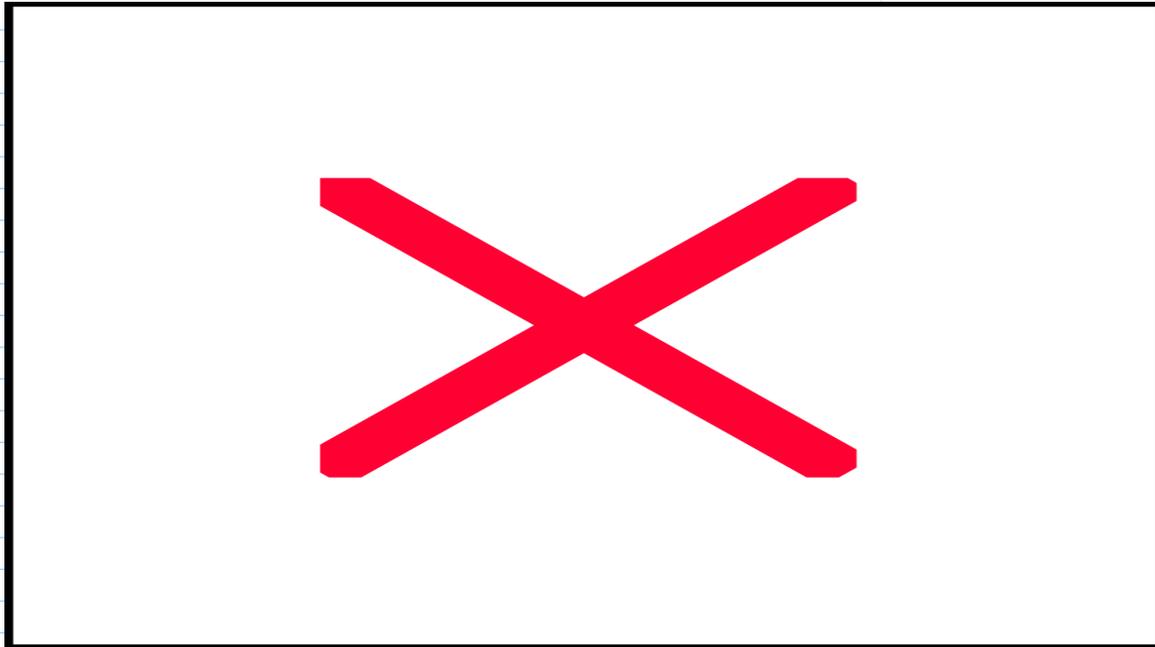


# **Evaluation 101**

## **Everything You Need to Know to Get Started Evaluating Informal Science Education Media**

**Saul Rockman and Jennifer Borse - Rockman et al**

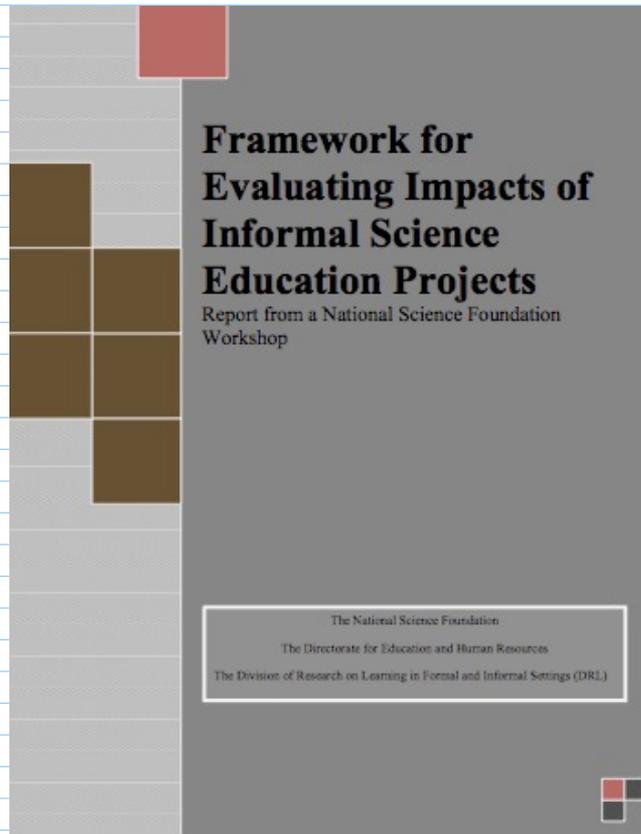
**Disclaimer:**



# This presentation is largely based on:

And our website:

<http://evaluationspringboard.org/science>



The banner for the Evaluation Springboard website features a teal background with a grid of puzzle pieces. The title 'Evaluation Springboard' is in a blue serif font. Below the title, there is a paragraph of text, a smaller paragraph, and a graphic of puzzle pieces with various labels. At the bottom, there is a yellow bar with copyright information and a logo for the EdVenture Group.

## Evaluation Springboard

**Evaluation Springboard** responds to the need for knowledge and skills in evaluation for those who want to undertake or commission evaluations of informal science education projects.

While evaluation is about "determining the worth" of something, it is important to think about how evaluation happens in real life. Often it involves decisions that have to be made under pressure of time, or in circumstances where the project is so new that the evaluation needs to gather information that can be used directly to influence the implementation of the intervention.

We hope that this website provides a springboard for launching your own evaluation efforts and for developing a basic understanding of the why and how of evaluation. It's the key to determining the effectiveness of informal science projects.

Getting Started  
Evaluation  
Case Studies  
Labs  
Resources  
