



Untangling Knowledge Generation and Evaluation in S-STEM Proposals

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Change in Submission Deadline

DUE DATE POSTPONED: **New Due Date April 22, 2020**

With the disruption in regular operations of institutions of higher education and other research organizations due to the ongoing COVID-19 outbreak, NSF has decided to delay the due date for proposals to solicitation NSF 20-526 by four weeks, to April 22, 2020.

Proposals can be submitted, and already submitted proposals can be updated, at any time before **5pm local time** of the submitting organization on April 22, 2020.

Please visit the [S-STEM solicitation](#) for detailed information. You can also find additional information on the [NSF COVID-19 website](#) regarding this change.

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- Distinguish between knowledge generation and evaluation in S-STEM proposals
- Identify expertise needed to fulfill research and evaluation roles for S-STEM projects
- Include strong plans for evaluation and knowledge generation in S-STEM proposals
- Develop effective plans for disseminating S-STEM project results to interested audiences

Is the evaluator a part of the S-STEM project team?



PI

- Faculty Member Currently Teaching in S-STEM Discipline*



Co-PIs/Other Sr. Personnel

- Researcher
- STEM Administrator

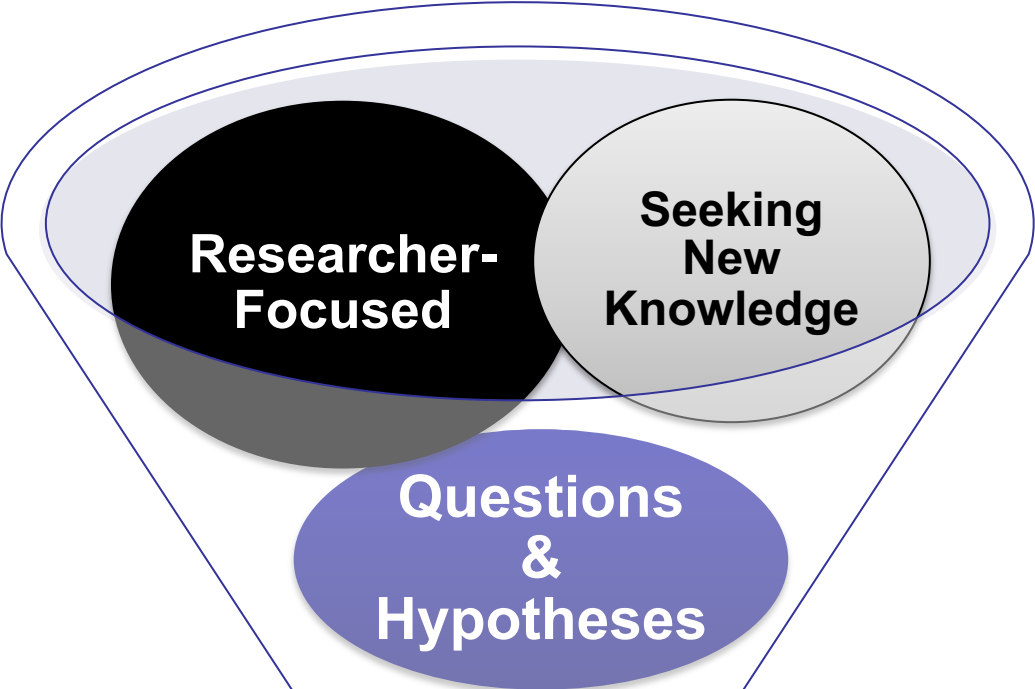


Evaluator

- External to Project Team
- Unbiased, 3rd Party

Not Necessarily External to the Institution

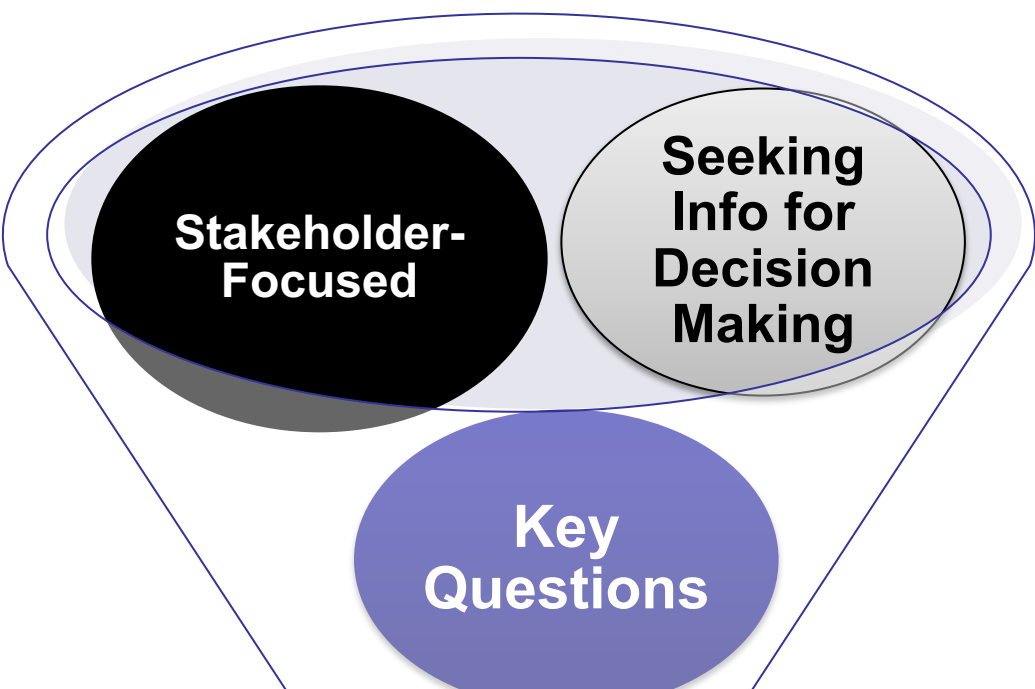
RESEARCH



METHODS & ANALYSES

Research Recommendations
Publish Results

EVALUATION



METHODS & ANALYSES

Recommendations about Key Questions
Report to Stakeholders

Adapted from: American Evaluation Association

Evaluation...

Particularizes

Designed to *improve* something

Basis for *decision making*

About *what is valuable*

Asks

So what?

How well does it work?

Research...

Generalizes

Designed to *prove* something

Basis for *drawing conclusions*

About *what is*

Asks:

What's so?

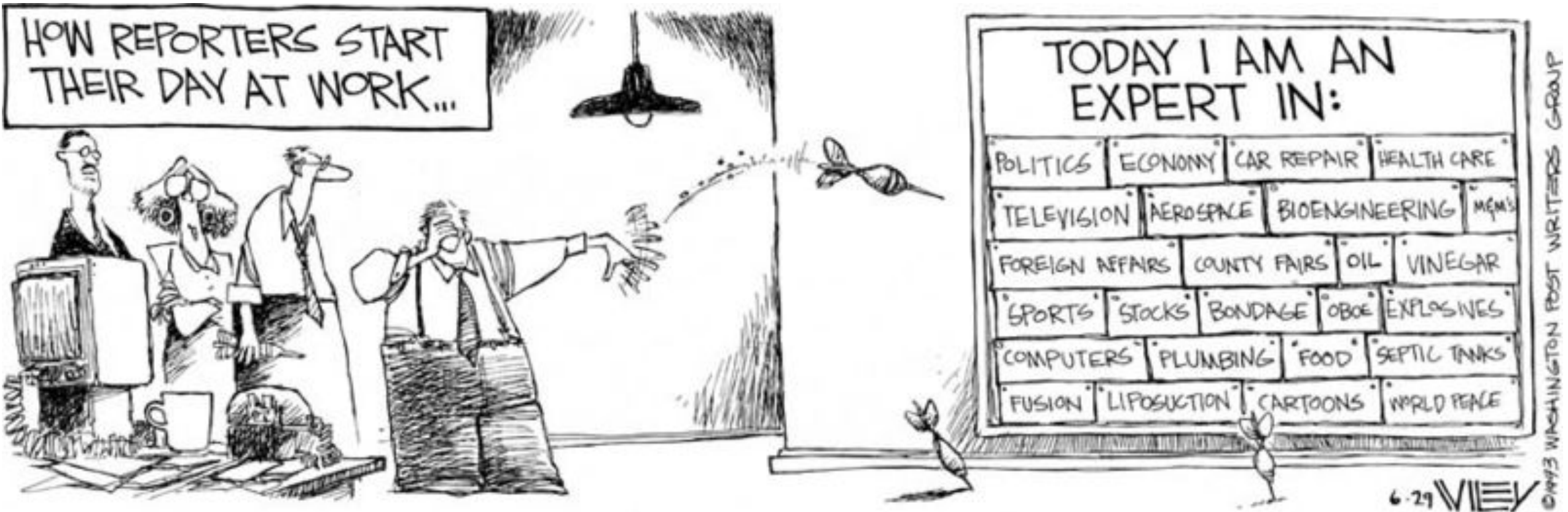
How does it work?



