

**Impact of the Professional Development Activity**

8. Which of the following would you consider to be the impact of the professional development activity in which you participated? (check all that apply)

- Establishment of new curriculums
- Increased enrollment of students
- Increased number of students being certified
- Establishment of new projects using new technologies
- Improved teaching through the use of new approaches and technologies
- Incorporation of new topics and content (such as science) into the classroom
- Raising of teaching standards
- Improved morale and enthusiasm of faculty
- Additional requests for specific material or content to be presented (again)
- Changing of educational requirements
- Establishment of new departments within colleges and universities
- Establishment of local and regional organizations and chapters to share information
- No specific impacts of professional development
- Other (please specify) \_\_\_\_\_

9. How do you know that the impact(s) you indicated above happened? (open-ended question)

**Overall Programs**

10. To what extent have you been able to **IMPLEMENT** the ideas and materials that you were presented in the professional development activity in which you participated?

- Very Much So    For the Most Part    Somewhat    Marginally    Not at All

11. Please rate how effective have you been in **ADOPTING** the ideas and materials that you were presented in the professional development activity in which you participated?

- Excellent    Good    Fair    Marginal    Poor

12. What types of support were you given to participate in your professional development activities? (check all that apply)

- Paid time off from work to attend professional development activities (i.e., attendance is part of my job responsibilities)
- Non-paid time off from work to attend professional development activities (i.e., attended on my own time—vacation or weekend)
- The tuition/registration fees were paid in full by my employer.
- Part of my tuition/registration was paid by my employer.
- My expenses (e.g., meals, transportation) were paid in full to participate in professional development activities.
- Part of my expenses (e.g., meals, transportation) were paid in full to participate in professional development activities.
- Access to technologies when needed (computers, software, etc.)
- Encouragement from my supervisor to participate in professional development activities

- Requirement to participate in order to obtain (or retain) some type of certification
- I did not receive any specific support to participate in any professional development activity
- Other (please specify) \_\_\_\_\_

13. If you received support for professional development activities, what was the source(s) of the support? (open-ended question)

14. If you were given any financial support to participate in professional development activities, how much specifically were you given? (use whole dollars) \_\_\_\_\_?

15. How supportive of professional development activities is the organization of which you are a part?

- Very supportive
- Supportive
- Somewhat supportive
- Slightly supportive
- Not at all supportive

16. Overall, how would you rate your level of satisfaction with the professional development program in which you participated?

- Excellent    Good    Fair    Marginal    Poor

17. Please list the aspect of the professional development activity that helped you the MOST in your work.

18. Please list the aspect of the professional development activity you found to be LEAST helpful to you in your work.

19. If you would like to be entered into the drawing for a \$100 gift certificate for survey participants, please provide your e-mail address so we can contact you if you are selected.