Strategies and Insights into

Evaluation Plans for NSF ATE Proposals

Begins at 1 p.m. Eastern

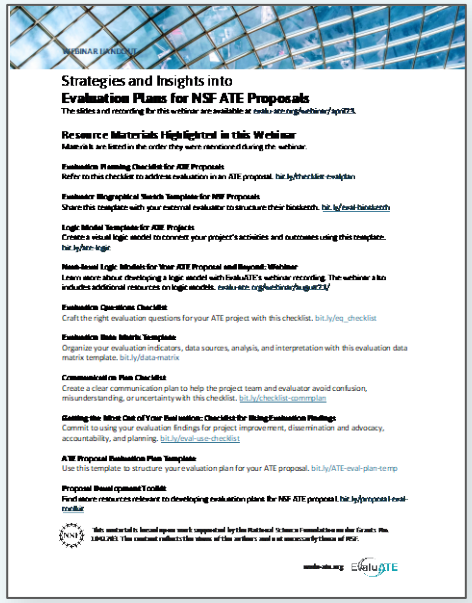
EvaluATE

EvaluATE

www.evalu-ate.org

Materials

Slides



Additional Resources

Recording

Introductions

Samantha

Hooker

Lyssa

Wilson Becho

Behind the Scenes

Maureen
Green

Lori
Wingate

Erika
Sturgis

Megan
López

Thank You

Nikki
Glazer
Stoicoiu

Elizabeth
Hawthorne

Elaine
Craft

MENTOR CONNECT

Pam
Silvers

MENTOR CONNECT

Emery
DeWitt

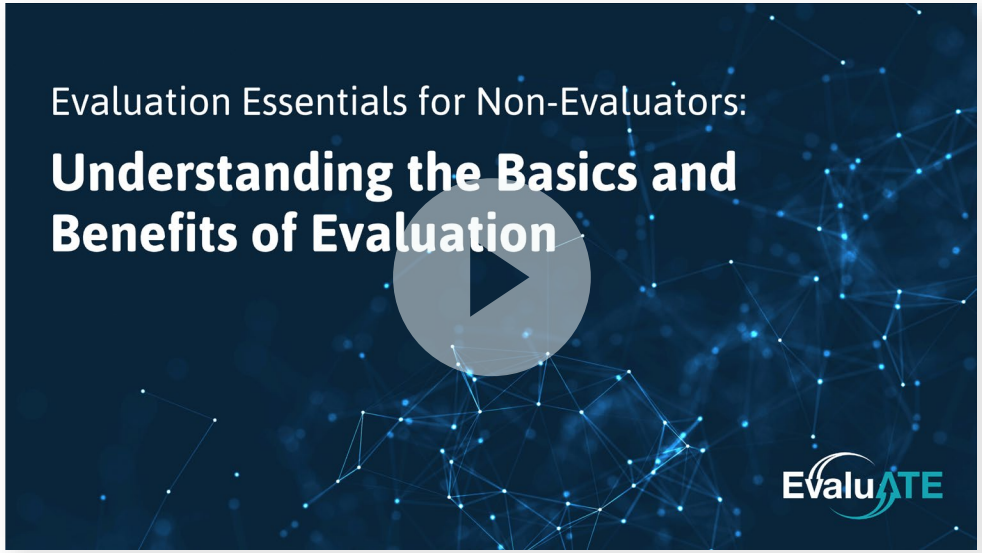
MENTOR CONNECT

This material is based upon work supported by the National Science Foundation under Grants No. 1841783. The content reflects the views of the authors and not necessarily those of NSF.

Lyssa

Resources

WHAT IS EVALUATION?



Toolkit for Pre-Award ATE Evaluation

Essential Steps: Where to Start and What to Do Next

Lyssa Wilson Becho | June 2023

The resources in this toolkit are intended to assist for those applying to the National Science Foundation's Advanced Technological Education (ATE) program. The suggested steps below can guide grant seekers and grant professionals through the process of identifying an independent evaluator and developing an evaluation plan. Practical details on carrying out each of these milestones can be found in the associated resources.

PRE-WORK

Understand the purpose and value of evaluation to your ATE project

Watch this webinar on evaluation essentials for non-evaluators (bit.ly/eval-essentials-webinar) or refer to this list of ATE evaluation tasks (bit.ly/ate-eval-tasks) to get a deeper sense of why evaluation is required in the NSF ATE program and what is involved in each stage.

STEP 1

Know your institution or organization's requirements for procuring an evaluator

Call your institution's procurement officer, purchasing or fiscal agent, or grants manager to ask about specific policies. Refer to this guide to support your understanding of the evaluator procurement process (bit.ly/eval-procurement-map).

STEP 2A, if you *can* name an evaluator

Search for evaluators with skills and experience that fit your project's needs

Use this guide to answer common questions about choosing an evaluator including where to look, what qualifications to look for, and how to compensate them (bit.ly/finding-evaluator). When interviewing evaluators, refer to this list of questions to help determine whether an evaluator is a good fit for your project (bit.ly/qs-for-evaluators). Once you have selected an evaluator, they can begin developing the evaluation plan.

STEP 2B, if you cannot name an evaluator in your proposal due to your institution's policies

Draft an evaluation plan for your ATE proposal

In cases where you cannot name an evaluator, the grant seeker is responsible for writing their own evaluation plan. Refer to this checklist to know where and how to address evaluation in an ATE proposal (bit.ly/checklist-evalplan). More resources can be found in the evaluation plan toolkit for ATE proposals (bit.ly/proposal-eval-toolkit).

STEP 3

Review evaluation plan with full ATE proposal to ensure alignment

Read this blog series for tips on developing a strong evaluation plan for your ATE proposal (bit.ly/eval-plan-blog-series).

STEP 4

Submit your ATE proposal

Once you receive funding, refer to the checklist for getting started with your evaluation post-award (bit.ly/post-award-eval). If you were unable to name an evaluator in your proposal, revisit Step 2A.

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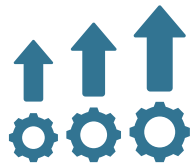
Evaluation

PURPOSES



Project improvement

Accountability

Evidence

Evaluation

PURPOSES

"if you don't evaluate and assess your activities and outcomes you can't know if the project was successful.

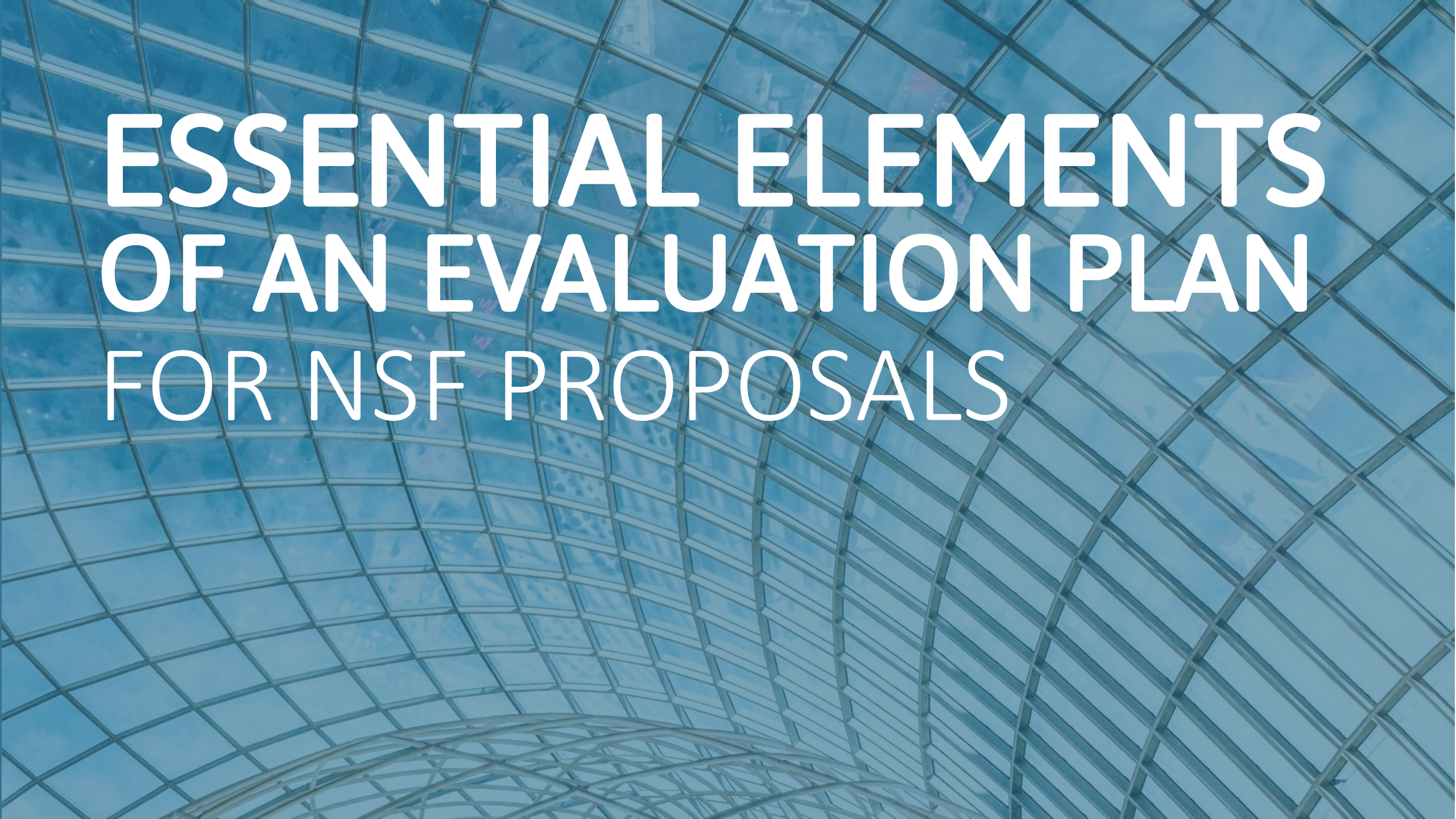
It also provides the project team with data to convince others of the success of the project as well as contributing to the body of knowledge in that particular area of STEM."

Celeste Carter

ATE Program Director

Evaluation

FOUR BASIC STEPS

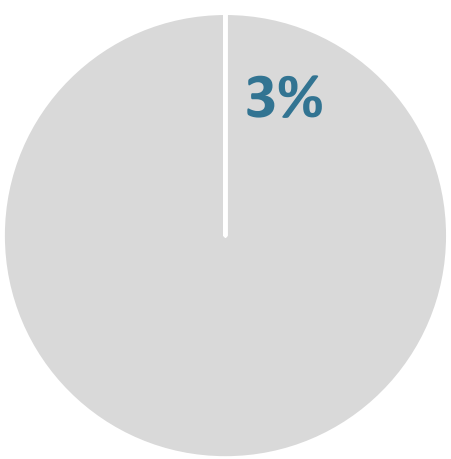


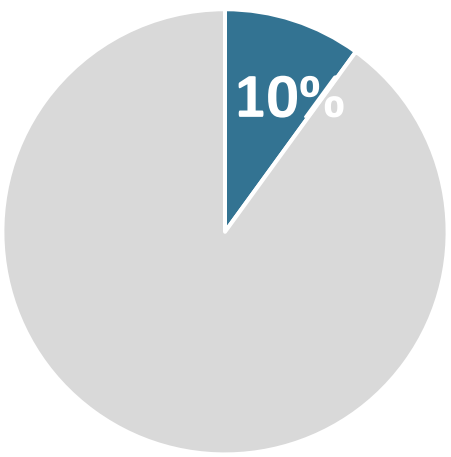
ESSENTIAL ELEMENTS OF AN EVALUATION PLAN FOR NSF PROPOSALS

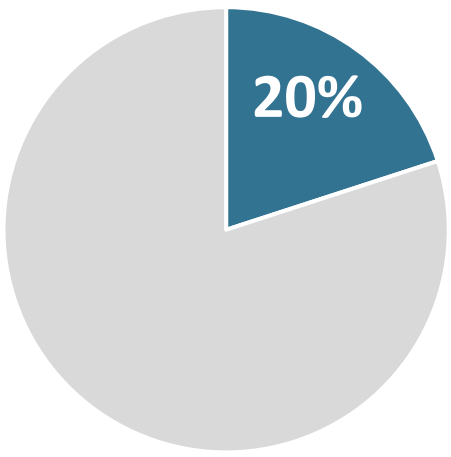
Evaluation Plans

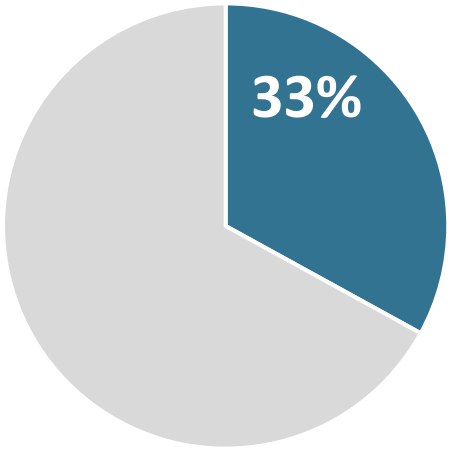
POLL QUESTION

- What proportion of a proposal should be dedicated to an evaluation plan?