<http://www>

Copyright 2006 ROCKMAN ET AL and the EdVenture Group  
Revised Copyright 2008 ROCKMAN ET AL

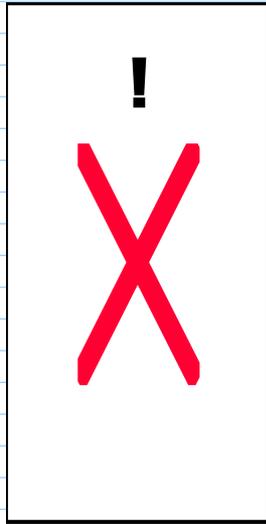
Partners • Site Map

**ROCKMAN ET AL**  
Independent • Insightful • Informative

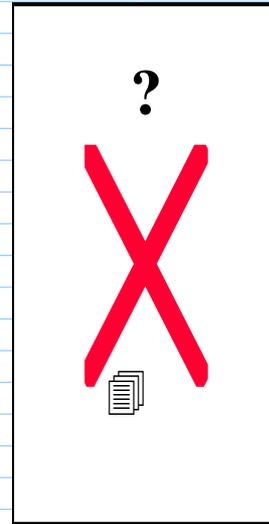
the **EdVenture** group  
Make education an adventure

The development of Evaluation Springboard was supported by the U.S. Department of Education Office of Elementary and Secondary Education (Grant No. S318A030015; West Virginia Department of Education Contract No. EDD204451). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the U.S. Department of Education or the West Virginia Department of Education.

# Two perspectives:



The P.I.



The Evaluator

# Why do an evaluation?

- Ensure that your product/program is successful...and...
- Prove that it is successful!

What you used to think was a  
necessary evil....

still is!

# What is an evaluation?

- Ensure that your product/program is successful...and...

**Formative  
Evaluation**

- Prove that it is successful!

**Summative  
Evaluation**

“Evaluation is not just for preparing good proposals, it is also an integral part of running good projects.”

Lynn Dierking, in “Framework for Evaluating Impacts of Informal Science Education Projects”(2008)

# Formative Evaluation

*Focused on development and improvement of a project*

- Are components of the project being carried out as intended? If not, what has changed and why?
- Is the project moving according to the projected timeline?
- What is working well? What are the challenges?
- Is the budget on track?
- What needs to be done to ensure progress according to plan?