PROJECT EVALUATION



What's the first step in crafting your evaluation plan?





RICE

Evaluation Requires Expertise

© MARK ANDERSON

WWW.ANDERTOONS.COM



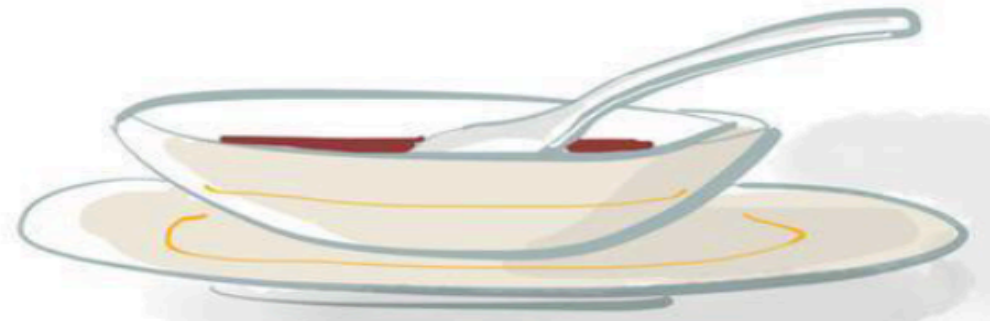
"Listen, I'm no expert, but I still want you to listen to me ramble on about this for a while."

