

Reducing the Outcomes Angst

A Step-by-Step Approach to Identify What to Measure

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Evaluat|e
EVALUATION RESOURCE CENTER for
advanced technological education


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Introductions

Jason


| | | |
|--|---|--|
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Handout



Jason

Available from
www.evalu-ate.org/resources

Keyword search:
angst




Objectives


Jason

By the end of this webinar, you will...

1. understand the process of defining evaluation questions and measures based on project objectives
2. recognize the value of using existing research and instruments to inform your evaluation design
3. be able to identify or improve outcome measures for your current or upcoming projects

Steps to Reduce the Outcomes Angst



Lana

1. Establish an evaluation team
2. Create a model of the project
3. Articulate evaluation questions
4. Design evaluation and identify measures
5. Collect data, analyze & interpret
6. Communicate findings
7. **Incorporate lessons learned**

Foundational Components

The "Heart" of the Evaluation

"Optimization"

ATE Project Dayton Urban STEM Teacher Academy





Lana

A STEM teacher talent professional development initiative

in partnership with ...




 **ATE Project**
Dayton Urban STEM Teacher Academy



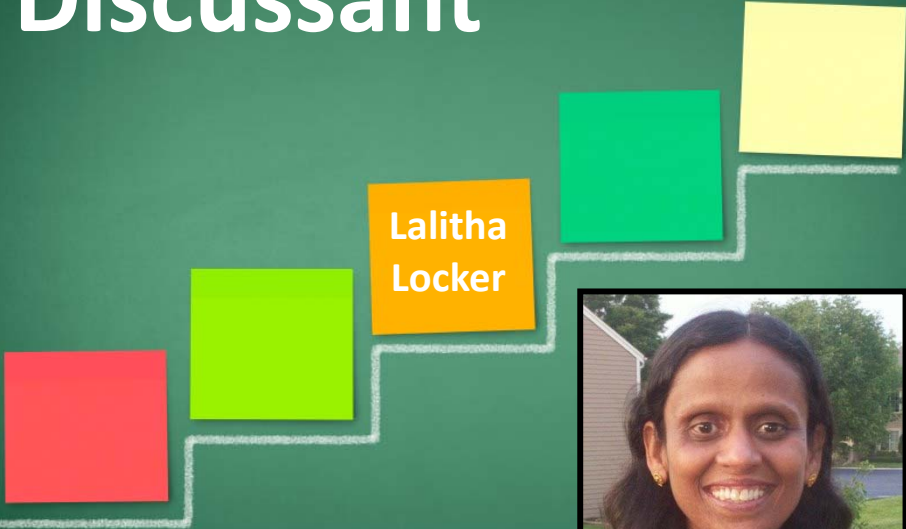
Lana

Goals


- (1) A new education paradigm utilizing an inquiry-based pedagogical framework among current high school STEM teachers
- (2) An environment where urban high school students pursue urban teaching careers
- (3) A STEM teacher development pipeline




Discussant




Lalitha Locker



Foundational Components



Lana Rucks



1 Create a project evaluation team



Lana

The goal of the team is to ensure that multiple stakeholder perspectives are represented.

Include:

- PI
- Co-PI(s)
- Project Manager
- External Evaluator
- Other key stakeholders?