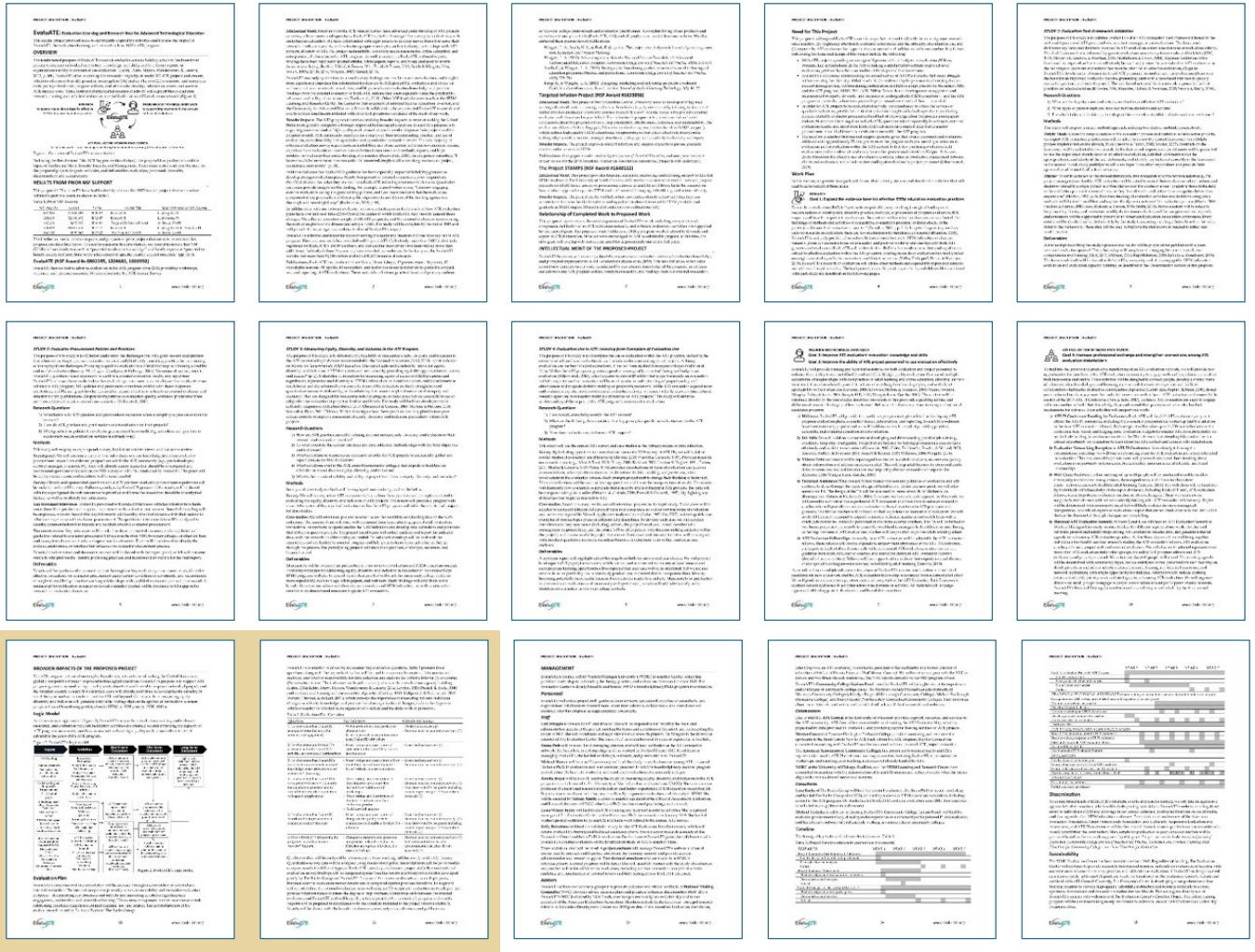






NSF Project Description

15 PAGES



Evaluation Plan

1 – 2 pages

Evaluation Plan

1-2 PAGES

Evaluator 1

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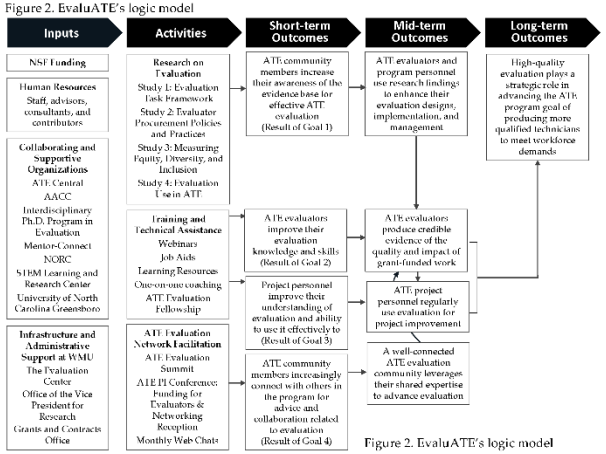
Logic Model

As shown in our logic model (Figure 2), EvaluATE's research on evaluation, training and technical assistance, and evaluation network facilitation activities are oriented toward enhancing the capacity of ATE program community members to conduct and use high-quality evaluation in the interest of advancing the goals of the ATE program.

Figure 2. EvaluATE's logic model



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Questions	*Key Indicators*	*Methods and Sources*
1. To what extent has EvaluATE engaged its intended and other audiences? (Engagement)	- Webinar attendance and participant characteristics - Users' reports of sharing information from EvaluATE with others	- Participation records (I) - Biannual external evaluation surveys (E)
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Evaluation Plan

1-2 PAGES

Evaluator

Evaluation Questions 2

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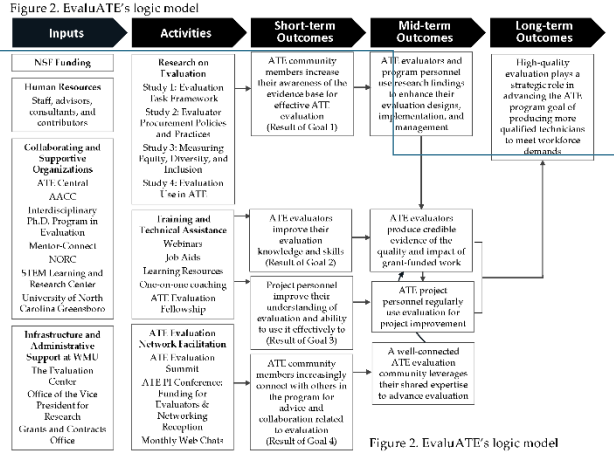

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Evaluation Plan

1-2 PAGES

Evaluator

Evaluation Questions

Data 3

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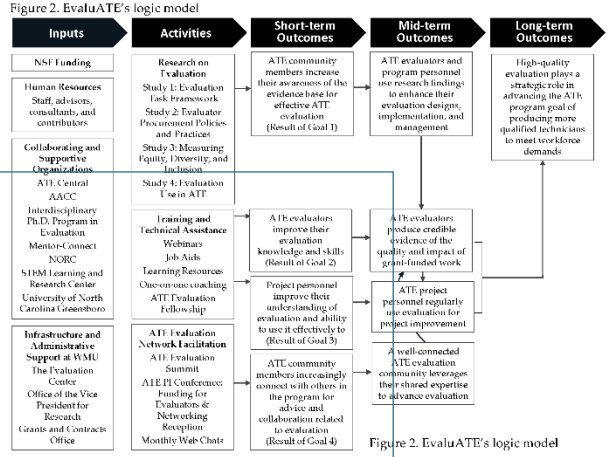

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Evaluation Plan

1-2 PAGES

Evaluator

Evaluation Questions

Data

Communication & Use 4

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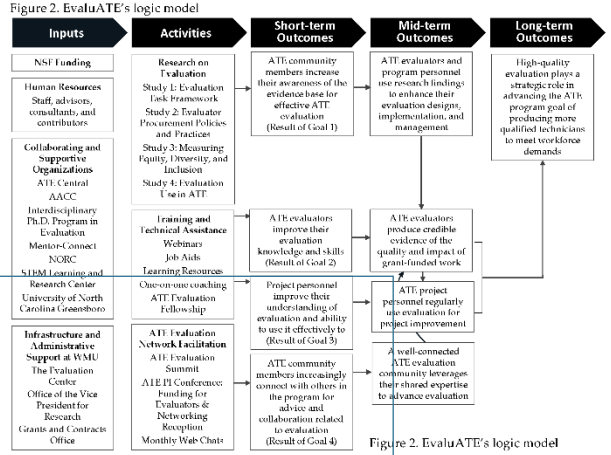

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Evaluation Plan

1-2 PAGES

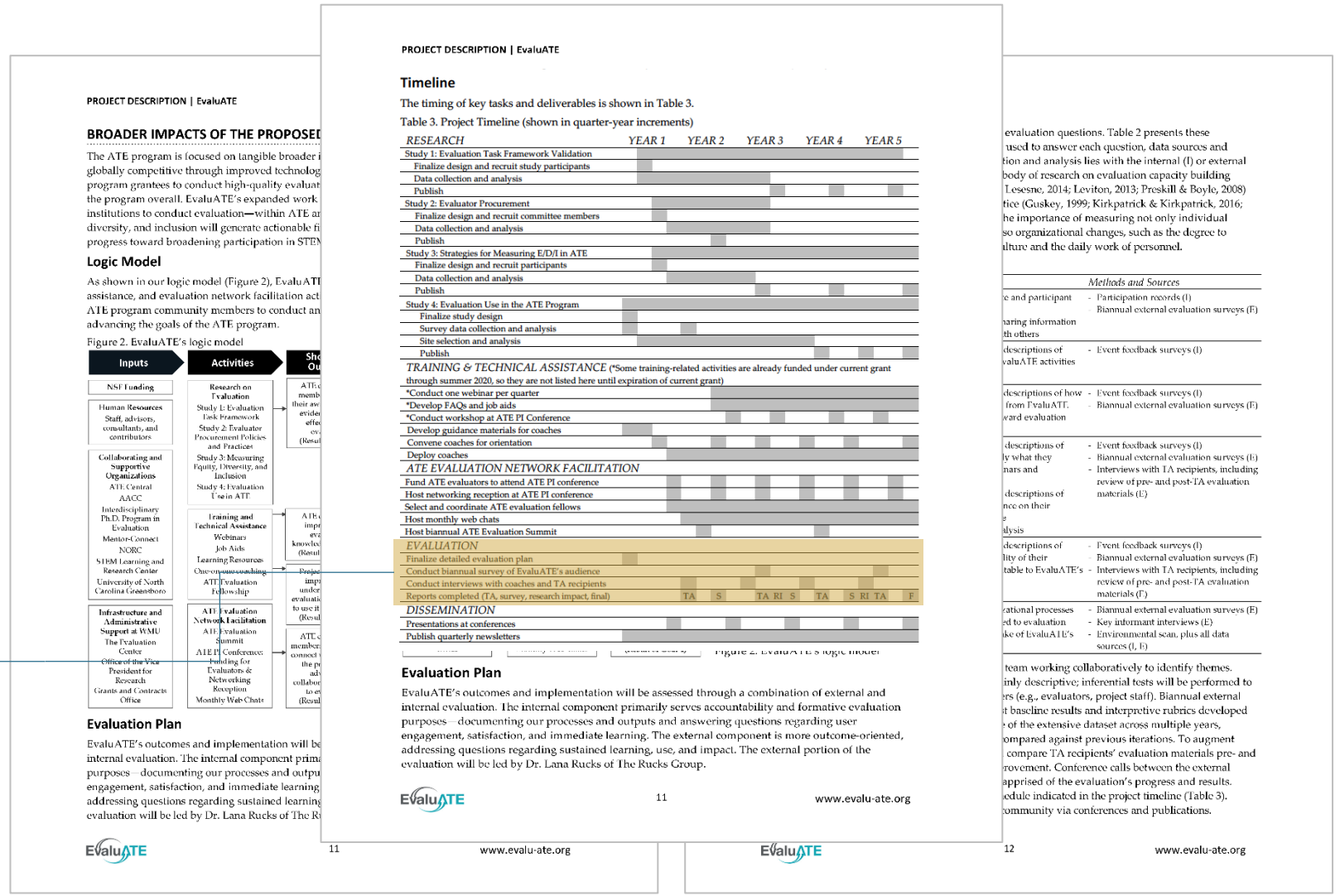
Evaluator

Evaluation Questions

Data

Communication & Use

Timeline 5



PROJECT DESCRIPTION | EvaluATE

Timeline

The timing of key tasks and deliverables is shown in Table 3.

Table 3. Project Timeline (shown in quarter-year increments)