# Summative Evaluation

*Measures the outcomes and impacts of a project:*

- Were the project's goals met?
- What components of the project were most effective?
- What specific impacts did the project have on intended audiences (as well as secondary audiences)?

# Summative Evaluation:

## Informal Education and Outreach Framework

Impact Category	Public Audiences	Professional Audiences
<b>Awareness</b> , knowledge or understanding (of)	STEM concepts, processes, or careers	Informal STEM education/ outreach research or practice.
<b>Engagement</b> or interest (in)	STEM concepts, processes, or careers	Advancing informal STEM education/outreach field
<b>Attitude</b> (towards)	STEM-related topic or capabilities	Informal STEM education/ outreach research or practice
<b>Behavior</b> (related to)	STEM concepts, processes, or careers	Informal STEM education/ outreach research or practice
<b>Skills</b> (based on)	STEM concepts, processes, or careers	Informal STEM education/ outreach research or practice
<b>Other</b>	Project specific	Project specific

Source: Friedman, A. (Ed) (March 12, 2008) Framework for Evaluating Impacts of Informal Science Education Projects [On-line] (p. 11). Available at [http://inisci.org/resources/Eval\\_Framework.pdf](http://inisci.org/resources/Eval_Framework.pdf)

# Three Big Questions:

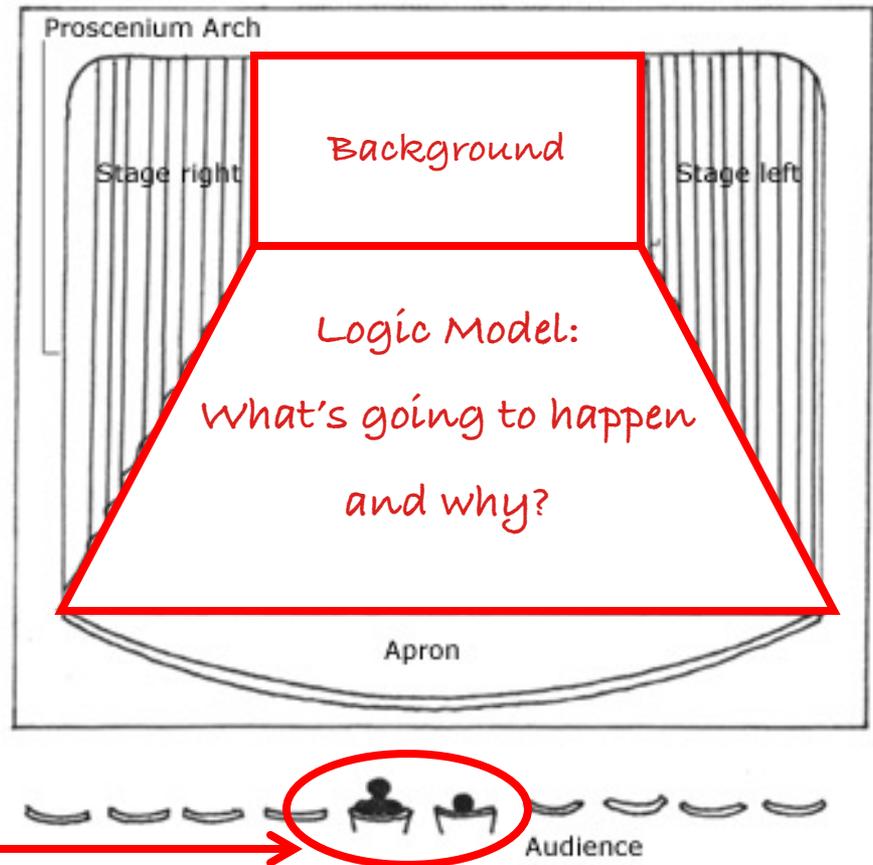
1. Are you doing what you said you were going to do?
2. How well is it (the project, program, or initiative) going?
3. Does what you are doing have an impact?