FORMATIVE

SUMMATIVE



WHEN THE **CHEF**
TASTES THE ~~SOUP~~
GUMBO



WHEN THE **GUESTS**
TASTE THE ~~SOUP~~
GUMBO

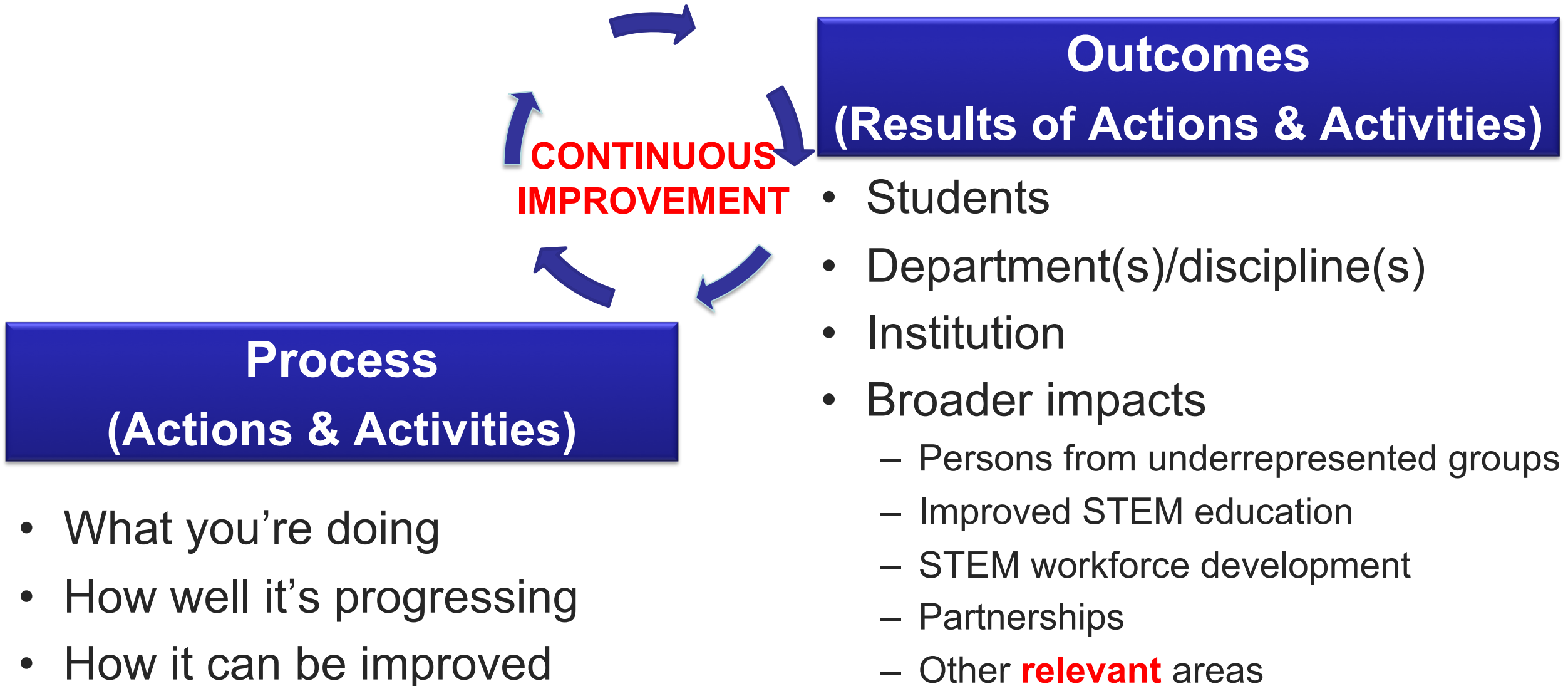
@bryanMMathers

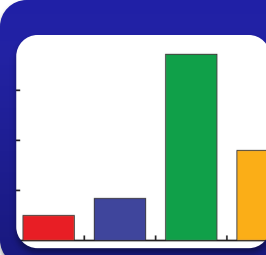
FROM STEVE WHEELER'S BLOG "THE AFL TRUTH ABOUT ASSESSMENT"

<http://steve-wheeler.blogspot.com/2014/10/the-afl-truth-about-assessment.html>



S-STEM Evaluations Consider...





Baseline Data



Outcomes & Metrics



Instruments



Methods & Analysis



Feedback Loop

Assessment and Evaluation Plan Components

3 Places to Find an Evaluator

Your Campus

- Education
- Social/Behavioral Sciences
- Institutional Research

Ask a Colleague

- S-STEM/STEP PIs
- Other Educational Researchers

AEA

- American Evaluation Association
- www.eval.org



KNOWLEDGE GENERATION





RICE Knowledge Generation Considers...

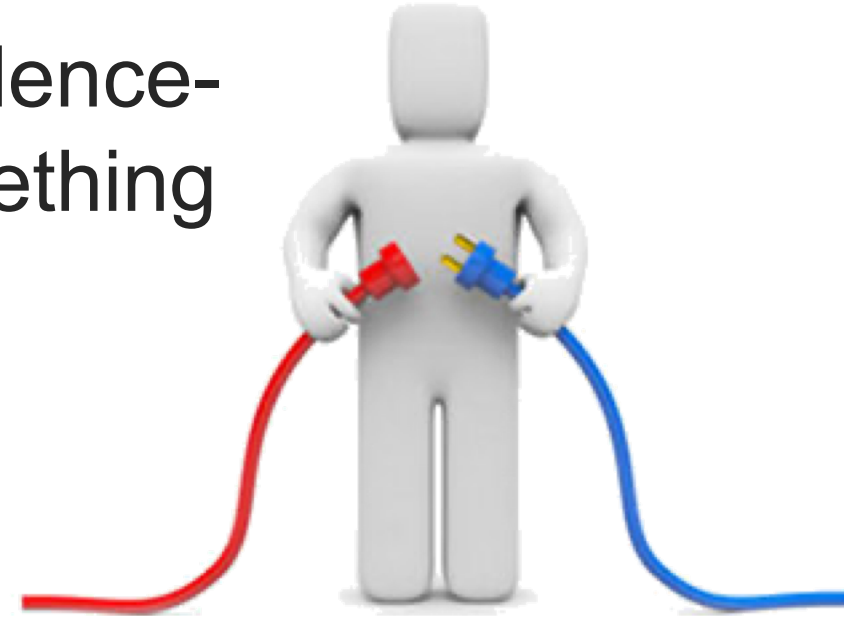
How your project will **advance knowledge** about:

- Retention and student success
- Transfer from two to four-year colleges (if applicable)
- Academic and career pathways
- Degree attainment
- Workforce development
- Low income students in STEM

The current and future knowledge base:

- Generalizable findings
- Needs of the institution/program
- Existing evidence on teaching and learning
- Evidence-based curricular and co-curricular activities and practices
- Existing research on what does and does not work

- **Adopting/adapting** and studying evidence-based strategies (not developing something new)
- Research questions guided by **theory**
- Requires **expertise**
 - ✓ Educational
 - ✓ Discipline-Based Educational (DBER)
 - ✓ Social/Behavioral
 - ✓ Institutional



**Researcher Team Member:
Connects Project to the
Knowledge Base**

Research Questions

- **What will we seek to learn more about?**
- **What are the gaps in the literature?**

Research Plan

- **How will the questions be investigated?**

Connections to Needs

- **What's the relevance to the challenges you're addressing?**

What are the questions that guide the investigation?

- **Section B: Project Objectives and Plans**
- **Restate in Section I: Generation of Knowledge**

How will these questions be answered by the proposed research?

- **Fully Developed **Research Plan****
- **Section I: Generation of Knowledge**

Why are they important, and to whom?

- **Throughout Proposal**
- **Broader Impacts Section**
- **Section K: Dissemination**



DISSEMINATION



The project website will be used to disseminate resources resulting from this project. The STEM education community will be made aware of the resources on the website through the same email listservs and targeted contacts described in the Participant Recruitment and Selection section of this proposal. The resources posted will include a summary of helpful guidance for developing competitive S-STEM proposals, strategies for creating and evaluating partnerships, and a list of educational, discipline-based educational, social/behavioral, and institutional researchers sorted by expertise. Additionally, the proposal development and partnership resources will be shared with the American Association of Colleges and Universities (AAC&U) to consider for dissemination through their STEM Central website. Journal articles will be prepared for submission to *Educational Researcher*, *Journal of STEM Education*, or other publications describing the project's results. A possible article topic is identifying and overcoming challenges for competitive STEM education proposals for faculty at predominantly undergraduate institutions. For NSF, the annual and final reports will contain recommendations for outreach efforts that can be targeted to prospective PIs at PUIs.

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- Are **active**, not passive
- Are **specific**, and tell:
 - What will be distributed
 - To whom it will be distributed
 - How it will be distributed
- Are **not** an afterthought
 - Build dissemination into your evaluation plan and your **budget**



CONCLUDING THOUGHTS

- Make sure to:
 - Explicitly link research question(s) and research plan to institutional needs and project goals/objectives
 - Explicitly link evaluation question(s) and evaluation plan to institutional needs and project goals/objectives
 - Get the right experts for the right tasks
- Make sure **not** to:
 - Conflate project evaluation and research
 - Propose too much or too little
 - List passive, mundane dissemination strategies with no details