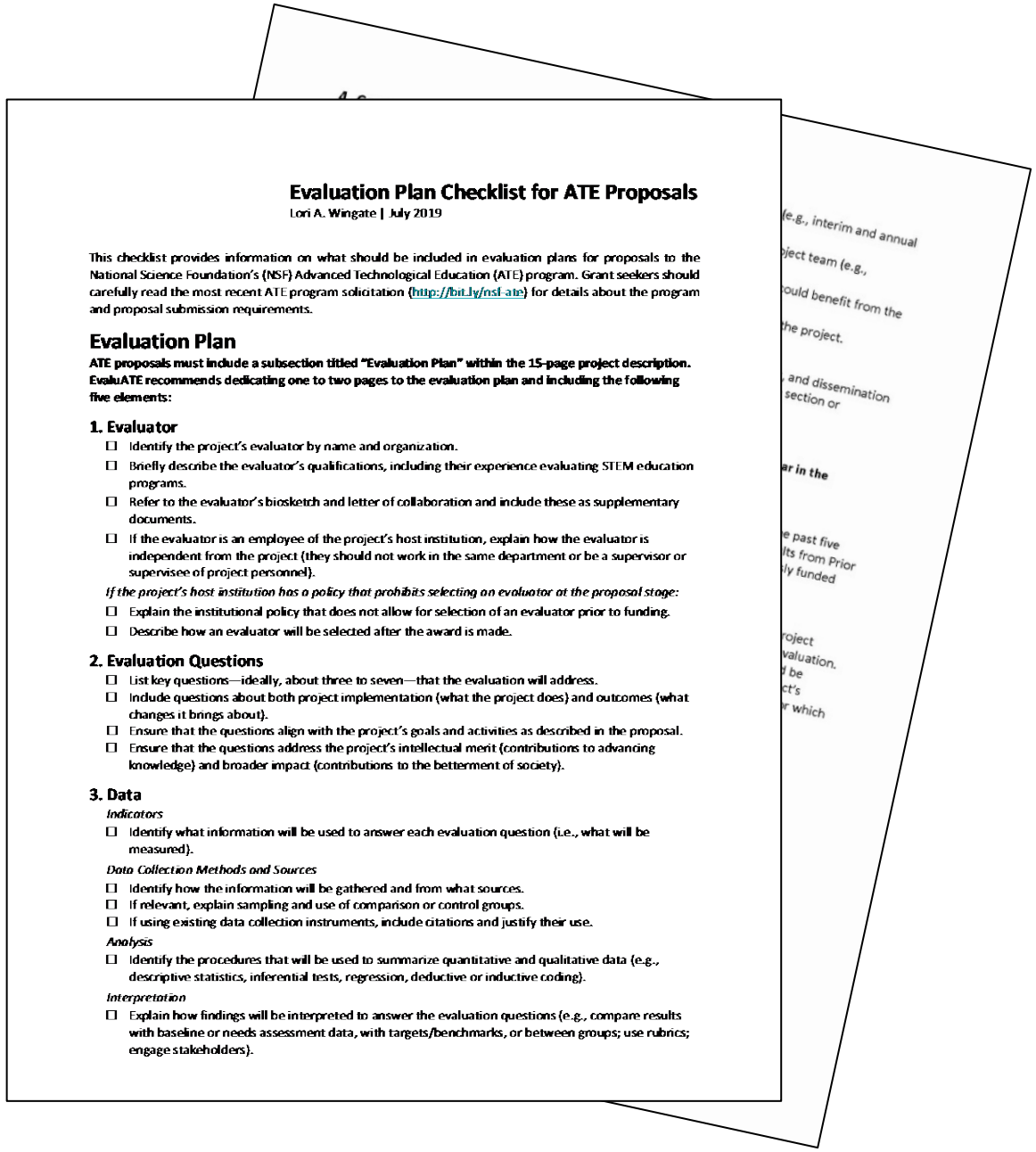
RESEARCH	*YEAR 1*	*YEAR 2*	*YEAR 3*	*YEAR 4*	*YEAR 5*
Study 1: Evaluation Task Framework Validation					
Finalize design and recruit study participants					
Data collection and analysis					
Publish					
Study 2: Evaluator Procurement					
Finalize design and recruit committee members					
Data collection and analysis					
Publish					
Study 3: Strategies for Measuring E/D/I in ATE					
Finalize design and recruit participants					
Data collection and analysis					
Publish					
Study 4: Evaluation Use in the ATE Program					
Finalize study design					
Survey data collection and analysis					
Site selection and analysis					
Publish					
TRAINING & TECHNICAL ASSISTANCE (*Some training-related activities are already funded under current grant through summer 2020, so they are not listed here until expiration of current grant)					
*Conduct one webinar per quarter					
*Develop FAQs and job aids					
*Conduct workshop at ATE PI Conference					
Develop guidance materials for coaches					
Convene coaches for orientation					
Deploy coaches					
ATE EVALUATION NETWORK FACILITATION					
Fund ATE evaluators to attend ATE PI conference					
Host networking reception at ATE PI conference					
Select and coordinate ATE evaluation fellows					
Host monthly web chats					
Host biannual ATE Evaluation Summit					
EVALUATION					
Finalize detailed evaluation plan					
Conduct biannual survey of EvaluATE's audience					
Conduct interviews with coaches and TA recipients					
Reports completed (TA, survey, research impact, final)	TA S		TA RI S	TA	S RI TA F
DISSEMINATION					
Presentations at conferences					
Publish quarterly newsletters					

Evaluation Plan

EvaluATE's outcomes and implementation will be assessed through a combination of external and internal evaluation. The internal component primarily serves accountability and formative evaluation purposes—documenting our processes and outputs and answering questions regarding user engagement, satisfaction, and immediate learning. The external component is more outcome-oriented, addressing questions regarding sustained learning, use, and impact. The external portion of the evaluation will be led by Dr. Lana Rucks of The Rucks Group.

Resource

EVAL PLAN CHECKLIST



Evaluation Plan Checklist for ATE Proposals

Lori A. Wingate | July 2019

This checklist provides information on what should be included in evaluation plans for proposals to the National Science Foundation's (NSF) Advanced Technological Education (ATE) program. Grant seekers should carefully read the most recent ATE program solicitation (http://bit.ly/nsf-ate) for details about the program and proposal submission requirements.

Evaluation Plan

ATE proposals must include a subsection titled "Evaluation Plan" within the 15-page project description. EvaluATE recommends dedicating one to two pages to the evaluation plan and including the following five elements:

1. Evaluator

- ☐ Identify the project's evaluator by name and organization.
- ☐ Briefly describe the evaluator's qualifications, including their experience evaluating STEM education programs.
- ☐ Refer to the evaluator's biosketch and letter of collaboration and include these as supplementary documents.
- ☐ If the evaluator is an employee of the project's host institution, explain how the evaluator is independent from the project (they should not work in the same department or be a supervisor or supervisee of project personnel).

If the project's host institution has a policy that prohibits selecting an evaluator at the proposal stage:

- ☐ Explain the institutional policy that does not allow for selection of an evaluator prior to funding.
- ☐ Describe how an evaluator will be selected after the award is made.

2. Evaluation Questions

- ☐ List key questions—ideally, about three to seven—that the evaluation will address.
- ☐ Include questions about both project implementation (what the project does) and outcomes (what changes it brings about).
- ☐ Ensure that the questions align with the project's goals and activities as described in the proposal.
- ☐ Ensure that the questions address the project's intellectual merit (contributions to advancing knowledge) and broader impact (contributions to the betterment of society).

3. Data

Indicators

- ☐ Identify what information will be used to answer each evaluation question (i.e., what will be measured).

Data Collection Methods and Sources

- ☐ Identify how the information will be gathered and from what sources.
- ☐ If relevant, explain sampling and use of comparison or control groups.
- ☐ If using existing data collection instruments, include citations and justify their use.

Analysis

- ☐ Identify the procedures that will be used to summarize quantitative and qualitative data (e.g., descriptive statistics, inferential tests, regression, deductive or inductive coding).

Interpretation

- ☐ Explain how findings will be interpreted to answer the evaluation questions (e.g., compare results with baseline or needs assessment data, with targets/benchmarks, or between groups; use rubrics; engage stakeholders).

1 Evaluator

Evaluator

EVAL PLAN CHECKLIST

- ☐ Identify the project's evaluator
- ☐ Describe the evaluator's qualifications
- ☐ Refer to the evaluator's biosketch and letter of collaboration

Remember Jen Genericson*?

She has a GREAT idea
for an ATE proposal

*This is a fictional character and project.
Any resemblance to actual persons or projects is coincidental.

1. Embed training on sanitary welding into existing courses

2. Professional development for faculty

3. Purchase new lab equipment

Resources

IDENTIFYING YOUR EVALUATOR

Guide to Finding and Selecting an Evaluator

EvaluATE

Finding and Selecting an Evaluator for Advanced Technological Education (ATE) Proposals

Lori A. Wingate | July 2017 | www.evalu-ate.org

ATE PROPOSERS SHOULD CAREFULLY READ THE ATE PROGRAM SOLICITATION: bit.ly/2017ATE

All ATE proposals are required to request "funds to support an evaluator independent of the project." Ideally, this *external evaluator* should be identified in the project proposal. The information in this guide is for individuals who are able to select and work with an external evaluator at the proposal stage. However, some institutions prohibit selecting an evaluator on a noncompetitive basis in advance of an award being made. Advice for individuals in that situation is provided in an EvaluATE blog (bit.ly/rearick) and newsletter article (bit.ly/no-eval).

This guide includes advice on how to locate and select an external evaluator. It is not intended as a guide for developing an evaluation plan or contracting with an evaluator.

1. **What is an external evaluator?**

   An external evaluator is the person who will lead the design and implementation of the evaluation of your ATE project. The evaluation will include systematic collection and analysis of evidence related to the quality, effectiveness, and impact of the project. To be *external,* the evaluator must be *independent of the project* (see Question 3).

2. **When should I start working with an evaluator?**

   Proposal developers should contact an evaluator at least one month in advance of the proposal's due date—earlier if possible. A good evaluation plan should be closely aligned with the project's goals and activities. To achieve good alignment, the evaluator needs time to review a draft of the proposal, ask questions, and develop a sound evaluation plan. With short notice, some evaluators may offer to provide a generic evaluation plan. However, seasoned proposal reviewers will give your proposal a more favorable review if it has a well-integrated, tailored evaluation plan.

3. **Where should I look for an evaluator?**

   There is no list of vetted or approved evaluators for NSF projects. It is up to the proposal developer (which is usually the principal investigator) to locate an evaluator and determine if they are qualified and right for a project.

   Here are three sources for locating a potential evaluator:

   - Ask colleagues for recommendations: If you know someone with a grant that has an evaluation component, ask for the evaluator's name and contact information.
   - Use the American Evaluation Association's evaluator directory (bit.ly/aea-dir): It's searchable by state and keyword.
   - Use ATE Central's evaluator map (atecentral.net/evaluators): This interactive map can be used to identify evaluators by location and the types of ATE projects they evaluate.

   Most ATE projects employ evaluators based outside of their home institutions. However, program rules do allow grant recipients to contract with an evaluator who is employed by the project's home institution, as long as the evaluator is *independent of the project*. That is, the evaluator should not work in the same unit

This material is based upon work supported by the National Science Foundation under Grant No. 1600992 Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Resources

IDENTIFYING YOUR EVALUATOR

Evaluator Procurement Process

EvaluATE

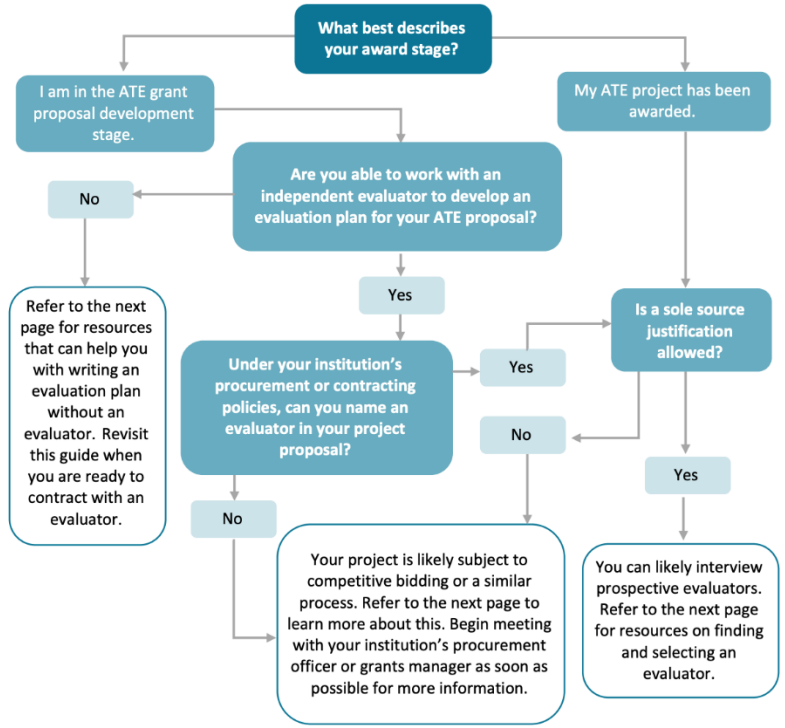
Guide to Navigating the Evaluator Procurement Process

Megan López & Michael Lesiecki| February 2023

Every NSF-funded ATE project is required to include an evaluation plan in its proposal and to work with an independent evaluator. For many projects, the act of procuring independent evaluation services is subject to institutional procurement policies. This step-by-step map aims to provide prospective and new ATE grantees with a general overview of when and how to select an evaluator. This resource may be most helpful while developing an ATE proposal and/or before naming an independent evaluator.

Remember, this process varies across institutions and can take time. Therefore, we recommend meeting early on with those who can walk you through your institution's specific process (e.g., your institution's procurement officer, purchasing or fiscal agent, or grants manager).

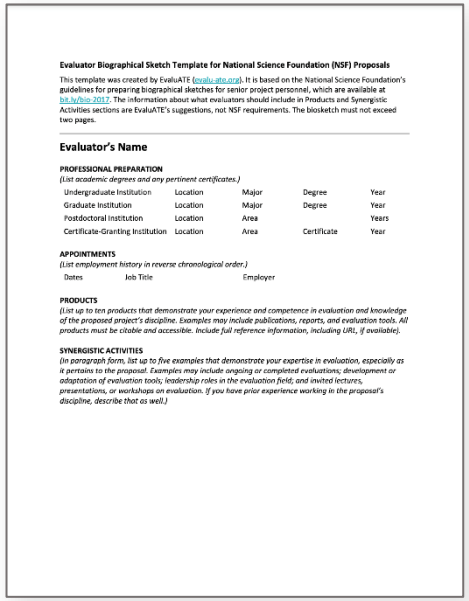
Mapping Out the Evaluator Procurement Process



Resources

IDENTIFYING YOUR EVALUATOR

Evaluator Biosketch Template



Evaluator Biographical Sketch Template for National Science Foundation (NSF) Proposals

This template was created by EvaluATE (evalu-ate.org). It is based on the National Science Foundation's guidelines for preparing biographical sketches for senior project personnel, which are available at bit.ly/bio-2017. The information about what evaluators should include in Products and Synergistic Activities sections are EvaluATE's suggestions, not NSF requirements. The biosketch must not exceed two pages.

Evaluator's Name

PROFESSIONAL PREPARATION

(List academic degrees and any pertinent certificates.)

Undergraduate Institution	Location	Major	Degree	Year
Graduate Institution	Location	Major	Degree	Year
Postdoctoral Institution	Location	Area		Years
Certificate-Granting Institution	Location	Area	Certificate	Year

APPOINTMENTS

(List employment history in reverse chronological order.)

Dates	Job Title	Employer

PRODUCTS

(List up to ten products that demonstrate your experience and competence in evaluation and knowledge of the proposed project's discipline. Examples may include publications, reports, and evaluation tools. All products must be citable and accessible. Include full reference information, including URL, if available).

SYNERGISTIC ACTIVITIES

(In paragraph form, list up to five examples that demonstrate your expertise in evaluation, especially as it pertains to the proposal. Examples may include ongoing or completed evaluations; development or adaptation of evaluation tools; leadership roles in the evaluation field; and invited lectures, presentations, or workshops on evaluation. If you have prior experience working in the proposal's discipline, describe that as well.)