See NSF Framework **Chapter 3**  
For more info about “impact.”

**Now you're ready to start!**

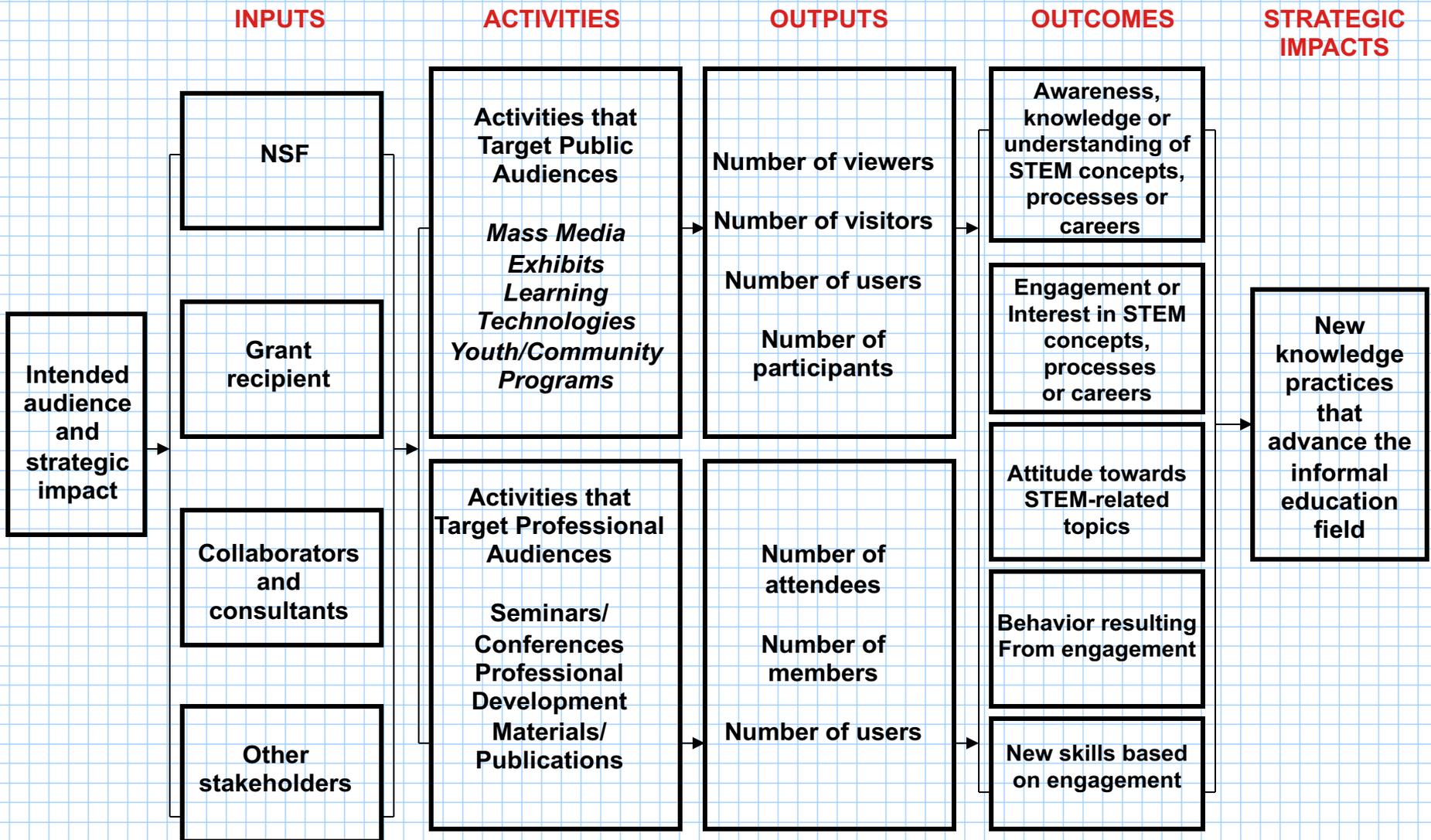
# Step 1: Prepare

- Set the stage
- Gather background information
- Develop a Logic Model



*And don't forget your Stakeholders!*

# Logic Model for the ISE Program



# Step 2: Design Plan

- Framing questions

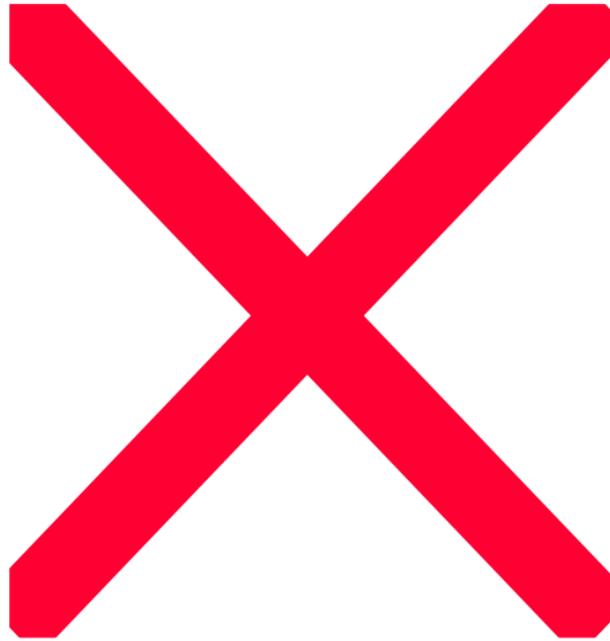
*Identify key questions that will guide the evaluation -  
What do you want to know (Remember the 3 Big ?'s)  
Consider: Audience, Resources, and Time*

- Organizing tools

*Constructs*: concepts that can be measured

*Indicators*: examples of success that can be measured

# Intended Impacts, Indicators and Evidence



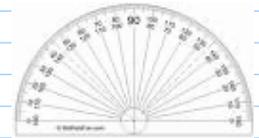
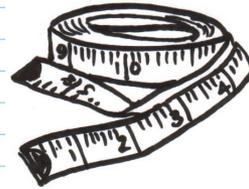
# Question/Method Matrix

Alignment of Research Questions, Constructs, and Data Sources for a Youth Media Program (NSF)

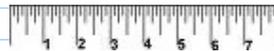
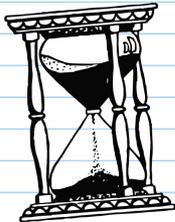
RESEARCH QUESTIONS		CONSTRUCTS	DATA SOURCES											
			Interviews with Program Staff	Classroom Observation	Focus Groups with Students	Program Evaluations**	Rubric Ratings of Skill** (i.e., Session Evaluations)	Artifacts (i.e. class work)**	Peer Mentor Rating Scale	Interviews with Peer Mentors	STP Assessment	Participant Surveys		
<b>Formative assessment</b>	Are the program components and activities of the Science and Technology Program (STP) being implemented as planned?	Integrity of implementation, supports, barriers, intended vs. enacted curriculum	✓	✓	✓	✓								
<b>Summative assessment</b>	What is the impact of participating in the STP Digital Technology Institute on participant media and technology engineering craft skills and competence?	21 <sup>st</sup> Century Skills as applied to production and media literacy					✓	✓	✓				✓	
	What is the impact of STP Science Desk on the development of participant journalistic skills, deepened understanding of science issues, and broader community awareness?	Media literacy, science content knowledge, social responsibility/community awareness, science-in-society knowledge					✓	✓	✓				✓	
	What is the impact of the STP peer-mentoring program on the development of mentoring skills and responsibility of peer mentors?	Pedagogical content knowledge, interpersonal skills, empathy				✓			✓	✓				
	What is the impact of the STP program on the interest and engagement of participants in STEM activities, courses-of-study, and careers?	Attitudes toward science and technology, awareness of and interest in science careers												✓
	What is the impact of all of the aforementioned features (i.e., skills, knowledge, mentoring and interest) over time? For instance, are there different levels of interest that emerge among students and different tracks that they take? What does attention to STEM issues look like over the course of the program?	Change over time, behaviors related to exposure to science (e.g., course of study choices, career interests, attention to science in the news, etc.)					✓	✓	✓	✓	✓	✓	✓	✓