Common Guidelines for Education Research and Development

A Report from the Institute of Education Sciences,
U.S. Department of Education

and the National Science Foundation

August 2013



Directorate for Education
and Human Resources

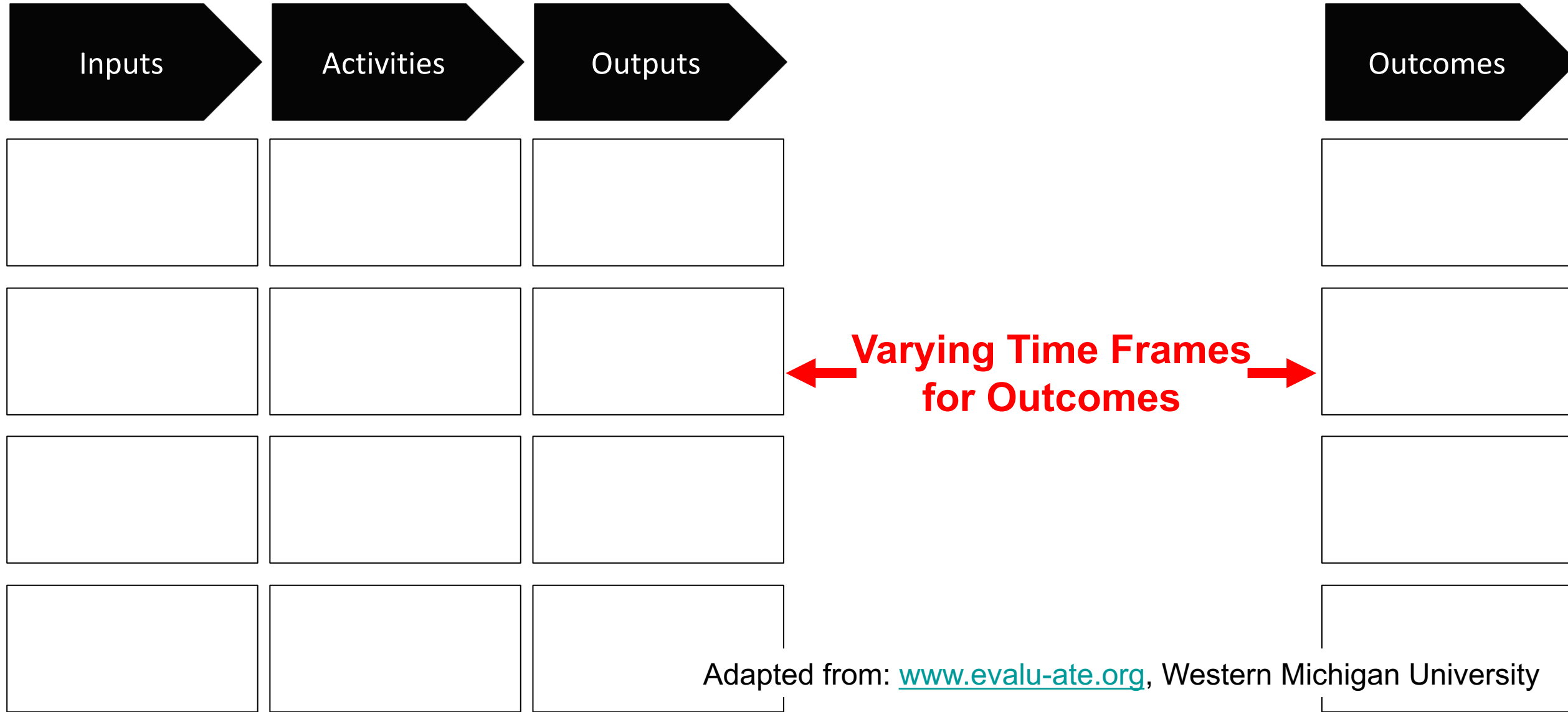


Division of Research and
Learning in Formal and
Informal Settings
National Science Foundation



The 2010 User-Friendly Handbook

for Project Evaluation



- What is the potential for the proposed activity to:
 - Advance knowledge and understanding within its own field or across different fields (**Intellectual Merit**); and
 - Benefit society or advance desired societal outcomes (**Broader Impacts**)?
- To what extent do the proposed activities suggest and explore creative, original, or **potentially transformative** concepts?
- Is the plan for carrying out the proposed activities **well-reasoned**, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to **assess success**?
- How well **qualified** is the individual, team, or organization to conduct the proposed activities?
- Are there **adequate resources** available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?



THANK YOU!

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