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2 Evaluation Questions

Evaluation Questions

EVAL PLAN CHECKLIST

- ☐ List the key questions that the evaluation will address
- ☐ Include questions about both project implementation and outcomes
- ☐ Ensure that questions align with project's goals and activities

Evaluation Questions

WHAT MAKES A GOOD EVALUATION QUESTION?

Evaluative

Not evaluative:
How many students did the project serve?

Evaluative:
What was the project's impact on program enrollment?

Evaluation Questions

WHAT MAKES A GOOD EVALUATION QUESTION?

Evaluative

Reasonable

Unreasonable:
Did the project increase hygienic welding employment in the state?

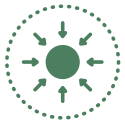
Reasonable:
To what extent did students served by the project find employment in the hygienic welding sector?

Evaluation Questions

WHAT MAKES A GOOD EVALUATION QUESTION?

Evaluative

Reasonable



Specific

Vague:
Did the project increase instructor effectiveness?

Specific:
To what extent did participating instructors increase their knowledge about sanitary welding techniques?

Evaluation Questions

WHAT MAKES A GOOD EVALUATION QUESTION?

- Evaluative
- Reasonable
- Specific
- **Answerable**

Unanswerable:
To what extent does the project affect long-term persistence in STEM careers?

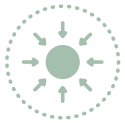
Answerable:
To what extent does the project affect students interest in pursuing a future career in STEM?

Evaluation Questions

WHAT MAKES A GOOD EVALUATION QUESTION?

Evaluative

Reasonable

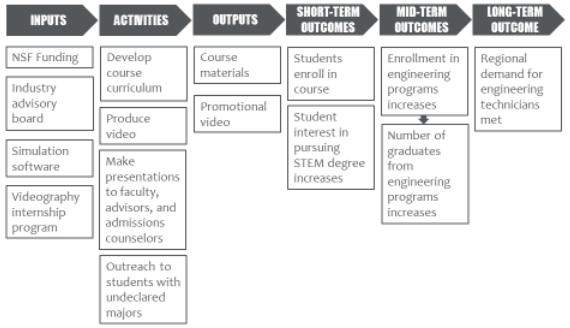

Specific

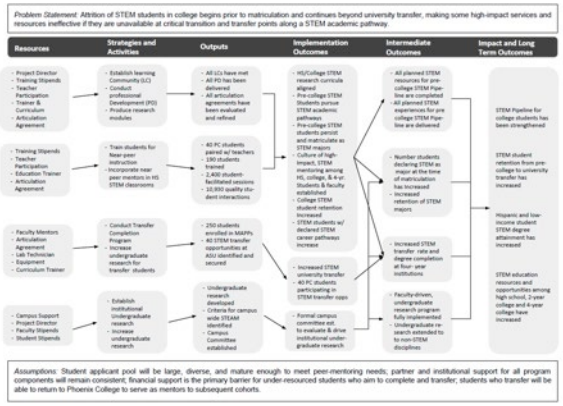
Answerable

Complete

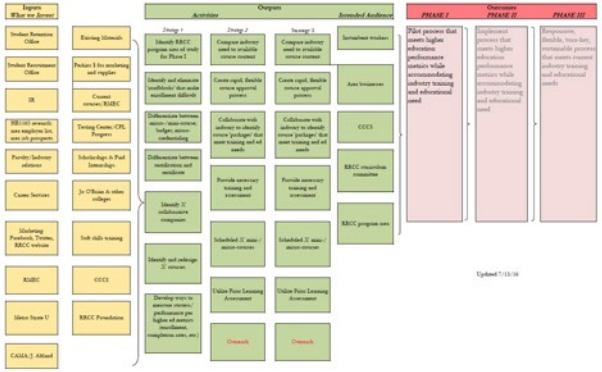
Logic Models

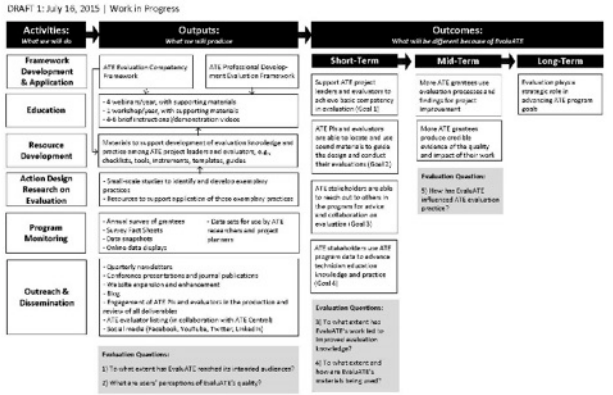
ORGANIZING EVALUATION QUESTIONS





Inputs/ Resources	Activities /Tasks	Outputs / Deliverables	Short-Term Outcomes	Mid-Term Outcomes	Long-Term Outcomes
Needs Assessment & Networking Development •Survey tool •List of experts •Interview strategy	•Conduct Survey •Recruit faculty & students •Conduct interviews •Analyze Survey and interviews	•Prioritize curricula from findings •Publicize needs assessment on QCS/CCS website	•Establish a baseline for industry needs & standards with the survey and interview results	•Use data as the framework for the pilot QCS/CSS curricula design	•Needs assessment findings are accepted as industry standards •Researchers present and publish on the QCS/CSS model
Faculty Training •Teach-Flipped MOOC •QKD platform technology installed •QCS Learning Lab setup	•Revise Teach-Flipped MOOC for QCS faculty •Learning Lab used for training •All participating faculty complete training	•Completed Curricula •Complete MOOC & technical training •Collect/analyze training data	•Faculty are prepared to teach in a flipped format and know how to integrate the QKD platform	•Due to positive impact, more faculty interested & recruited •Faculty translate the flipped model and QKD platform to other courses	•Utah QCS/CSS coalition becomes a national / international model •Curricula are marketed as QCS professional development
Pilot Curricula •Students recruited for SLCC pilot •Piloted revised Curricula •Class observations by CTLE & O&ELS	•Curricula built in LMS •Rubrics created •Complete pilot courses •Collect feedback: focus groups, interviews, and classroom observations	•Data analysis of pilot courses •Completed courses student evaluation •Revise courses based on pilots	•Successful implementation of pilot courses •Pilot data used to revise course •Successful course used to recruit students for next courses	•Word of mouth referrals increase students' interest and registration •Students taking SLCC course continue on to University course	• Increase in post-NSF financial support • Increased QCS national reputation • Increase in other cross-discipline teaching
QCS Student Outcomes •Pre- & post-knowledge instrument •Student learning assessments ready	•Collected data from students, faculty, and course analytic system •Analyzed data from students, faculty, and course analytic system	•Courses successfully completed by students •Students move onto the next course in series	•Students report QCS increased knowledge and skills confidence •Students grades align to their perceived learning	•Increased # of QCS students in QCS Pathway •Higher retention rate of QCS/CSS students •Better academic performance for QCS students than non-QCS students	•Students are being hired and retained based on QCS knowledge, skills and dispositions as a result of participation in QCS program
Inter-institutional Collaboration •Participants in the study willing to be part of the interdiscipline collaboration research	•Compile formative data on collaboration •Conduct end-of-grant interviews for cross-institutional collaboration & synergy	•Data Analysis for K-12 with College collaboration •Cross-Institutional findings shared with stakeholders on QCS website	•Faculty and students are actively engaged across the 3 levels of QCS courses	•Establishment of a cross-institutional culture of collaboration •Increased number of presentations and publications across the 3 QCS course levels	•Other programs establish pathways from high school to college •Other successful K-12 – College pathway grants result from this QCS project





Logic Models

EXAMPLE

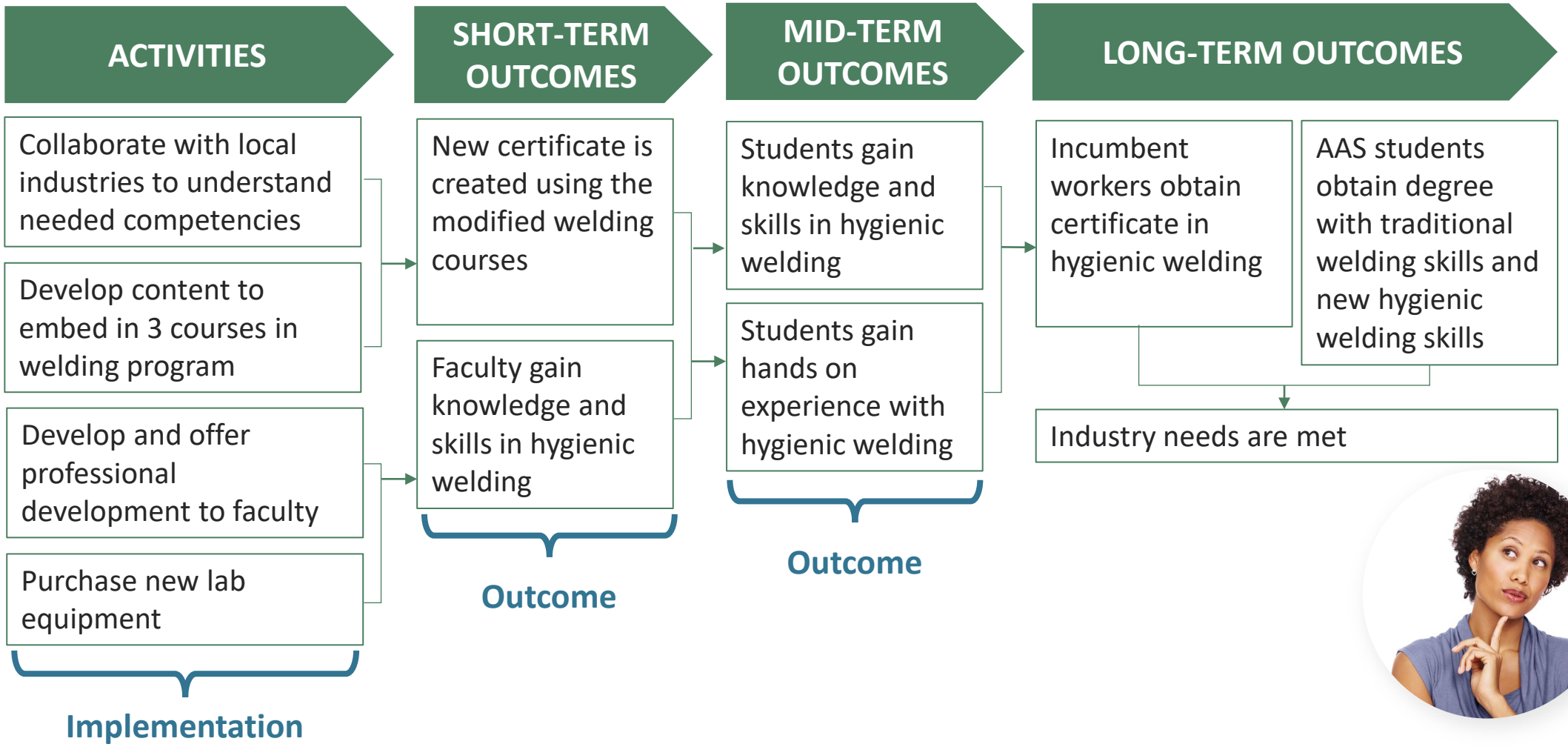
Logic Models

EXAMPLE

ACTIVITIES	SHORT-TERM OUTCOMES	MID-TERM OUTCOMES	LONG-TERM OUTCOMES
Collaborate with local industries to understand needed competencies	New certificate is created using the modified welding courses	Students gain knowledge and skills in hygienic welding	Incumbent workers obtain certificate in hygienic welding
Develop content to embed in 3 courses in welding program	Faculty gain knowledge and skills in hygienic welding	Students gain hands on experience with hygienic welding	AAS students obtain degree with traditional welding skills and new hygienic welding skills
Develop and offer professional development to faculty			Industry needs are met
Purchase new lab equipment			

Logic Models

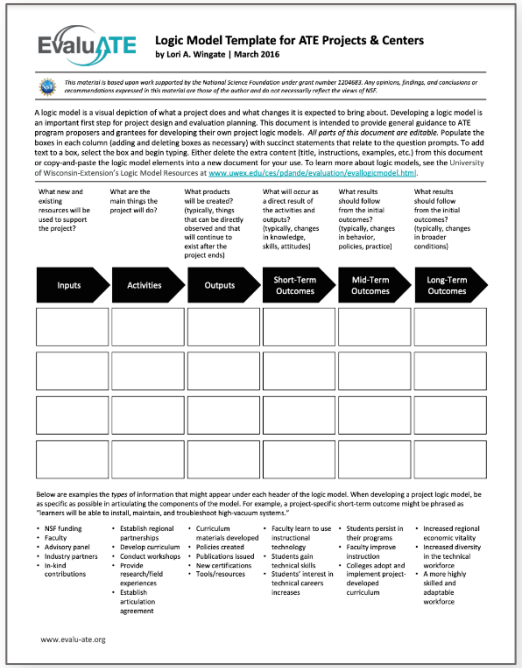
ORGANIZING EVALUATION QUESTIONS



Resources

EVALUATION QUESTIONS

Logic Model Template for ATE Projects



EvaluATE

Logic Model Template for ATE Projects & Centers
by Lori A. Wingate | March 2016

This material is based upon work supported by the National Science Foundation under grant number 1204683. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of NSF.

A logic model is a visual depiction of what a project does and what changes it is expected to bring about. Developing a logic model is an important first step for project design and evaluation planning. This document is intended to provide general guidance to ATE program proposers and grantees for developing their own project logic models. *All parts of this document are editable.* Populate the boxes in each column (adding and deleting boxes as necessary) with succinct statements that relate to the question prompts. To add text to a box, select the box and begin typing. Either delete the extra content (title, instructions, examples, etc.) from this document or copy-and-paste the logic model elements into a new document for your use. To learn more about logic models, see the University of Wisconsin-Extension's Logic Model Resources at www.uwex.edu/ces/pdande/evaluation/evallogicmodel.html.

