A Checklist for Assessing the Sustainability of Advanced Technological Education (ATE) Projects and Centers

A product of NSF Targeted Research Grant # 1132099, Wayne W. Welch, PI

I. Introduction

A checklist is a list of factors, elements, components, or dimensions that should be considered when performing a certain task, for example, when doing a program evaluation.[1] They are mnemonic devices, that is, a list of reminders of things to consider when making judgments about an object, for example, the sustainability of an ATE grant.

In this report, I describe a checklist that can be used to assess the sustainability of work carried out during the implementation of the Advanced Technological Education program funded by the National Science Foundation (NSF). The checklist comprises three sections; an introduction, the checklist itself, and an interpretive table. It is designed to help identify areas where sustainability has occurred, improve sustainability success, provide accountability evidence, and determine how a specific grant compares with the sustainability of other ATE projects and centers.

Sustainability is one of the goals of the Advanced Technological Education program. The program solicitation (National Science Foundation, 2011) states:

> A project or center is expected to communicate a realistic vision for sustainability and a plan to achieve it. It is expected that at least some aspects of both centers and projects will be sustained or institutionalized past the period of award funding. Being sustainable means that a product or service has been developed that the host institution, its partners, and its target audiences want continued. To be sustainable is to ensure a center or project's products and services have a life beyond ATE funding. (Introduction, para. 5)

The checklist presented here is based on work carried out during an ATE Targeted Research project that studied the impact and sustainability of the ATE program (Welch, 2012). One of the products of this research was a scale that measures ATE sustainability. The scale, which consists of a set of Likert-type statements, has been shown to meet generally accepted standards for validity, reliability, and usability.

The items for the scale, and for the checklist, consist of statements about sustainability provided by nearly 50 ATE PIs and others knowledgeable of the ATE program. These included NSF program officers, members of the projects' advisory panel and several researchers interested in the sustainability of NSF-supported programs. These people were asked to identify the products and activities of ATE grants that will be or were in place three years after the ATE grant ended. Approximately 70 statements were obtained from this process and were used to map a domain of content for ATE sustainability. These statements became the elements or the dimensions of sustainability. They are the things to consider when making judgments about continuation of ATE grants.

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[1] This definition is based on the writings of Michael Scriven. See (Scriven, 2007)

The main headings of the elements are:

    Programs (content and delivery mechanisms)
    Collaborations
    Educational materials
    Faculty
    Facilities
    Students
    Institution (administration, change)
    Revenue

Because of response burden limitations, we could only use about two dozen items to sample the sustainability domain. That amounted to about three items for each main heading. ATE PIs and test development experts reviewed the initial statements, and 23 of them were selected for the final checklist.

We followed generally accepted item development procedures in developing the checklist (Worthen & Sanders, 1987). Selection criteria included clarity of the statement and fit to the dimensions of the domain of content. Both positively and negatively worded items were included.

The statements are printed as quotes from ATE peers. Responders are asked to indicate if they agree with the statement, disagree, are uncertain, or if the statement is not applicable to their situation. These statements and a place to record responses follow as Part II of this report.

Although this checklist was created and normed for use by principal investigators, other groups can use it as well. Staff members, collaborators, participants, and evaluators each have their own perspectives. The checklist will aide your understanding of those perspectives and give you a more comprehensive understanding of sustainability as it pertains to your grant work.

The checklist can be used in several ways. It can serve as a reminder of the many ways that ATE sustainability can occur. For example, it may not be obvious that better prepared students are a possible product of a sustained grant. They are part of the legacy of an ATE project or center and will continue to be involved in advanced technological education after a grant ends. Similarly, a collaboration that a project has established with a local industry that continues after the grant ends is another example of ATE sustainability.

The ATE checklist also can be used in a formative sense to monitor progress toward achieving your sustainability goals during the implementation of a grant. This will help identify strength areas as well as places where more work needs to be done before the project is completed. In addition, it can also be used in a summative way to determine whether the sustainability goals were achieved.

Another way to interpret individual responses is to use the Interpretative Table that follows the checklist. (See pages 5 and 6.) The table displays the percent of responders that replied agree, uncertain, disagree, or not applicable to each statement. This information was obtained in the spring of 2010 from 216 PIs of active and ended ATE grants.

Checklist responders can use these results to determine how their sustainability findings compare to those of their peers. The table also includes a place to identify the areas of success or possible limitations in continuing a project or center's efforts. It also calls for the development

of a plan to address sustainability concerns, that is, how to maintain strength areas and to improve problem areas.

<p style="text-align:center">References</p>

National Science Foundation. (2011). *Advanced Technological Education (ATE).* Retrieved from Program Soliciation NSF 11- 692: www.nsf.gov/pubs/2011/nsf11692/nsf11692.htm

Scriven, M. (2007). *The logic and methodology of checklists.* Retrieved from Evalu_ATE: http://www.wmich.edu/evalctr/archive_checklists/papers/logic&methodology_dec07.pdf

Welch, W. W. (2012). *Measuring the sustainability of the advanced technological education (ATE) program.* Retrieved from Evalu-ATE: http://www.colorado.edu/ibs/decaproject/pubs/

Worthen, B. R., & Sanders, J. R. (1987). *Educational Evaluation: Alternative Approaches and Practical Guidelines.* New York: Longman, Inc.

Please read each statement and then indicate the extent to which you Agree, are Uncertain, or Disagree with the statement. If the statement is not applicable to your grant, use the NA response option. The response options are located to the right of the statements.

