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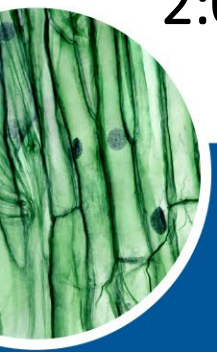


Responsive Evaluation Design (RED): A Framework for Evaluating NSF S-STEM Projects



October 29, 2026
2:00-3:00 p.m. ET





NSF AWARD #2224093: AAAS-NSF S-STEM Resource & Evaluation Center

Who is with us today?

In the chat…

please introduce yourself!

- Provide your name, institution & S-STEM role (if applicable)

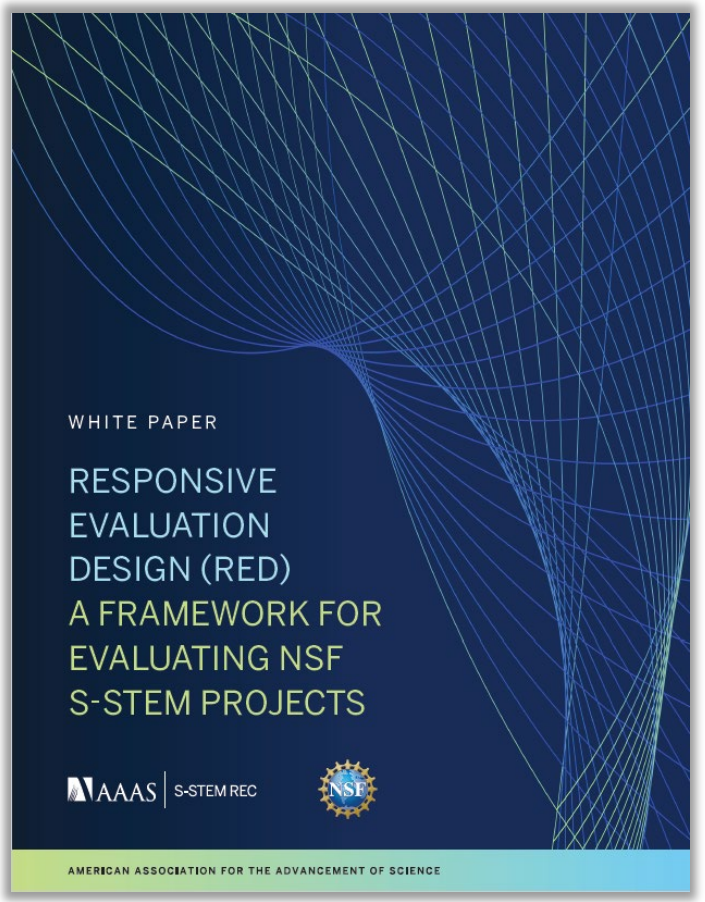


Poll questions

- How familiar are you with responsive evaluation?
- Have you read the RED white paper?

Responsive Evaluation Design White Paper





Housekeeping



Please keep you microphone on mute when not speaking.



You are welcome to turn on your camera. Nonverbal cues are helpful for us to know how you are responding to the discussion.



You are welcome to introduce yourself in the chat and ask questions anytime throughout the webinar.



Closed Captioning is available - click on the CC icon in the meeting control bar at the bottom of your screen.



Today's slides and recording will be posted on the event page of the S-STEM REC website.



Contact Lily Davey in the chat or at ldavey@aaas.org for technology questions or issues.



Please take our short survey to provide feedback on this webinar!

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NSF AWARD #2224093

AAAS S-STEM Resources & Evaluation Center (REC)

The S-STEM REC seeks to cultivate a network of S-STEM stakeholders and promote the exchange of ideas, resources, opportunities, and knowledge related to the effective strategies and practices to increase the number of talented low-income students obtaining degrees in STEM and entering the STEM workforce.

AAAS S-STEM REC works to:



Increase the effectiveness of the S-STEM Portfolio



Build the capacity of S-STEM Network Programs



Build the capacity of S-STEM Scholars

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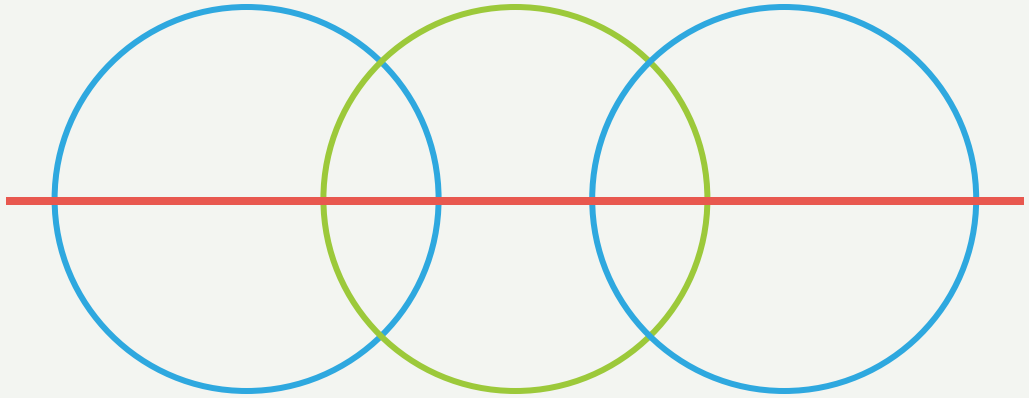
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Responsive Evaluation Design (RED)

A Framework for Evaluating NSF S-STEM Projects

Kavita Mittapalli, Ph.D.

CEO and Principal Evaluator, MN Associates, Inc.

Thursday, October 29, 2026 | 2:00 p.m. ET

MNA

RESPONSIVE EVALUATION DESIGN (RED) WHITE PAPER

Fixed benchmarks can show whether an outcome changed. They rarely show how, for whom, or under what conditions.

RED builds on Robert Stake's responsive evaluation. It treats context as central rather than as noise, and it lets stakeholder concerns, contextual knowledge, and iterative learning shape the evaluation throughout the project.

From pre-ordinate to responsive evaluation

Responsive evaluation, as conceptualized by Robert Stake (1975), focuses on project activities rather than fixed intents, responds to audience information needs, and considers multiple value perspectives when reporting success and failure.

PRE-ORDINATE EVALUATION

- Driven by pre-specified objectives and standardized instruments
- A fixed set of questions derived from project goals
- Best suited to projects that are well defined and stable

vs

RESPONSIVE EVALUATION (RED)

- Begins with sustained observation and stakeholder dialogue
- Lets the most important concerns emerge from those closest to the project
- Suited to projects that are complex, innovative, or serving populations whose needs are still unfolding, which describes most S-STEM projects

Seven core principles of RED

Principle	What it means in practice
Stakeholder-Centricity	Questions come from the concerns of scholars, mentors, staff, and leaders.
Contextual Sensitivity	Rooted in the project's disciplinary, institutional, and cultural context.
Iterative Inquiry	Ongoing, recursive data collection; early findings shape later inquiry.
Emergent Design	Methods and focus areas are refined as implementation unfolds.
Holistic Portrayal	Portrays full project functioning, including unintended consequences.
Multiple Perspectives	Represents viewpoints across disciplines, backgrounds, and career stages.
Opportunity and Access	Attends explicitly to access, belonging, and systemic opportunity.

Source: Responsive Evaluation Design (RED): A Framework for Evaluating NSF S-STEM Projects (MNA, 2026).

RED in action: what listening surfaced

Biology: summer research

THE METRIC

Only pre/post self-efficacy was tracked.

WHAT LISTENING SURFACED

A mid-summer focus group revealed scholars felt isolated in individual lab placements.

WHAT CHANGED

Weekly peer cohort check-ins; reflections showed a shift toward collaboration.

Computer science: internships

THE METRIC

Placement ran lower than expected, first blamed on scheduling conflicts.

WHAT LISTENING SURFACED

Scholars and industry mentors pointed to a missing professional-development phase.

WHAT CHANGED

A resume and mock-interview series; placement rose the following year.

Neither insight would have surfaced from outcome metrics alone. Illustrative examples from the RED White Paper.

RED IN ACTION | PHYSICS

Strong belonging scores, quiet withdrawals

1 THE SITUATION

Scholars shared two courses each semester and met at monthly cohort social events.

Belonging scores were strong, yet two scholars quietly withdrew mid-year and others stopped attending.

2 RED IN ACTION

The evaluator followed up with scholars who had disengaged, in voluntary, confidential conversations.

First-generation scholars felt out of place: costly outings and a group that had formed before the project.

3 WHAT CHANGED

Social events were redesigned with scholar input: on-campus events, potlucks, study activities, and a small fund for costs.

Engagement among first-generation scholars improved.

What a standard evaluation would have missed: aggregate belonging scores looked strong. The subgroup experience was invisible to the survey.

Illustrative mock example from the RED White Paper (MNA, 2026). Composite scenario; no institution or individual is identifiable.

RED IN ACTION | MULTIDISCIPLINARY

Catching a financial mechanism in time to act

WHAT CHANGED

48 hrs

A rapid-response emergency fund, separate from formal financial aid, with an application that can be completed within 48 hours.