Inputs	Activities	Outputs	Short-Term Outcomes	Mid-Term Outcomes	Long-Term Outcomes
What new and existing resources will be used to support the project?	What are the main things the project will do?	What products will be created? (typically, things that can be directly observed and that will continue to exist after the project ends)	What will occur as a direct result of the activities and outputs? (typically, changes in knowledge, skills, attitudes)	What results should follow from the initial outcomes? (typically, changes in behavior, policies, practice)	What results should follow from the initial outcomes? (typically, changes in broader conditions)

Below are examples the types of information that might appear under each header of the logic model. When developing a project logic model, be as specific as possible in articulating the components of the model. For example, a project-specific short-term outcome might be phrased as "learners will be able to install, maintain, and troubleshoot high-vacuum systems."

- NSF funding
- Faculty
- Advisory panel
- Industry partners
- In-kind contributions

- Establish regional partnerships
- Develop curriculum
- Conduct workshops
- Provide research/field experiences
- Establish articulation agreement

- Curriculum materials developed
- Policies created
- Publications issued
- New certifications
- Tools/resources

- Faculty learn to use instructional technology
- Students gain technical skills
- Students' interest in technical careers increases

- Students persist in their programs
- Faculty improve instruction
- Colleges adopt and implement project-developed curriculum

- Increased regional economic vitality
- Increased diversity in the technical workforce
- A more highly skilled and adaptable workforce

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Resources

EVALUATION QUESTIONS

Next-Level Logic Models for Your ATE Proposal and Beyond: Webinar

WEBINAR HANDOUT

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evalu-ate.org EvaluATE

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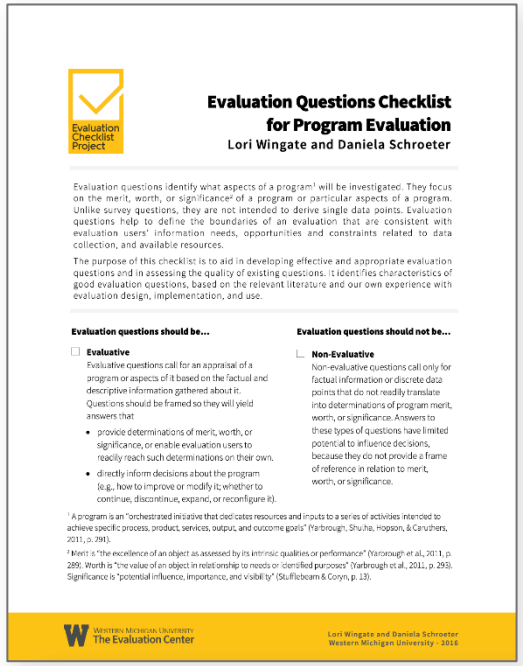
Evaluation Questions Checklist



Evaluation Checklist Project

Evaluation Questions Checklist for Program Evaluation

Lori Wingate and Daniela Schroeter

Evaluation questions identify what aspects of a program[1] will be investigated. They focus on the merit, worth, or significance[2] of a program or particular aspects of a program. Unlike survey questions, they are not intended to derive single data points. Evaluation questions help to define the boundaries of an evaluation that are consistent with evaluation users' information needs, opportunities and constraints related to data collection, and available resources.

The purpose of this checklist is to aid in developing effective and appropriate evaluation questions and in assessing the quality of existing questions. It identifies characteristics of good evaluation questions, based on the relevant literature and our own experience with evaluation design, implementation, and use.

Evaluation questions should be...

☐ **Evaluative**
Evaluative questions call for an appraisal of a program or aspects of it based on the factual and descriptive information gathered about it. Questions should be framed so they will yield answers that

- provide determinations of merit, worth, or significance, or enable evaluation users to readily reach such determinations on their own.
- directly inform decisions about the program (e.g., how to improve or modify it; whether to continue, discontinue, expand, or reconfigure it).

Evaluation questions should not be...

☐ **Non-Evaluative**
Non-evaluative questions call only for factual information or discrete data points that do not readily translate into determinations of program merit, worth, or significance. Answers to these types of questions have limited potential to influence decisions, because they do not provide a frame of reference in relation to merit, worth, or significance.

[1] A program is an "orchestrated initiative that dedicates resources and inputs to a series of activities intended to achieve specific process, product, services, output, and outcome goals" (Yarbrough, Shulha, Hopson, & Caruthers, 2011, p. 291).

[2] Merit is "the excellence of an object as assessed by its intrinsic qualities or performance" (Yarbrough et al., 2011, p. 289). Worth is "the value of an object in relationship to needs or identified purposes" (Yarbrough et al., 2011, p. 293). Significance is "potential influence, importance, and visibility" (Stufflebeam & Coryn, p. 13).

Western Michigan University The Evaluation Center

Lori Wingate and Daniela Schroeter
Western Michigan University • 2016

Strategies and Insights into **Evaluation Plans for NSF ATE Proposals**

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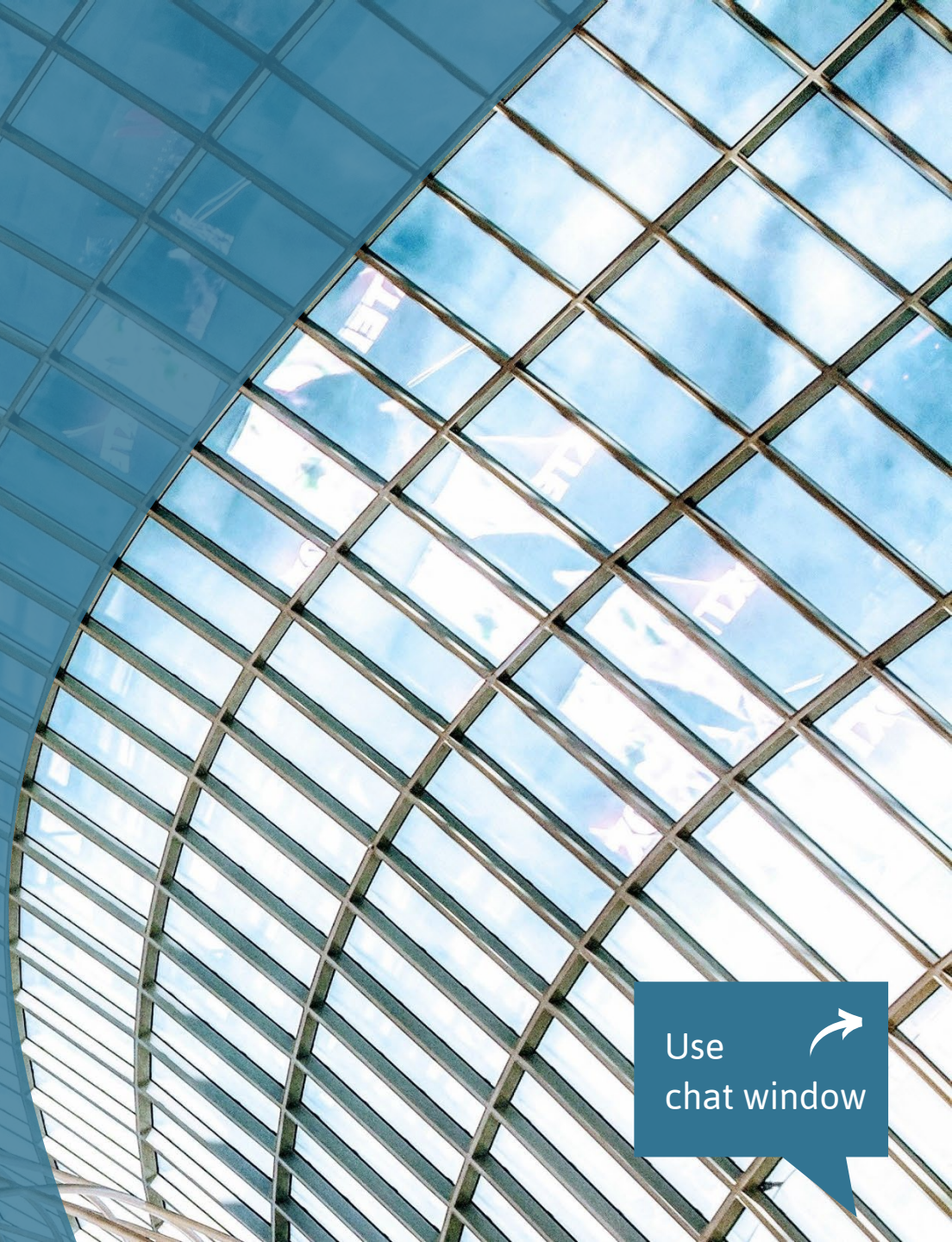
QUESTION

BREAK



Use
chat window

Morris Charts
Line Chart
Area Chart
Bar Chart
Donut Chart
Sparkline Charts
Line Chart
Bar Chart
Pie Chart
25%
Donut Chart
100%

3 Data

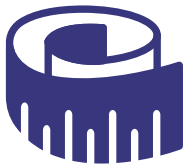
Data

EVAL PLAN CHECKLIST

- ☐ What information will be used to answer the evaluation questions
- ☐ How the information will be obtained and from what sources
- ☐ Procedures for summarizing quantitative and qualitative data
- ☐ Procedures for interpreting findings to answer evaluation questions

Data

KEY TERMS



Indicators

What will be measured in order to answer evaluation questions

Data Collection Methods

Obtaining information needed for the evaluation

Analysis

Transforming raw data into usable information

Interpretation

Translating findings into conclusions that address the evaluation questions

Describing data

CHAT QUESTION

What is your opinion of the description of data that will be used in an evaluation?

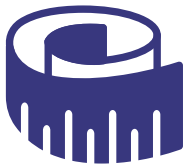
Do you see evidence of *indicators*, *data collection methods*, *analysis*, and *interpretation*?

> "The evaluation will utilize a mixed-methods approach in which quantitative and qualitative measures of performance will be used in both formative and summative manner to gauge the merit and worth of the grant initiative. Methods will include surveys, interviews, and review of program records."

Answer in chat box

Data

KEY TERMS



Indicators

Data Collection Methods

Analysis

Interpretation

It's OK to sacrifice some detail, but must convey there is a concrete plan for collecting and using evaluation data

Data Matrix

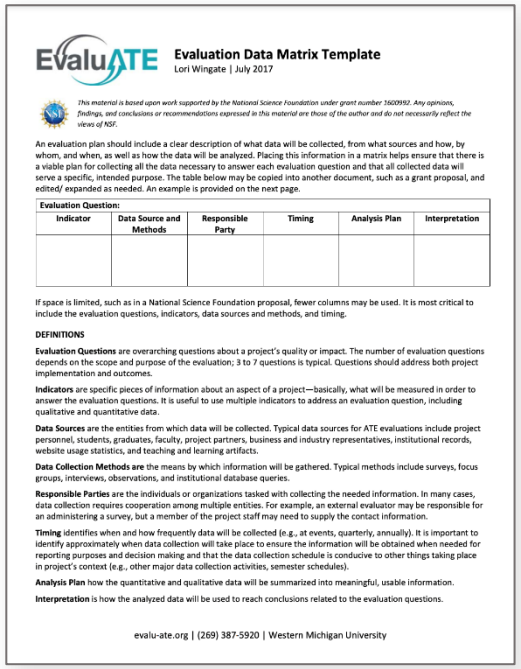
Evaluation Question 3: To what extent is participation in the professional development affecting faculty's knowledge and skills in hygienic welding?

Indicators	Data Sources & Methods	Analysis	Interpretation
Change in faculty knowledge of sanitary techniques and hygienic design	Pre- and post-assessment of faculty	Inferential statistics	Compare understanding before workshop with after workshop
Proficiency of faculty in basic hygienic welding techniques	Observation assessment	Descriptive statistics	Compare with project target of 90% pass rate
Faculty opinions about hygienic welding coursework	Survey	Descriptive statistics Inductive coding of qualitative data	Compare results with rubric to judge degree of satisfaction
…	…	…	…

Resources

DATA

Evaluation Data Matrix Template



EvaluATE **Evaluation Data Matrix Template**
Lori Wingate | July 2017

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An evaluation plan should include a clear description of what data will be collected, from what sources and how, by whom, and when, as well as how the data will be analyzed. Placing this information in a matrix helps ensure that there is a viable plan for collecting all the data necessary to answer each evaluation question and that all collected data will serve a specific, intended purpose. The table below may be copied into another document, such as a grant proposal, and edited/ expanded as needed. An example is provided on the next page.

Evaluation Question:					
Indicator	**Data Source and Methods**	**Responsible Party**	**Timing**	**Analysis Plan**	**Interpretation**

If space is limited, such as in a National Science Foundation proposal, fewer columns may be used. It is most critical to include the evaluation questions, indicators, data sources and methods, and timing.

DEFINITIONS

Evaluation Questions are overarching questions about a project's quality or impact. The number of evaluation questions depends on the scope and purpose of the evaluation; 3 to 7 questions is typical. Questions should address both project implementation and outcomes.

Indicators are specific pieces of information about an aspect of a project—basically, what will be measured in order to answer the evaluation questions. It is useful to use multiple indicators to address an evaluation question, including qualitative and quantitative data.

Data Sources are the entities from which data will be collected. Typical data sources for ATE evaluations include project personnel, students, graduates, faculty, project partners, business and industry representatives, institutional records, website usage statistics, and teaching and learning artifacts.

Data Collection Methods are the means by which information will be gathered. Typical methods include surveys, focus groups, interviews, observations, and institutional database queries.

Responsible Parties are the individuals or organizations tasked with collecting the needed information. In many cases, data collection requires cooperation among multiple entities. For example, an external evaluator may be responsible for an administering a survey, but a member of the project staff may need to supply the contact information.

Timing identifies when and how frequently data will be collected (e.g., at events, quarterly, annually). It is important to identify approximately when data collection will take place to ensure the information will be obtained when needed for reporting purposes and decision making and that the data collection schedule is conducive to other things taking place in project's context (e.g., other major data collection activities, semester schedules).

Analysis Plan how the quantitative and qualitative data will be summarized into meaningful, usable information.

Interpretation is how the analyzed data will be used to reach conclusions related to the evaluation questions.