A   I Agree with the statement
U   Uncertain on whether I agree or disagree
D   I Disagree with the statement
NA   Not applicable to our grant

	Circle the option that best represents your situation.
1 "We have at least one industry partner who is committed to support some of our work after NSF funding has ended."	A U D NA
2. "Our use of a national review committee has helped make our advisory committees more effective."	A U D NA
3. "The instrumentation and equipment we secured as part of our ATE grant will have little use by the college after the grant ends."	A U D NA
4. "Our ATE grant experience has caused our administration to encourage other faculty to seek external funding to address workforce needs."	A U D NA
5. "It is doubtful that the relationships we have established with our various partners will continue after our ATE grant has ended."	A U D NA
6. "Changes made in our technological education program will keep going after our current grant ends."	A U D NA
7. "Revenue earned from the sale of educational materials is used to provide scholarships for students."	A U D NA
8. "Alumni of our project are ambassadors to the larger technical community and tell potential students about the value of technology education."	A U D NA
9. "Through this grant we have created liaisons with our industry partners and academia that will end when our grant does."	A U D NA
10. "Our faculty has become a part of a collegial network that will continue to share program information, workforce trends, and cutting-edge instructional technologies."	A U D NA

Please turn the page

11. *"Most of the programs and activities started during our ATE grant will come to an end when our NSF funding stops."*	A	U	D	NA
12. *"The professional development program(s) we developed is/are used at other sites."*	A	U	D	NA
13. *"The new curriculum was created through the regular institutional approval process so all the new classes are in the regular college catalogue and are part of approved college degrees."*	A	U	D	NA
14. *"Our Center/Project has formed a not-for-profit corporation to help us continue our work beyond NSF funding."*	A	U	D	NA
15. *"Very few of the graduates prepared under our grant are employed as technicians."*	A	U	D	NA
16. *"It is unrealistic to expect that ATE grants will have a long term impact on community colleges."*	A	U	D	NA
17. *"We will be able to keep our project/center going by obtaining income for specific education services."*	A	U	D	NA
18. *"The recruitment efforts developed through the grant will be incorporated into the college's general recruitment activities."*	A	U	D	NA
19. *"The materials we have developed are seldom used by other colleges for technician preparation programs."*	A	U	D	NA
20. *"The teaching methods adapted by faculty as part of our ATE project will continue to be used after the grant ends."*	A	U	D	NA
21. *"The grant has enhanced our reputation as a regional leader in advanced technology education."*	A	U	D	NA
22. *"Internships, supported by industry, will continue as a way to provide our students with exposure to the real world."*	A	U	D	NA
23. *"We would not be able to continue our project/center without continued funding from NSF. "*	A	U	D	NA

III. Interpretive Table

Below is a summary of responses to the checklist statements made by 216 ATE grantees. After you complete the checklist, use these results to help interpret your responses. For example, if you marked Agree for the first statement, you are among the 60% of the respondents that did so.

Sustainability Statements	Percentage Responses[1]			
	Agree	Uncertain	Disagree	Not Applicable
1. "We have at least one industry partner who is committed to support some of our work after NSF funding has ended."	60	11	19	10
2. "Our use of a national review committee has helped make our advisory committees more effective."	39	13	8	40
3. "The instrumentation and equipment we secured as part of our ATE grant will be used by the college after the grant ends."	69	2	2	26
4. "Our ATE grant experience has caused our administration to encourage other faculty to seek external funding to address workforce needs."	73	10	11	6
5. "It is doubtful that the relationships we have established with our various partners will continue after our ATE grant has ended."	6	7	87	1
6. "Changes made in our technological education program will keep going after our current grant ends."	84	4	5	8
7. "Revenue earned from the sale of educational materials is used to provide scholarships for students."	4	7	23	67
8. "Alumni of our project are ambassadors to the larger technical community and tell potential students about the value of technology education."	67	12	4	17
9. "Through this grant we have created liaisons with our industry partners and academia that will end when our grant does."	13	4	81	2
10. "Our faculty has become a part of a collegial network that will continue to share program information, workforce trends, and cutting-edge instructional technologies."	82	8	3	7
11. "Most of the programs and activities started during our ATE grant will come to an end when our NSF funding stops."	14	8	78	1
12. "The professional development program(s) we developed is/are used at other sites."	52	17	13	18

13. "The new curriculum was created through the regular institutional approval process so all the new classes are in the regular college catalogue and are part of approved college degrees."	73	5	3	20
14. "Our Center/Project has formed a not-for-profit corporation to help us continue our work beyond NSF funding."	7	4	45	44
15. "Very few of the graduates prepared under our grant are employed as technicians."	6	13	60	21
16. "It is unrealistic to expect that ATE grants will have a long term impact on community colleges."	2	6	89	2
17. "We will be able to keep our project/center going by obtaining income for specific education services."	28	31	20	20
18. "The recruitment efforts developed through the grant will be incorporated into the college's general recruitment activities."	58	15	8	18
19. "The materials we have developed are seldom used by other colleges for technician preparation programs."	11	19	56	14
20. "The teaching methods adapted by faculty as part of our ATE project will continue to be used after the grant ends."	86	6	2	7
21. "The grant has enhanced our reputation as a regional leader in advanced technology education."	86	7	5	3
22. "Internships, supported by industry, will continue as a way to provide our students with exposure to the real world."	61	10	3	26
23. "We would not be able to continue our project/center without continued funding from NSF. "	36	21	40	3
1. Totals do not always equal 100% because of rounding errors.				

Based on your responses, what are your sustainability strength areas? _____
_____
_____
_____

What sustainability areas have room for improvement?_____
_____
_____
_____

Based on the above analysis, develop a plan for addressing your sustainability concerns. Explain how you will address your limitations, if any, and maintain your strength areas.
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