2
Develop a project model



Lana

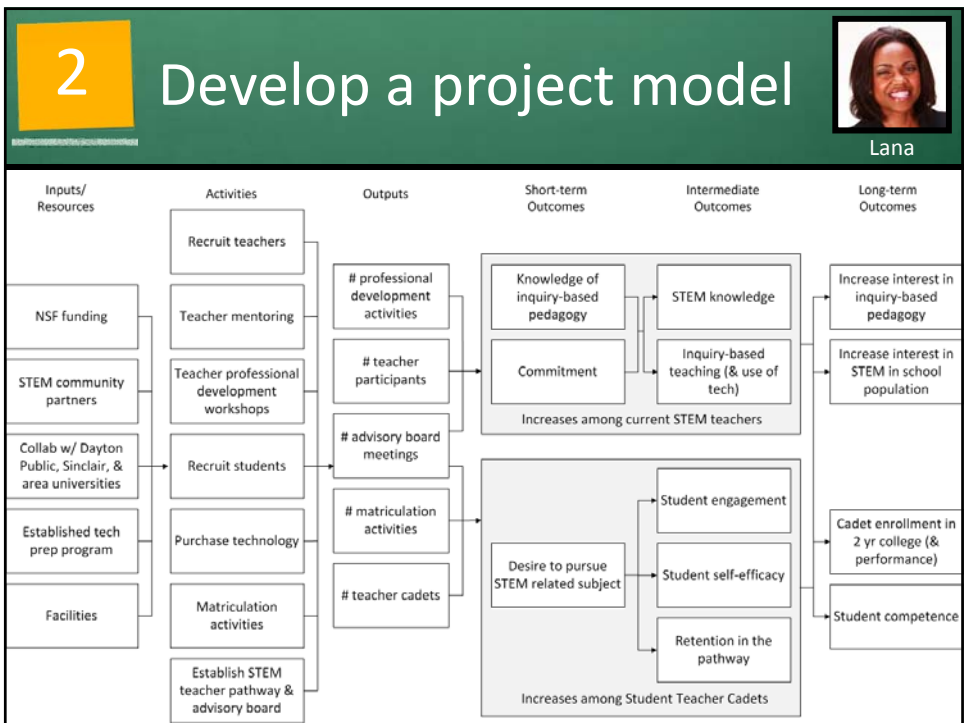



Input/Resources

Activities

Outputs

Outcomes



3 Articulate the evaluation questions 
Lana

How effectively is the project being implemented? (Formative)

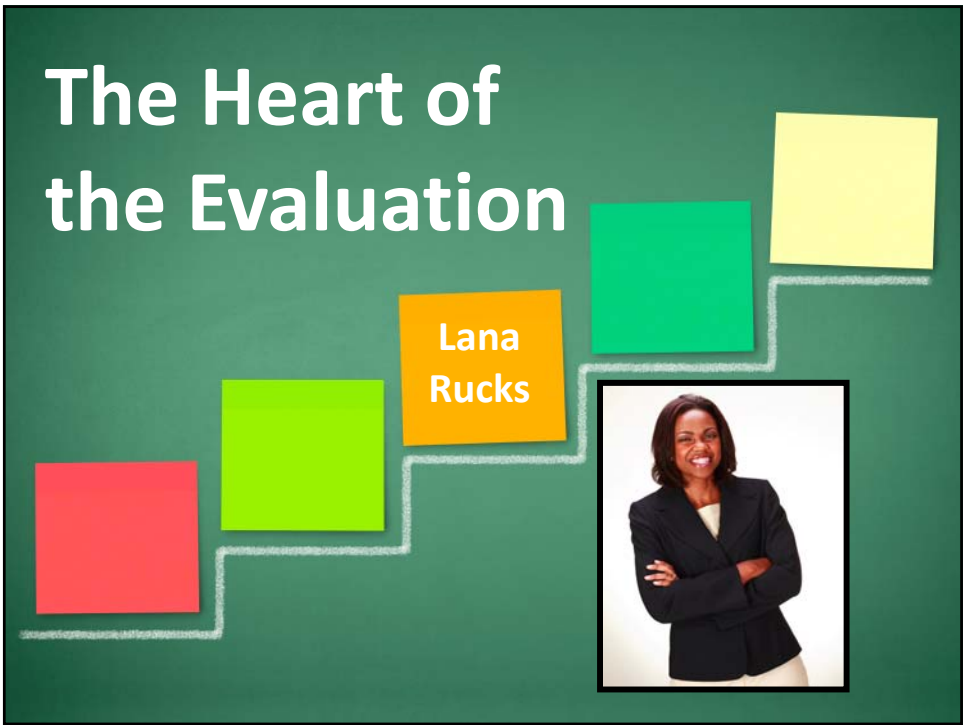
What influence is the program having on the teachers? (Summative)

What difference is the program having on the students? (Summative)


What components were most effective? (Summative)