THE ASSUMPTION	Scholarship funds plus existing institutional aid would meet scholars' financial needs.
THE SIGNAL	In Year 2, retention in the mathematics cohort dropped unexpectedly.
WHAT LISTENING SURFACED	Individual check-ins revealed mid-semester emergencies: medical bills, car repairs needed for commuting, lost part-time jobs. The aid office was too slow and complex, and some scholars had considered withdrawing.
THE RESULT	Mathematics cohort retention stabilized the following semester, and the evaluation documented the institutional policy change.

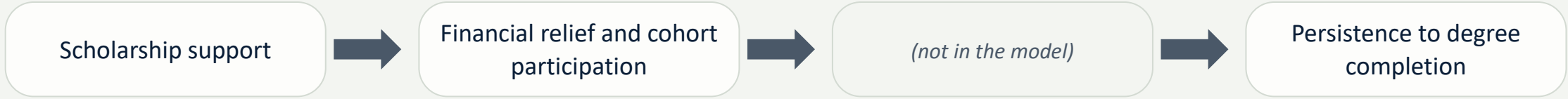
Illustrative mock example from the RED White Paper (MNA, 2026). Composite scenario; no institution or individual is identifiable.

LOGIC MODELS THROUGH A RESPONSIVE LENS

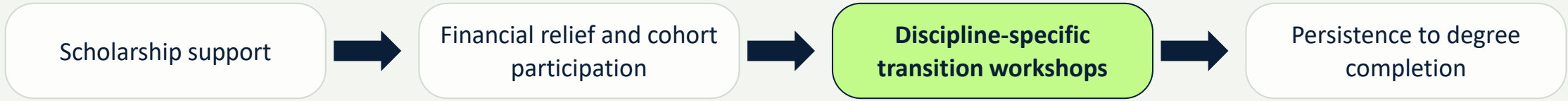
A living logic model: transfer shock across STEM fields

Transfer scholars in biology, chemistry, and mathematics were assumed to persist through financial relief and cohort participation. Year 1 focus groups and advisor interviews pointed to transfer shock instead.

ORIGINAL LOGIC MODEL



REVISED MID-GRANT



Chemistry: higher-than-expected laboratory demands

Mathematics: unfamiliar proof-writing conventions

Illustrative mock example from the RED White Paper (MNA, 2026). Composite scenario; no institution or individual is identifiable.

CRITICAL REALIST LENS | CONTEXT, MECHANISM, OUTCOME

Same mechanism, different disciplinary cultures

	CONTEXT	MECHANISM	OUTCOME
Biology	Lab-based cohort work builds in sustained peer interaction	Informal spaces to discuss shared experiences form naturally	Peer mentoring is most effective
Mathematics	Scholars often work more independently	The same mechanism is harder to trigger; formal pairings feel artificial	Weaker effects for mentors and mentees

What changed: mathematics mentoring was redesigned around organic peer community: study groups, a living-learning community, problem-solving sessions, and mathematical communication workshops.

Illustrative mock example from the RED White Paper (MNA, 2026). Composite scenario; no institution or individual is identifiable.

RED WHITE PAPER

Common challenges and how RED responds

CHALLENGE	RED'S RESPONSE
Disciplinary fragmentation across multi-department projects	Treats disciplinary context as a primary variable rather than averaging differences away
Limited evaluation time and budget	Embeds evaluation within regular project activities to generate data at minimal added cost
Resistance to changing established practices	Early stakeholder engagement in shaping evaluation questions builds trust in findings
Evaluator positionality shaping what is observed	Requires ongoing reflexivity and member checking, especially across disciplinary lines

PUTTING THEM TOGETHER

Timing from the Lifecycle Guidebook, responsiveness from RED

Phase	Lifecycle focus	A RED move
Year 0 (Track 1)	Readiness: evaluation plan, logic model, IRB, baseline data, tools aligned to EBPs	Begin with sustained listening across cohorts before finalizing instruments.
Years 1-2	Formative: onboarding, mentoring dosage, disbursement, early academic signals	Treat the evaluation plan as a living document, revisited as the project evolves.
Year 3	Midpoint summative: retention, progression, subgroup patterns	Prioritize scholar voice, from question formulation through dissemination of findings.
Years 4-6	Intermediate and final summative: cross-cohort trends, completion, sustainability	Integrate findings into real-time decisions through regular PI team dialogues.

Lifecycle focus from the Lifecycle Guidebook (2026); RED moves from the RED White Paper recommendations (2026).

Guidebook For Evaluation Across the Project Lifecycle



What Questions Do You Have?



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Participant Survey

Link:
https://tinyurl.com/3w8h5bn7



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