\*\* Existing instrument in use by the youth media program

# Step 3: Select Methods



What you measure with  
depends on what you are  
measuring.



# Step 3: Select Methods

## • Quantitative

- Surveys or questionnaires
- Objective tests of comprehension
- Gate counts, television ratings, website hits
- Time spent in exhibits
- Number of posts to a website or comments/questions

- Analyze a large quantity of data
- Findings are more generalizable

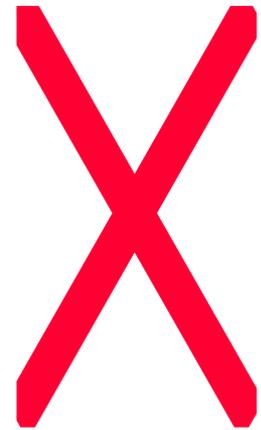
## • Qualitative

- In-depth interviews
- Focus Groups
- Observations
- Analysis of authentic data, user/visitor created products

- Get a more in-depth understanding
- Helps with interpretation of quantitative data

# Tips

Think about what you want to know and be able to say at the end of your evaluation.



# Tips

Consider what data you may already have access to,

i.e., Existing Data:

- Gate counts
- Website hits and tracking data
- Television ratings
- User-created products
- Data from past research or evaluation efforts

# Tips

Don't limit yourself to one  
method - consider using  
Multiple Methods



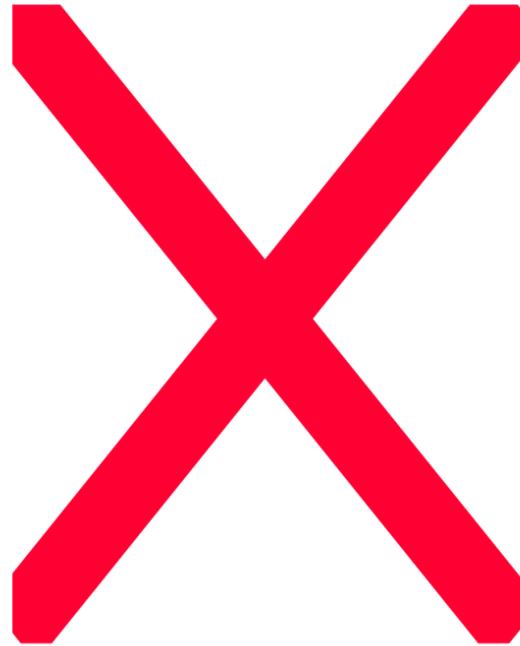
Mixed Methods Evaluations

# Step 4: Collect Data

## Surveys

- Types of questions
- Word Choice
- Sampling
- Pilot!
- Anonymity
- Personal questions
- Keep it short
- Strategies for collection