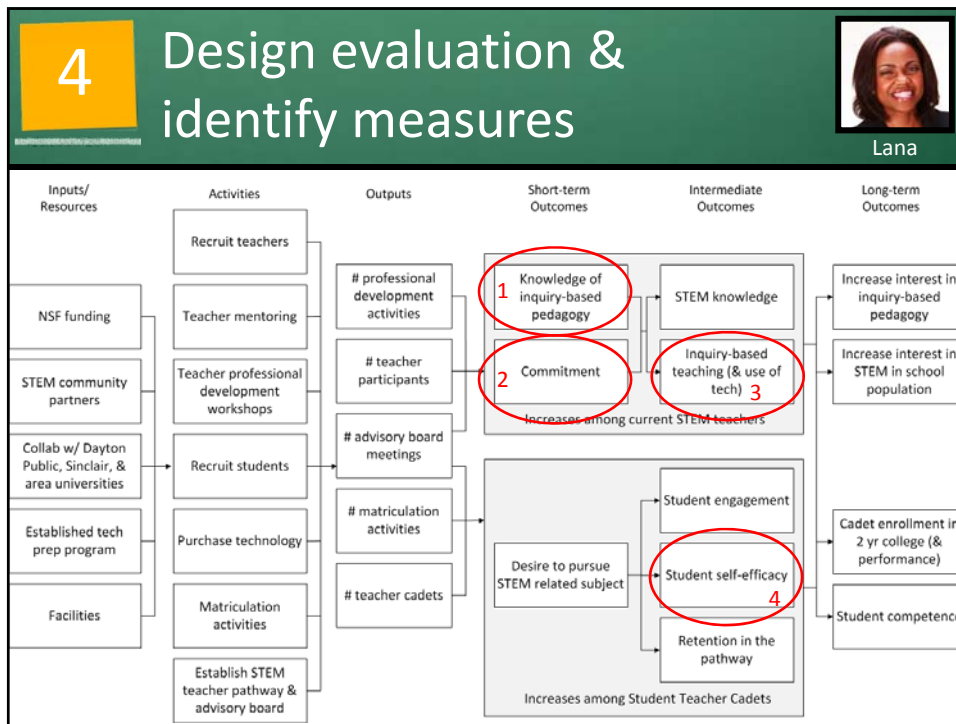
Is the project replicable and transportable? (Formative)

The Heart of the Evaluation




Lana Rucks






4a Define/describe key terms




Lana



Outcome 1
Increased teacher knowledge
inquiry-based pedagogy

“An approach to learning whereby students find and use a variety of sources of information and ideas to increase their understanding of a problem, topic, or issues ... It espouses investigation, exploration, research, pursuit, and study.”

4b
Conduct a literature search



Lana


Keep track of the measures used in the articles that you review as you do the general literature review

Complete a search in PsycINFO (or another database)

Search “forwards” using ISI Web of Knowledge

Search key words for measures online

4
Local Systemic Change (LSC)

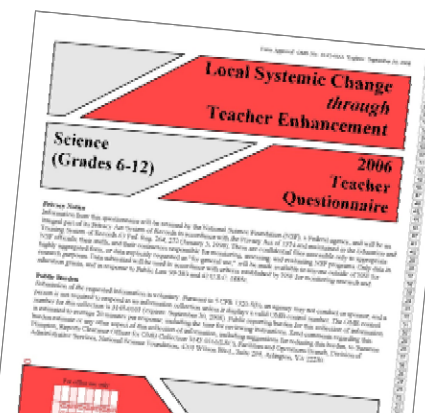


Lana


Questionnaire developed by Horizon-Research, Inc.

7 composites (or subscales)

- Teacher Opinions
- Teacher Preparation
- Instructional Control
- National Standards for Science and Mathematics Education
- Factors Affecting Instruction
- Teaching Practices
- Instructional Objectives



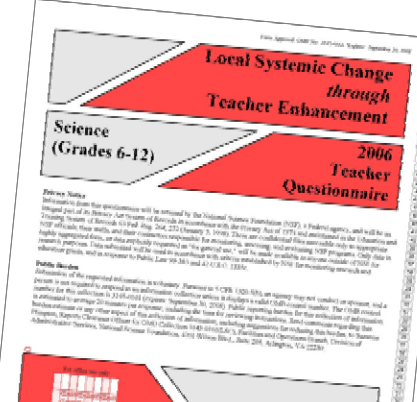
4
LSC




Lana

Responses on a scale from 1 (never) – 7 (all or almost all lessons)

- Introduce content through formal presentations
- Read a science/math textbook in class
- Ask students to use multiple representations



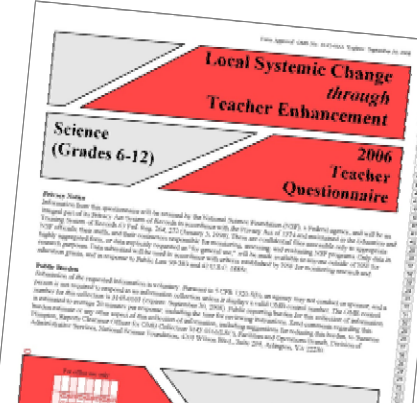
4
LSC




Lana

- Pose open-ended questions
- Design or implement their own investigation
- Have students present their work in class


Pre-/post-test format



4
Design evaluation & identify measures

Lana

Outcome 2
*Increased **teacher commitment***

Definition
 The willingness to become fully involved and enthusiastic about teaching. The use of discretionary effort into their work in the form of extra time, brainpower and energy.