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4 Communication & Use of Results

Communication & Use

EVAL PLAN CHECKLIST

- ☐ Identify what evaluation reports will be prepared
- ☐ Identify the frequency with which the evaluator will communicate with the project team
- ☐ Describe how evaluation results will be shared with external audiences

ATE-Specific Review Criteria

RELATED TO EVALUATION

- ✓ Is the evaluation likely to provide useful information to the project and others?
- ✓ Will the project evaluation inform others through the communication of results?

Which is the best description of evaluation communication & use?

POLL QUESTION

Example A

The evaluator will work with the project PI to prepare required annual reports submitted to NSF. Evaluation reports will be shared with appropriate decision-makers. The two teams will meet as needed to ensure an effective evaluation.

Example B

The evaluator will meet with the project team quarterly to share evaluation results and receive updates on the project. Interim evaluation reports will be used by project team for improvement. In the final year, the project PI will collaborate with the evaluator to prepare a presentation to present at national conferences.

Example C

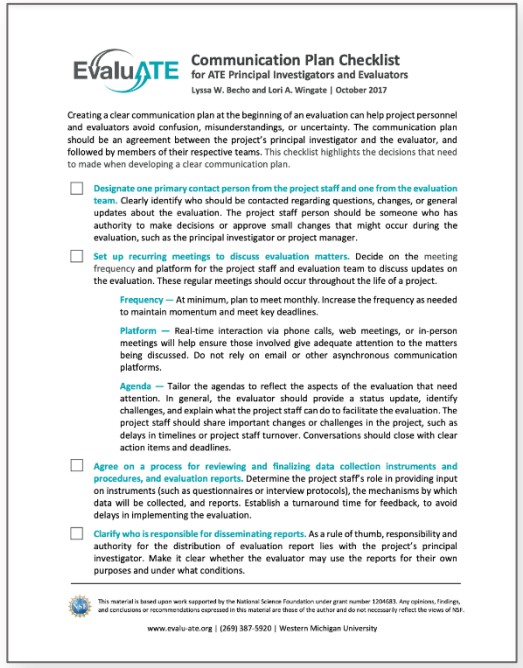
The evaluator will submit annual reports to the project PI and assist the project team in preparing evaluation results for inclusion in the project's annual report to NSF. Evaluation reports will be shared with the project's advisory committee.

Answer in poll box

Resources

COMMUNICATION & USE

Communication Plan Checklist



EvaluATE **Communication Plan Checklist**
for ATE Principal Investigators and Evaluators

Lyssa W. Becho and Lori A. Wingate | October 2017

Creating a clear communication plan at the beginning of an evaluation can help project personnel and evaluators avoid confusion, misunderstandings, or uncertainty. The communication plan should be an agreement between the project's principal investigator and the evaluator, and followed by members of their respective teams. This checklist highlights the decisions that need to made when developing a clear communication plan.

- ☐ **Designate one primary contact person from the project staff and one from the evaluation team.** Clearly identify who should be contacted regarding questions, changes, or general updates about the evaluation. The project staff person should be someone who has authority to make decisions or approve small changes that might occur during the evaluation, such as the principal investigator or project manager.
- ☐ **Set up recurring meetings to discuss evaluation matters.** Decide on the meeting frequency and platform for the project staff and evaluation team to discuss updates on the evaluation. These regular meetings should occur throughout the life of a project.
  - **Frequency** — At minimum, plan to meet monthly. Increase the frequency as needed to maintain momentum and meet key deadlines.
  - **Platform** — Real-time interaction via phone calls, web meetings, or in-person meetings will help ensure those involved give adequate attention to the matters being discussed. Do not rely on email or other asynchronous communication platforms.
  - **Agenda** — Tailor the agendas to reflect the aspects of the evaluation that need attention. In general, the evaluator should provide a status update, identify challenges, and explain what the project staff can do to facilitate the evaluation. The project staff should share important changes or challenges in the project, such as delays in timelines or project staff turnover. Conversations should close with clear action items and deadlines.
- ☐ **Agree on a process for reviewing and finalizing data collection instruments and procedures, and evaluation reports.** Determine the project staff's role in providing input on instruments (such as questionnaires or interview protocols), the mechanisms by which data will be collected, and reports. Establish a turnaround time for feedback, to avoid delays in implementing the evaluation.
- ☐ **Clarify who is responsible for disseminating reports.** As a rule of thumb, responsibility and authority for the distribution of evaluation report lies with the project's principal investigator. Make it clear whether the evaluator may use the reports for their own purposes and under what conditions.

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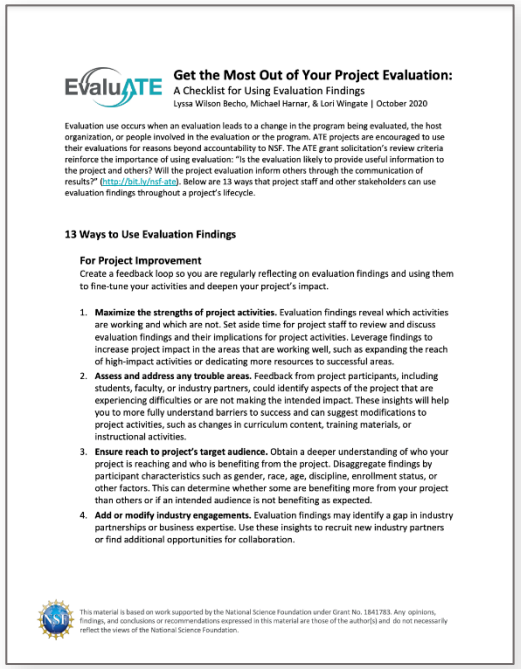

EvaluATE

Get the Most Out of Your Project Evaluation:
A Checklist for Using Evaluation Findings

Lyssa Wilson Becho, Michael Harnar, & Lori Wingate | October 2020

Evaluation use occurs when an evaluation leads to a change in the program being evaluated, the host organization, or people involved in the evaluation or the program. ATE projects are encouraged to use their evaluations for reasons beyond accountability to NSF. The ATE grant solicitation's review criteria reinforce the importance of using evaluation: "Is the evaluation likely to provide useful information to the project and others? Will the project evaluation inform others through the communication of results?" (http://bit.ly/nsf-ate). Below are 13 ways that project staff and other stakeholders can use evaluation findings throughout a project's lifecycle.

13 Ways to Use Evaluation Findings

For Project Improvement
Create a feedback loop so you are regularly reflecting on evaluation findings and using them to fine-tune your activities and deepen your project's impact.

1. **Maximize the strengths of project activities.** Evaluation findings reveal which activities are working and which are not. Set aside time for project staff to review and discuss evaluation findings and their implications for project activities. Leverage findings to increase project impact in the areas that are working well, such as expanding the reach of high-impact activities or dedicating more resources to successful areas.
2. **Assess and address any trouble areas.** Feedback from project participants, including students, faculty, or industry partners, could identify aspects of the project that are experiencing difficulties or are not making the intended impact. These insights will help you to more fully understand barriers to success and can suggest modifications to project activities, such as changes in curriculum content, training materials, or instructional activities.
3. **Ensure reach to project's target audience.** Obtain a deeper understanding of who your project is reaching and who is benefiting from the project. Disaggregate findings by participant characteristics such as gender, race, age, discipline, enrollment status, or other factors. This can determine whether some are benefiting more from your project than others or if an intended audience is not benefiting as expected.
4. **Add or modify industry engagements.** Evaluation findings may identify a gap in industry partnerships or business expertise. Use these insights to recruit new industry partners or find additional opportunities for collaboration.

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5 Timeline

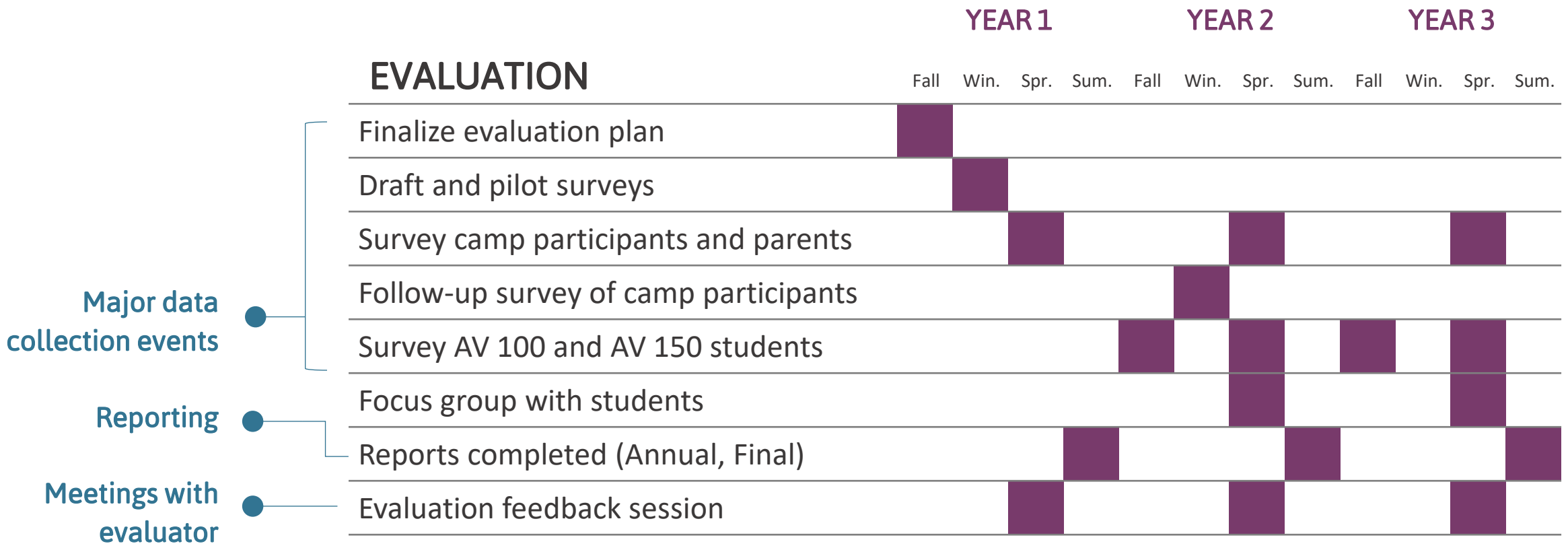
Timeline

EVAL PLAN CHECKLIST

- ☐ Identify when key evaluation activities will occur in order to produce timely information

Evaluation Timeline

EXAMPLE



Evaluation Timeline

EXAMPLE

Evaluation timeline

Timeline

The timing of key tasks and deliverables is shown in Table 3.

Table 3. Project Timeline (shown in quarter-year increments)

RESEARCH	*YEAR 1*	*YEAR 2*	*YEAR 3*	*YEAR 4*	*YEAR 5*
Study 1: Evaluation Task Framework Validation					
Finalize design and recruit study participants					
Data collection and analysis					
Publish					
Study 2: Evaluator Procurement					
Finalize design and recruit committee members					
Data collection and analysis					
Publish					
Study 3: Strategies for Measuring E/D/I in ATE					
Finalize design and recruit participants					
Data collection and analysis					
Publish					
Study 4: Evaluation Use in the ATE Program					
Finalize study design					
Survey data collection and analysis					
Site selection and analysis					
Publish					
TRAINING & TECHNICAL ASSISTANCE (*Some training-related activities are already funded under current grant through summer 2020, so they are not listed here until expiration of current grant)					
*Conduct one webinar per quarter					
*Develop FAQs and job aids					
*Conduct workshop at ATE PI Conference					
Develop guidance materials for coaches					
Convene coaches for orientation					
Deploy coaches					
ATE EVALUATION NETWORK FACILITATION					
Fund ATE evaluators to attend ATE PI conference					
Host networking reception at ATE PI conference					
Select and coordinate ATE evaluation fellows					
Host monthly web chats					
Host biannual ATE Evaluation Summit					
EVALUATION					
Finalize detailed evaluation plan					
Conduct biannual survey of EvaluATE's audience					
Conduct interviews with coaches and TA recipients					
Reports completed (TA, survey, research impact, final)		TA S	TA RI S	TA	S RI TA F
DISSEMINATION					
Presentations at conferences					
Publish quarterly newsletters					

Figure 2. EvaluATE's logic model

Evaluation Plan

EvaluATE's outcomes and implementation will be assessed through a combination of external and internal evaluation. The internal component primarily serves accountability and formative evaluation purposes—documenting our processes and outputs and answering questions regarding user engagement, satisfaction, and immediate learning. The external component is more outcome-oriented, addressing questions regarding sustained learning, use, and impact. The external portion of the evaluation will be led by Dr. Lana Rucks of The Rucks Group.

Evaluation Plan

ESSENTIAL ELEMENTS

- Evaluator 1
- Evaluation Questions 2
- Data 3
- Communication & Use 4
- Timeline 5

BROADER IMPACTS OF THE PROPOSED PROJECT

The ATE program is focused on tangible broader impacts in terms of making the United States more globally competitive through improved technological education. EvaluATE's purpose is to support ATE program grantees to conduct high-quality evaluation that can be used to improve individual projects and the program overall. EvaluATE's expanded work will directly contribute to developing the capacity of institutions to conduct evaluation—within ATE and beyond. Our research on measuring equity, diversity, and inclusion will generate actionable findings that can be applied at institutions to assess progress toward broadening participation in STEM, an NSF priority (NSF, 2018a).

Logic Model

As shown in our logic model (Figure 2), EvaluATE's research on evaluation, training and technical assistance, and evaluation network facilitation activities are oriented toward enhancing the capacity of ATE program community members to conduct and use high-quality evaluation in the interest of advancing the goals of the ATE program.