**Types of Survey  
Questions** →



# Step 4: Collect Data

## Assessments

A	B	C	D	E
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

**Get your #2 pencils  
ready!**

**Objective assessment:  
only one right answer**

**Subjective  
assessment: more  
than one correct  
answer**

# Step 4: Collect Data

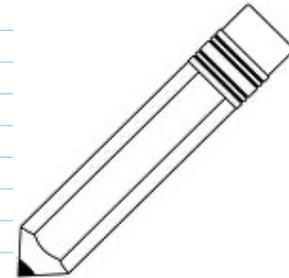
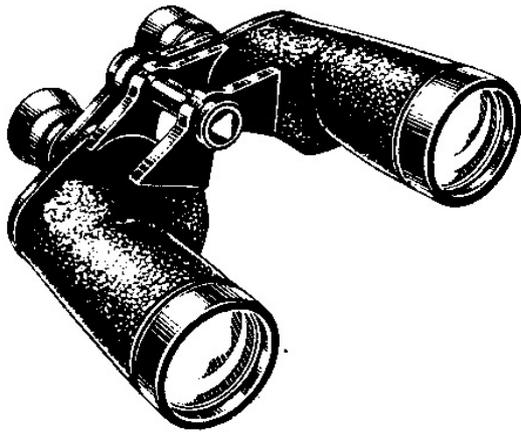
## Interviews & Focus Groups

- Structured vs. In-Depth
- One-on-one or pairs
- Small group (8-12)
- Find group consensus
- Encourage diversity in responses

# Step 3: Collect Data

## Observations

- *Who, What, Where, When, How?*
- *Use a rubric or structured protocol to ensure consistent data collection*



# Step 5: Analyze Data

- **Quantitative**

- *Prepare the data: code, enter, and check for errors*
- *Run analyses: what differences and patterns do you see?*

- **Qualitative**

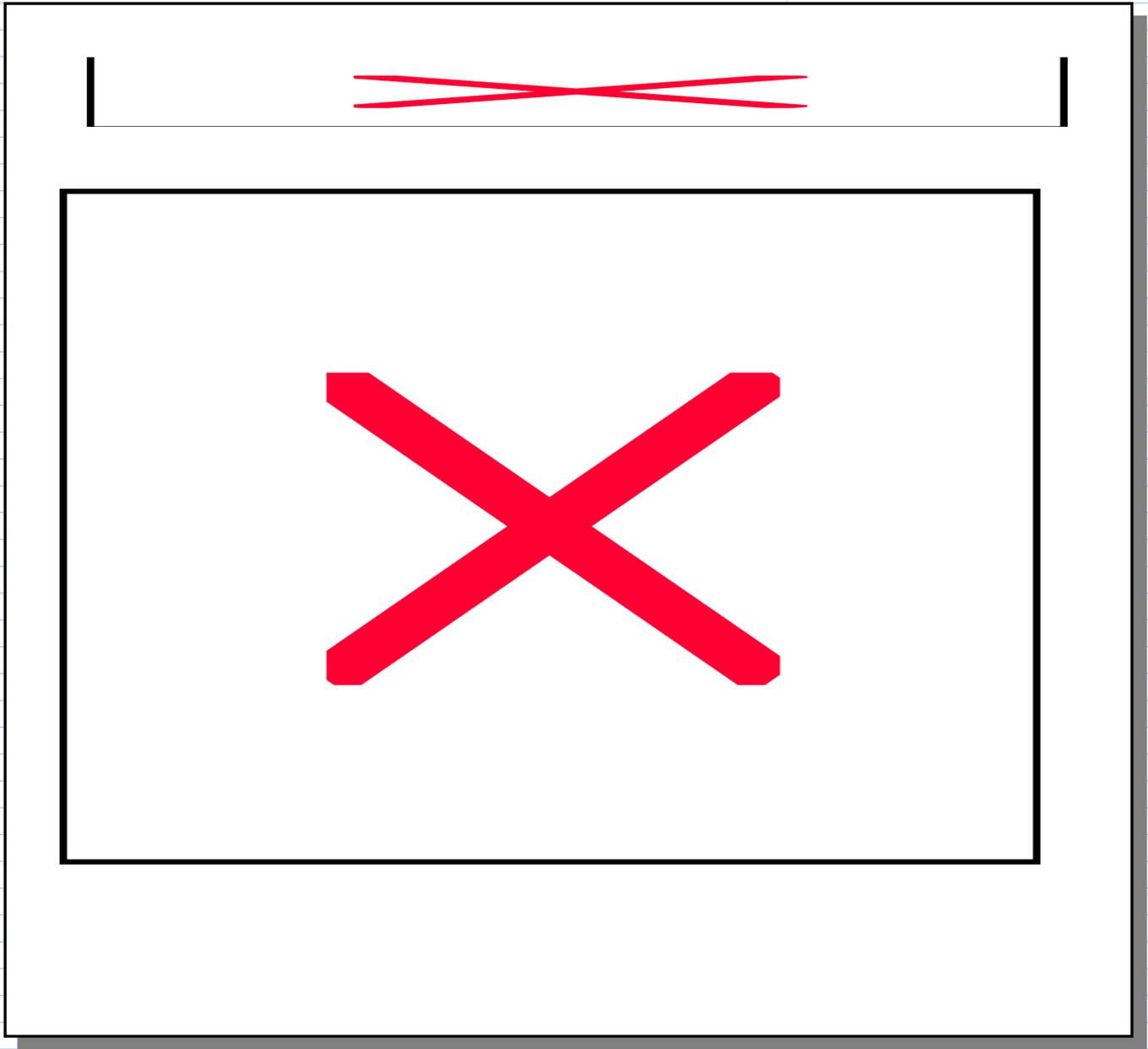
- *Coding - start general...then get more specific*
- *Use instruments and goals to guide analysis*