4
Measurements

Lana

Workshop surveys

- How will you use or apply what you learned in your classroom?
- What level of support would you need in order to incorporate these ideas into your classroom?

Enrollment in discretionary course

4
Triangulation



Lana


When a construct is operationalized differently.





Ideally, should produce similar findings.

4
Design evaluation & identify measures




Lana

Outcome 3
*Increased **inquiry-based teaching** (and use of technology)*

Definition
 Use of inquiry-based teaching within the classroom

Measurement
 RTOPS – Reformed Teaching Observation Protocol (RTOP) Rubric

4
RTOPS Rubric Sample Item

Lana

The lesson was designed to engage students as members of a learning community.


4 – All students in the small group contribute to the construction of ideas and theory building.

3 – Some students in the small group contribute to the construction of ideas and theory building.

2 – There is some student-to-student interaction and discussion but little or no construction of ideas or theory building.

1 – The lesson employs only large group discussion with little evidence of community.

0 – This lesson is completely teacher-centered, lecture only.

4
Design evaluation & identify measures

Lana

Outcome 4
*Increased **student STEM self-efficacy***

Definition
 The belief in one’s abilities to perform within STEM subjects


Measurement
 Questionnaire on beliefs around the ability to perform in STEM-related subjects.

4 STEM Self-Efficacy

How prepared do you feel to complete a college-level course on ...

- Earth Science: Earth features and physical processes
- Biology: Structure and function of human systems
- Science Process & Inquiry: Writing a hypothesis


5 Collect Data & Analyze




Pre/Post-Tests
 X_1 intervention X_2

Comparison Groups
 X_1 intervention X_2
 X_1 NO INTERVENTION X_2

5
Collect Data & Analyze



Lana




Possible Outcome


Scores on Self-efficacy Scale

| Group | Time 1 | Time 2 |
|-----------------|--------|--------|
| Participants | 3.45 | 3.49 |
| Nonparticipants | 3.42 | 2.21 |

6-7
Subsequent Steps



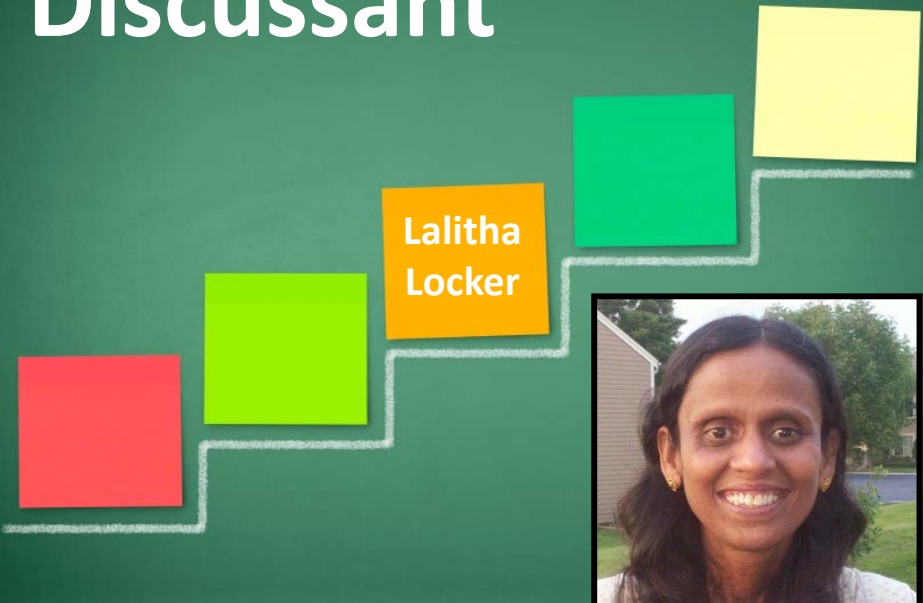
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Step 6
Communicate Findings

Step 7
Incorporate Lessons Learned

Discussant



Lalitha Locker



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Jason




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How Well are We Serving our Female Students?


July 18
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 **AEA**


Jason

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Introduction to Website Evaluation:
First Steps

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Data Collection in Hispanic Communities

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Jason

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