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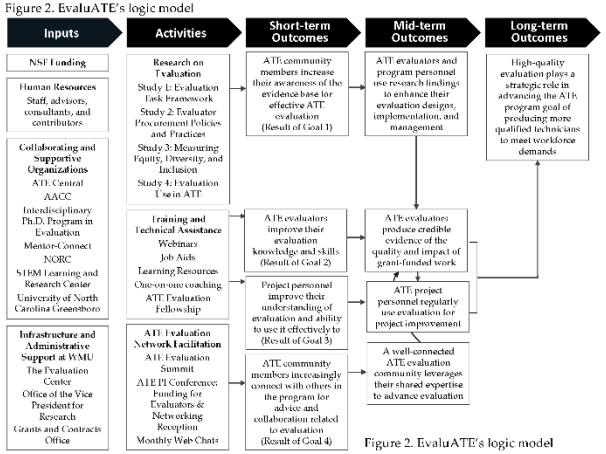

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EvaluATE's evaluation is driven by six overarching evaluation questions. Table 2 presents these questions, along with the key indicators that will be used to answer each question, data sources and methods, and whether responsibility for data collection and analysis lies with the internal (I) or external (E) evaluation teams. The indicators are based on a body of research on evaluation capacity building (Labin, 2014; Labin, Duffy, Meyers, Wandersman & Lesesne, 2014; Leviton, 2013; Preskill & Boyle, 2008) and evaluation of training and communities of practice (Guskey, 1999; Kirkpatrick & Kirkpatrick, 2016; Wenger, Trayner, & de Laat, 2011), which conveys the importance of measuring not only individual changes in attitude, knowledge, and practice, but also organizational changes, such as the degree to which evaluation is reflected in an organization's culture and the daily work of personnel.

Table 2. Evaluation Plan Overview

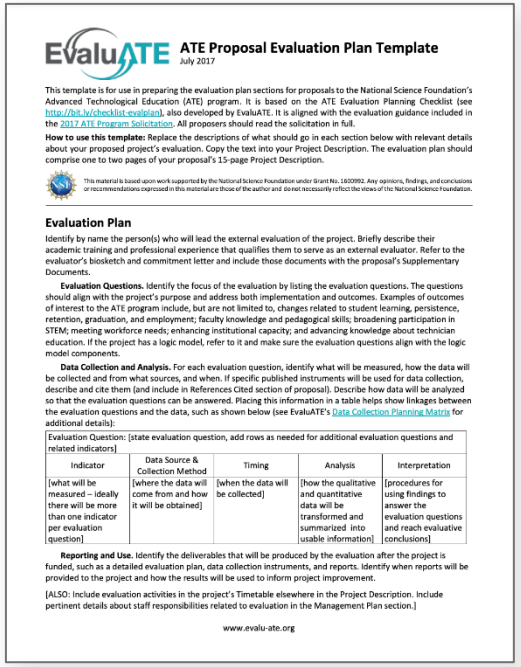
Questions	*Key Indicators*	*Methods and Sources*
1. To what extent has EvaluATE engaged its intended and other audiences? (Engagement)	- Webinar attendance and participant characteristics - Users' reports of sharing information from EvaluATE with others	- Participation records (I) - Biannual external evaluation surveys (E)
2. To what extent are EvaluATE's users satisfied with EvaluATE's activities and resources? (Satisfaction)	- Users' ratings and descriptions of satisfaction with EvaluATE activities and resources	- Event feedback surveys (I)
3. To what extent has EvaluATE's work led to improvements in users' knowledge of and attitudes toward evaluation? (Learning)	- Users' ratings and descriptions of how much they learned from EvaluATE. - Users' attitudes toward evaluation	- Event feedback surveys (I) - Biannual external evaluation surveys (E)
4. To what extent has EvaluATE's work prompted users to (a) modify their evaluation practices and (b) extend their network of evaluation colleagues? (Application)	- Users' ratings and descriptions of their intent to apply what they learned from webinars and workshops - Users' ratings and descriptions of EvaluATE's influence on their evaluation practice - Social network analysis	- Event feedback surveys (I) - Biannual external evaluation surveys (E) - Interviews with TA recipients, including review of pre- and post-TA evaluation materials (E)
5. To what extent has EvaluATE contributed to improvements in evaluation quality? (Impact)	- Users' ratings and descriptions of changes in the quality of their evaluations attributable to EvaluATE's influence	- Event feedback surveys (I) - Biannual external evaluation surveys (E) - Interviews with TA recipients, including review of pre- and post-TA evaluation materials (E)
6. How is EvaluATE influencing the program's overall evaluation capacity? (Impact)	- Changes in organizational processes and practices related to evaluation - Diffusion and uptake of EvaluATE's research findings	- Biannual external evaluation surveys (E) - Key informant interviews (E) - Environmental scan, plus all data sources (I, E)

Qualitative data will be analyzed by a two-member team working collaboratively to identify themes. Quantitative survey data will be analyzed using mainly descriptive; inferential tests will be performed to compare results for different types of EvaluATE users (e.g., evaluators, project staff). Biannual external evaluation survey findings will be compared against baseline results and interpretive rubrics developed jointly by The Rucks Group and EvaluATE. Because of the extensive dataset across multiple years, biannual external evaluation survey results can be compared against previous iterations. To augment self-reported data, the external evaluation team will compare TA recipients' evaluation materials pre- and post-technical assistance to assess the degree of improvement. Conference calls between the external evaluators and EvaluATE staff will keep all parties apprised of the evaluation's progress and results. Reports will be prepared in accordance with the schedule indicated in the project timeline (Table 3). Results will be shared with the broader evaluation community via conferences and publications.

Resources

EVALUATION PLAN

ATE Proposal Evaluation Plan Template



EvaluATE **ATE Proposal Evaluation Plan Template**
July 2017

This template is for use in preparing the evaluation plan sections for proposals to the National Science Foundation's Advanced Technological Education (ATE) program. It is based on the ATE Evaluation Planning Checklist (see http://bit.ly/checklist-evalplan), also developed by EvaluATE. It is aligned with the evaluation guidance included in the 2017 ATE Program Solicitation. All proposers should read the solicitation in full.

How to use this template: Replace the descriptions of what should go in each section below with relevant details about your proposed project's evaluation. Copy the text into your Project Description. The evaluation plan should comprise one to two pages of your proposal's 15-page Project Description.

This material is based upon work supported by the National Science Foundation under Grant No. 1800992. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of the National Science Foundation.

Evaluation Plan

Identify by name the person(s) who will lead the external evaluation of the project. Briefly describe their academic training and professional experience that qualifies them to serve as an external evaluator. Refer to the evaluator's biosketch and commitment letter and include those documents with the proposal's Supplementary Documents.

Evaluation Questions. Identify the focus of the evaluation by listing the evaluation questions. The questions should align with the project's purpose and address both implementation and outcomes. Examples of outcomes of interest to the ATE program include, but are not limited to, changes related to student learning, persistence, retention, graduation, and employment; faculty knowledge and pedagogical skills; broadening participation in STEM; meeting workforce needs; enhancing institutional capacity; and advancing knowledge about technician education. If the project has a logic model, refer to it and make sure the evaluation questions align with the logic model components.

Data Collection and Analysis. For each evaluation question, identify what will be measured, how the data will be collected and from what sources, and when. If specific published instruments will be used for data collection, describe and cite them (and include in References Cited section of proposal). Describe how data will be analyzed so that the evaluation questions can be answered. Placing this information in a table helps show linkages between the evaluation questions and the data, such as shown below (see EvaluATE's Data Collection Planning Matrix for additional details):

Evaluation Question: [state evaluation question, add rows as needed for additional evaluation questions and related indicators]				
Indicator	Data Source & Collection Method	Timing	Analysis	Interpretation
[what will be measured – ideally there will be more than one indicator per evaluation question]	[where the data will come from and how it will be obtained]	[when the data will be collected]	[how the qualitative and quantitative data will be transformed and summarized into usable information]	[procedures for using findings to answer the evaluation questions and reach evaluative conclusions]

Reporting and Use. Identify the deliverables that will be produced by the evaluation after the project is funded, such as a detailed evaluation plan, data collection instruments, and reports. Identify when reports will be provided to the project and how the results will be used to inform project improvement.

[ALSO: Include evaluation activities in the project's Timetable elsewhere in the Project Description. Include pertinent details about staff responsibilities related to evaluation in the Management Plan section.]

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Strategies and Insights into
Evaluation Plans for NSF ATE Proposals

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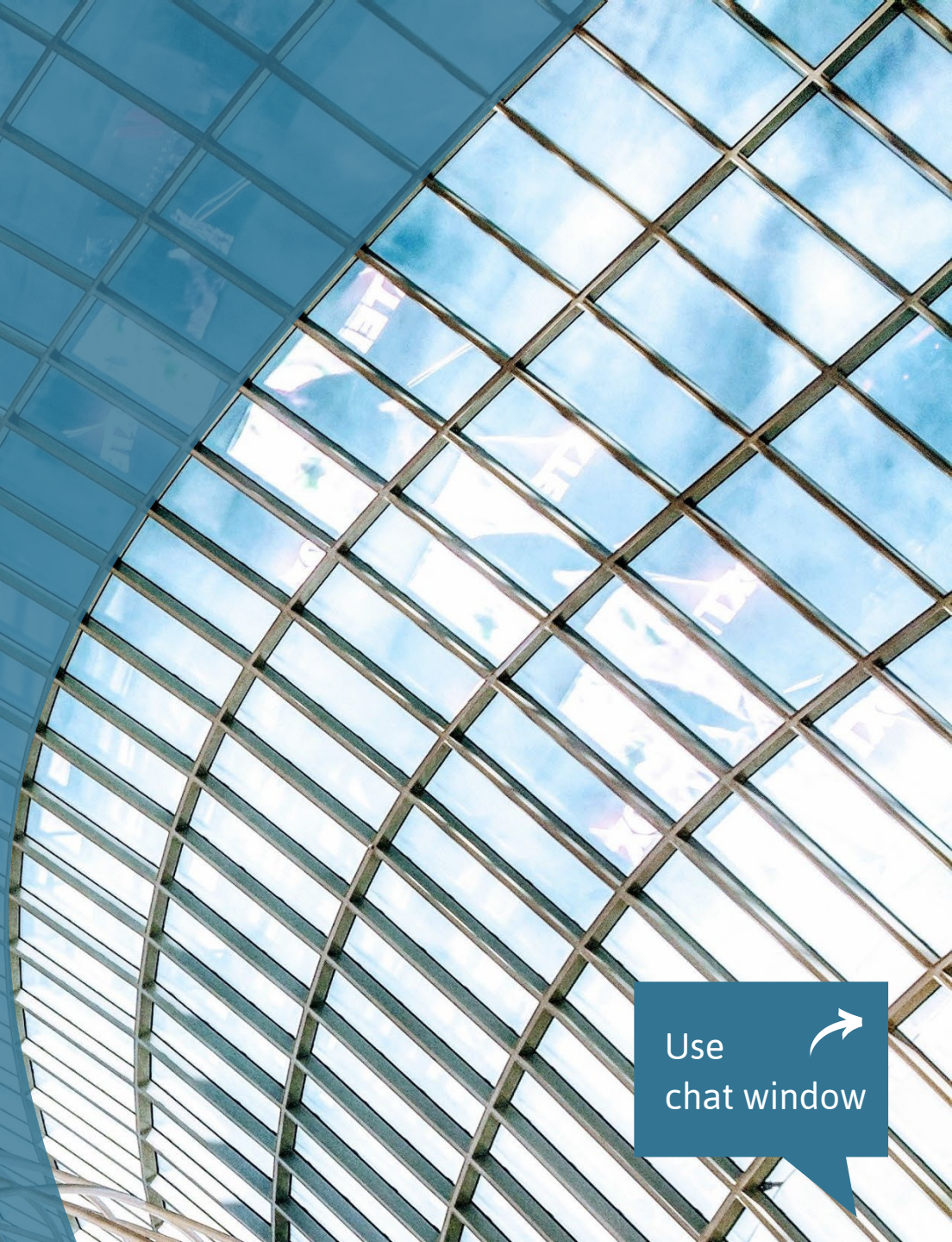
evalu-ate.org EvaluATE

QUESTION

BREAK



Use
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INTEGRATING EVALUATION THROUGHOUT AN NSF PROPOSALS

Beyond the Evaluation Plan

Results from Prior NSF Support

"This subsection must contain specific outcomes and results including metrics to demonstrate the impact of the project activities."

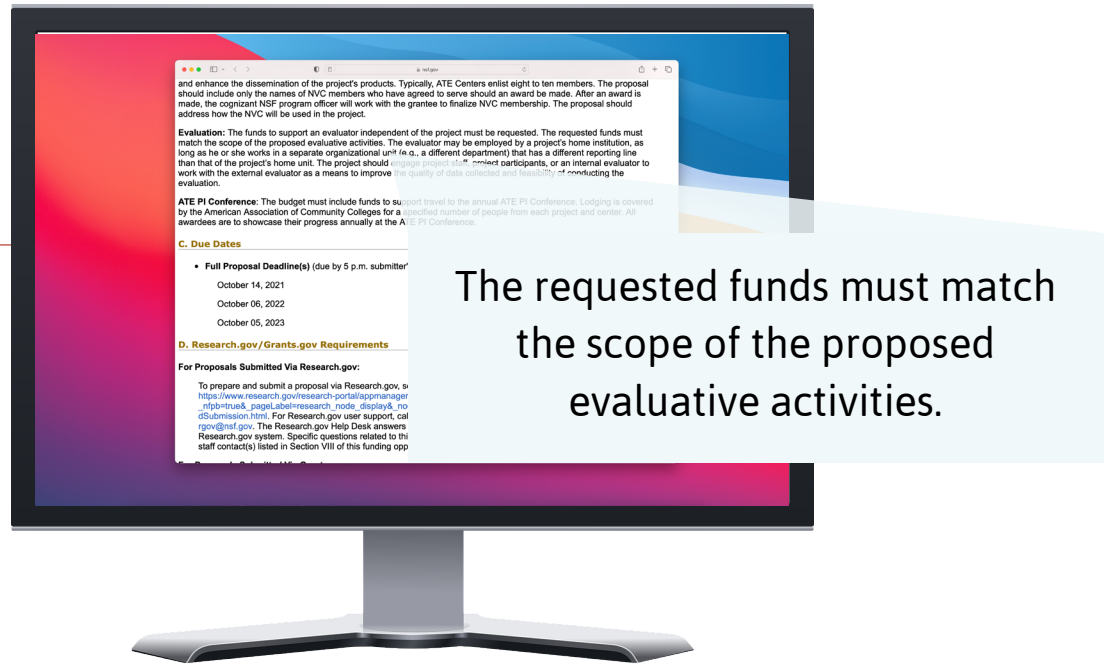
Intellectual Merit
advancement of knowledge

Broader Impacts
benefit to society

Beyond the Evaluation Plan

Results from Prior NSF Support

Budget and Budget Justification



The requested funds must match the scope of the proposed evaluative activities.