- **Integrate/Synthesize**

- *Use data from different sources to get the big picture and draw conclusions*

# Step 6: Take Action!

- Report
  - *Clear and concise; provides adequate evidence for claims and enough explanation to make sure readers understand your interpretation of the data*
  - *You don't have to report on every piece of data or every finding: Know when to say when!*
- Make Recommendations/Changes
  - *Be specific*
  - *Plan for further evaluation after changes are made*



# Evaluation Springboard

**Evaluation Springboard** responds to the need for knowledge and skills in evaluation for those who want to undertake or commission evaluations of informal science education projects.

While evaluation is about "doing something, it is important to happen in real life. Often it is to be made under pressure or where the project is so new that you gather information that can be used in the implementation of the project.

We hope that this website will help you in launching your own evaluation project. It's the key to determining the success of your science projects.

Copyright 2006 ROCKMAN ET AL. and Revised Copyright 2008 ROCKMAN ET AL.

**ROCKMAN ET AL.**  
Independent • Insightful • Informative

The development of Evaluation Springboard S318A030015; West Virginia Dept of Education. This material are those of the author.



### Getting Started

**What is an Evaluation?**

As greater demands are placed on you to go—check on progress, monitor, build powerful projects, you need to develop an evaluation plan for the development of an evaluation project that have the great

- THREE BIG QUESTIONS**
- To simplify the concept of evaluation, we have identified three big questions:
1. Are you doing what you want to do?
  2. How well is it (the process) going?
  3. Is what you're doing it worth the effort?
- Many labels are used to describe evaluation, but there are a few that are worth knowing about. Between them is a useful one.*

# Evaluation Springboard

Getting Started   Evaluation 101   Case Studies   Labs   Resources

Introduction to Labs	Logic Models	Framing Questions	Consent & Human Subjects	Evaluation Types	Evaluation Methods	Data Collection	Data Analysis	Taking Action
----------------------	--------------	-------------------	--------------------------	------------------	--------------------	-----------------	---------------	---------------

## Lab 1: Building a Logic Model

A logic model is a visual way of showing how you believe (or your theory behind how) your project will work to solve a problem.

**Key Information:**

In a logic model, you describe and depict the relationship among these project factors:

**Inputs / Resources**

What materials, money, staff, and other assets are available and necessary for the project's operation?

**Actions / Activities**

What needs to be done to achieve the project goals?

**Outputs**

Think About   **Activity**   Link to Resources

**Question 1**

Think about a project that you would be interesting in evaluating (or use one of the Case Studies you read). What are the goals or objectives of this project?

**Question 2**

What data and information already exist? What are the sources?

**Question 3**

Is a logic model needed for this project? Why?

**Question 4**