Beyond the Evaluation Plan

Results from Prior NSF Support

Budget and Budget Justification

According to PAPPG

- ☐ Identify hourly rate of pay for evaluator
- ☐ Justify time required for evaluator
- ☐ Outline their main tasks and deliverables

Beyond the Evaluation Plan

Results from Prior NSF Support

Budget and Budget Justification

Data Management Plan

Requirements

- ☐ Types of data and other materials to be produced
- ☐ Format of the data
- ☐ Policies for accessing and sharing data
- ☐ Policies for use of data by others
- ☐ Plans for archiving data for preserving access

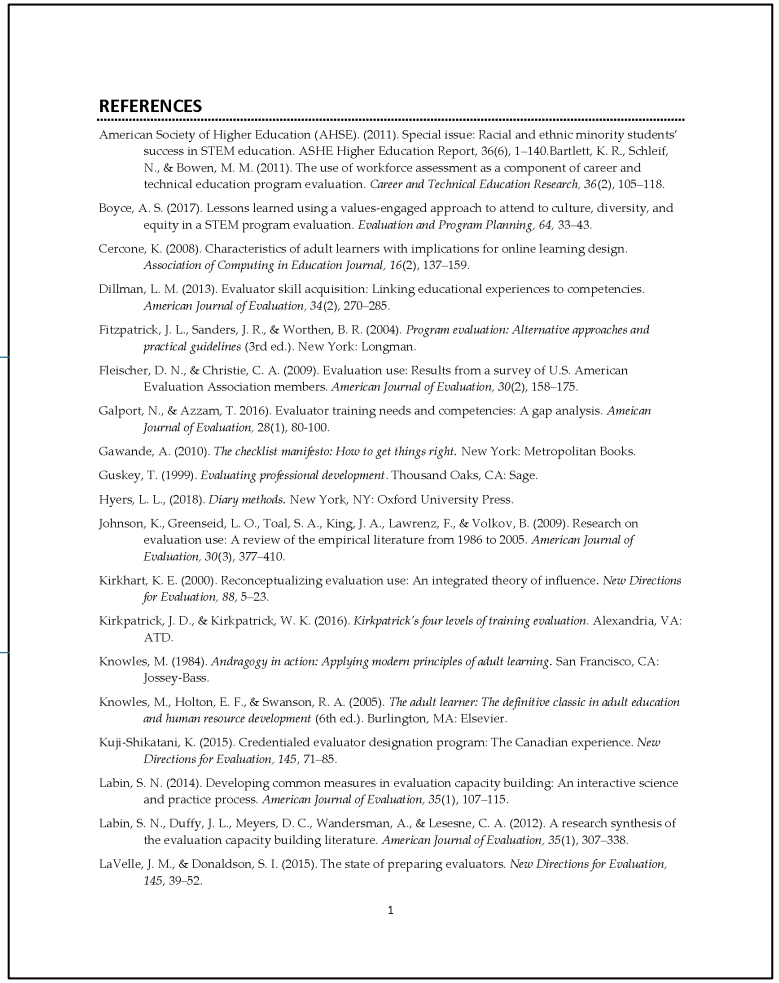
Include evaluation data

Beyond the Evaluation Plan

- Results from Prior NSF Support
- Budget and Budget Justification
- Data Management Plan
- **References**

Include references to evaluation literature

- Justify evaluation approach
- Justify use of instruments and methods



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Resources

WHAT'S MY NEXT STEP?

Find an evaluator — 1

Create a project logic model — 2

Review requirements of evaluation plan — 3

WEBINAR HANDOUT

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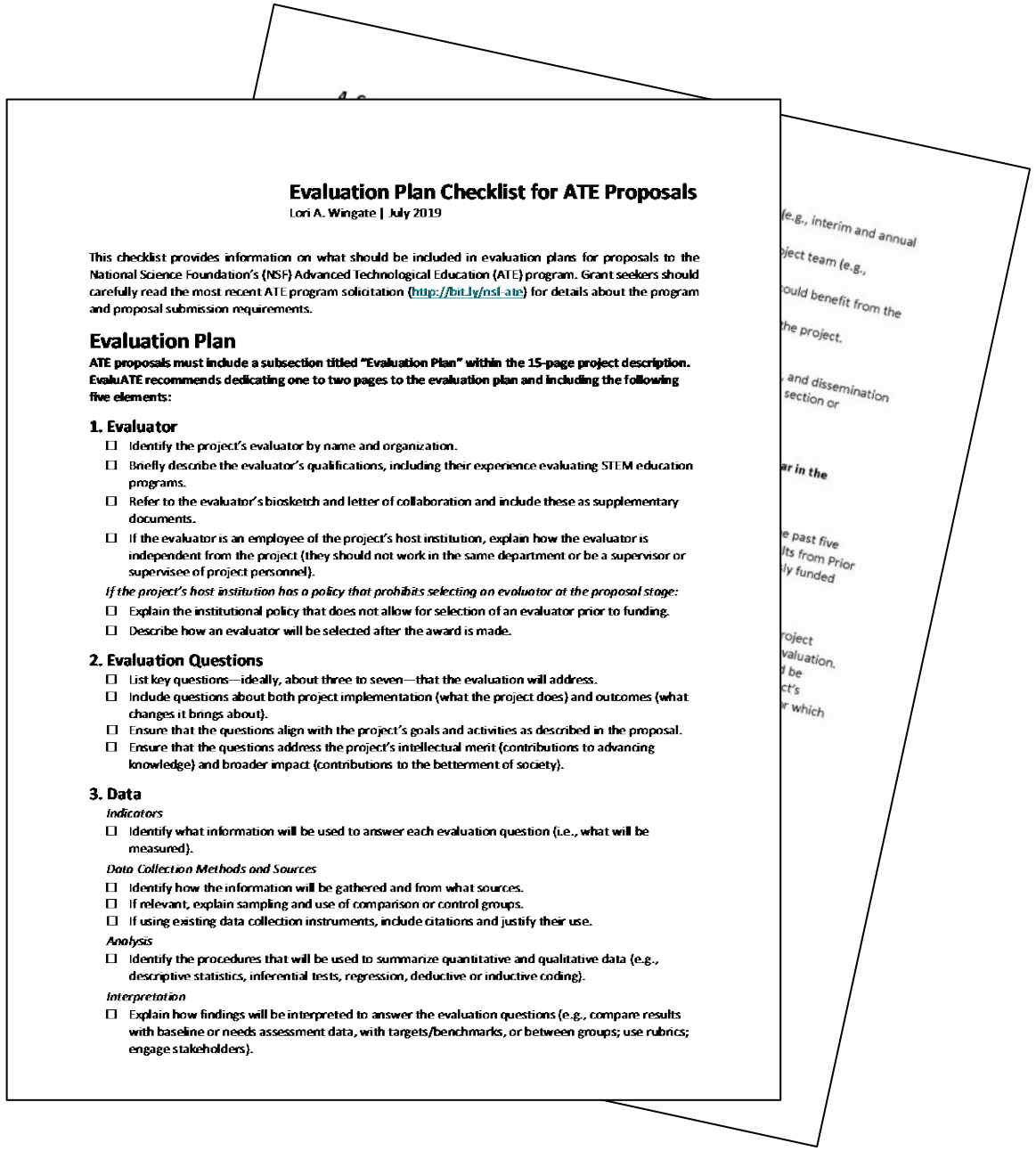

Evaluation Plan Checklist for ATE Proposals

Lori A. Wingate | July 2019

This checklist provides information on what should be included in evaluation plans for proposals to the National Science Foundation's (NSF) Advanced Technological Education (ATE) program. Grant seekers should carefully read the most recent ATE program solicitation (http://bit.ly/nsf-ate) for details about the program and proposal submission requirements.

Evaluation Plan

ATE proposals must include a subsection titled "Evaluation Plan" within the 15-page project description. EvaluATE recommends dedicating one to two pages to the evaluation plan and including the following five elements:

1. Evaluator

- ☐ Identify the project's evaluator by name and organization.
- ☐ Briefly describe the evaluator's qualifications, including their experience evaluating STEM education programs.
- ☐ Refer to the evaluator's biosketch and letter of collaboration and include these as supplementary documents.
- ☐ If the evaluator is an employee of the project's host institution, explain how the evaluator is independent from the project (they should not work in the same department or be a supervisor or supervisee of project personnel).

If the project's host institution has a policy that prohibits selecting an evaluator at the proposal stage:

- ☐ Explain the institutional policy that does not allow for selection of an evaluator prior to funding.
- ☐ Describe how an evaluator will be selected after the award is made.

2. Evaluation Questions

- ☐ List key questions—ideally, about three to seven—that the evaluation will address.
- ☐ Include questions about both project implementation (what the project does) and outcomes (what changes it brings about).
- ☐ Ensure that the questions align with the project's goals and activities as described in the proposal.
- ☐ Ensure that the questions address the project's intellectual merit (contributions to advancing knowledge) and broader impact (contributions to the betterment of society).

3. Data

Indicators

- ☐ Identify what information will be used to answer each evaluation question (i.e., what will be measured).

Data Collection Methods and Sources

- ☐ Identify how the information will be gathered and from what sources.
- ☐ If relevant, explain sampling and use of comparison or control groups.
- ☐ If using existing data collection instruments, include citations and justify their use.

Analysis

- ☐ Identify the procedures that will be used to summarize quantitative and qualitative data (e.g., descriptive statistics, inferential tests, regression, deductive or inductive coding).

Interpretation

- ☐ Explain how findings will be interpreted to answer the evaluation questions (e.g., compare results with baseline or needs assessment data, with targets/benchmarks, or between groups; use rubrics; engage stakeholders).

Resources

ATE EVALUATION COACHING

evalu-ate.org/coaching

Amy Germuth

Lola Adedokun

Keith Sturgis

QUESTION

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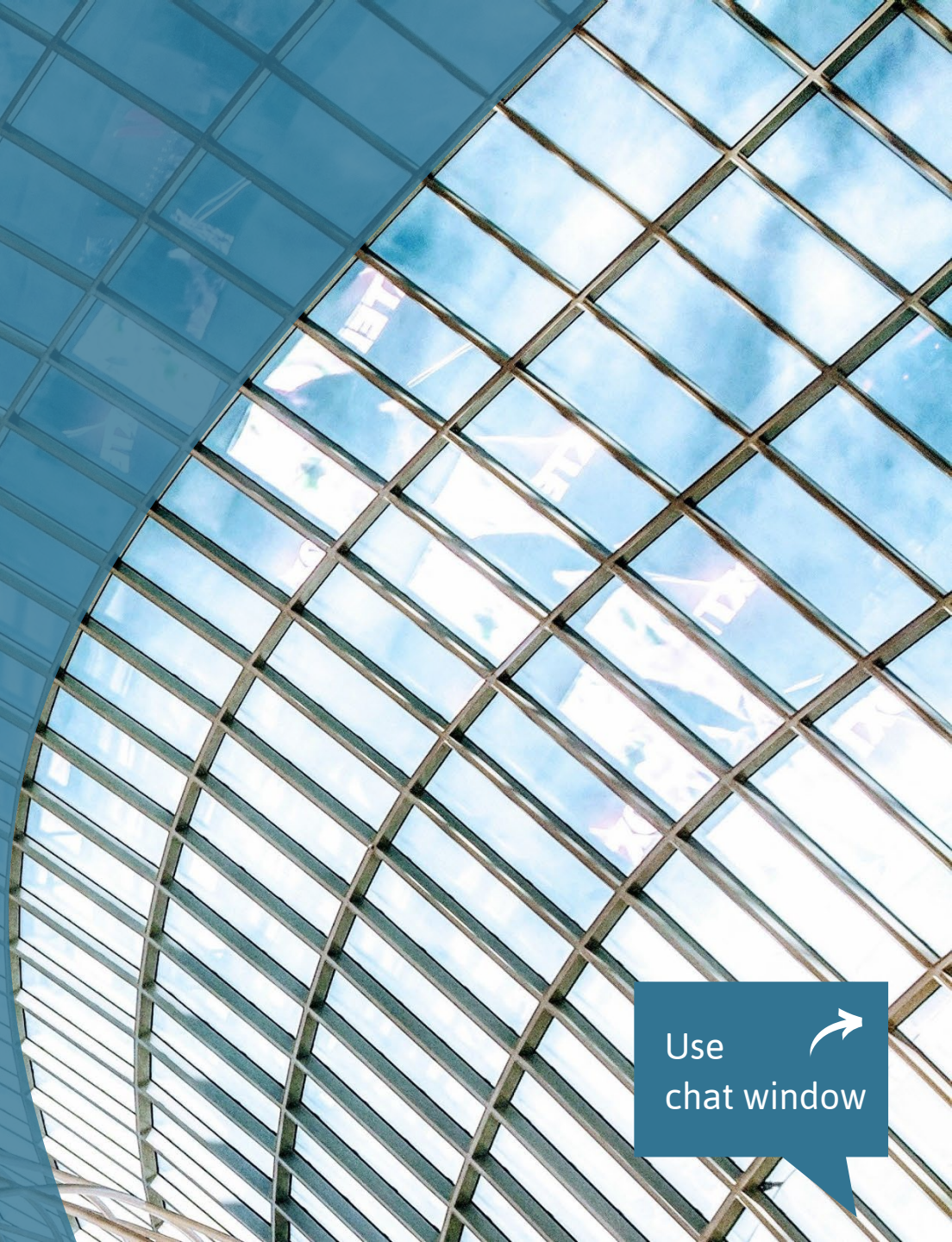

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