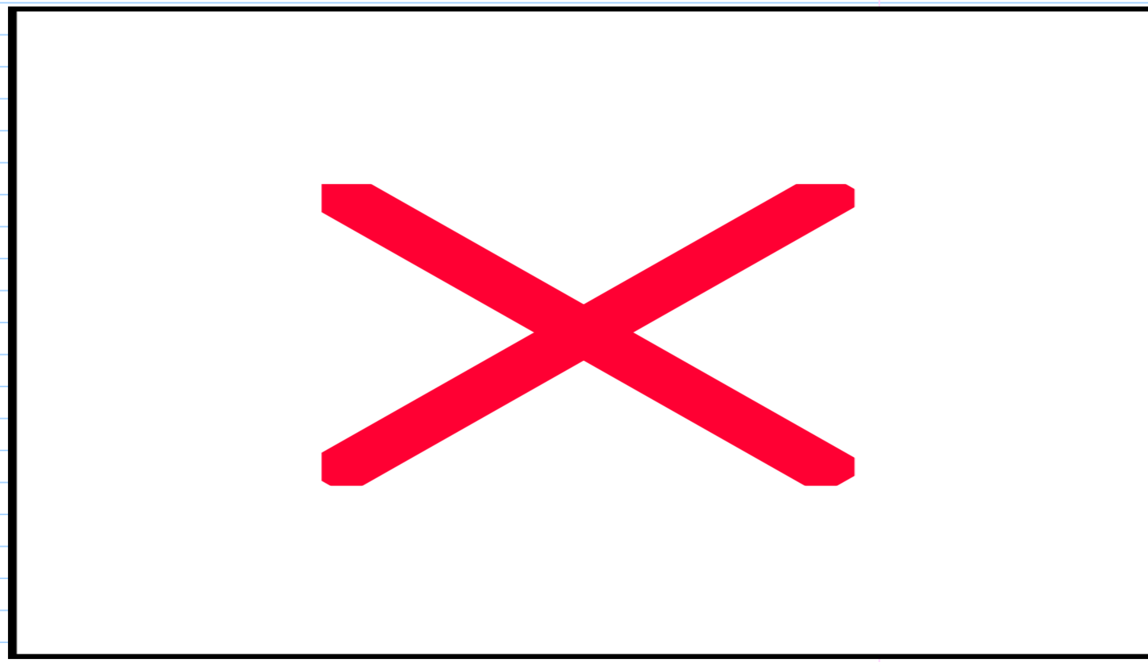
Evaluation 101

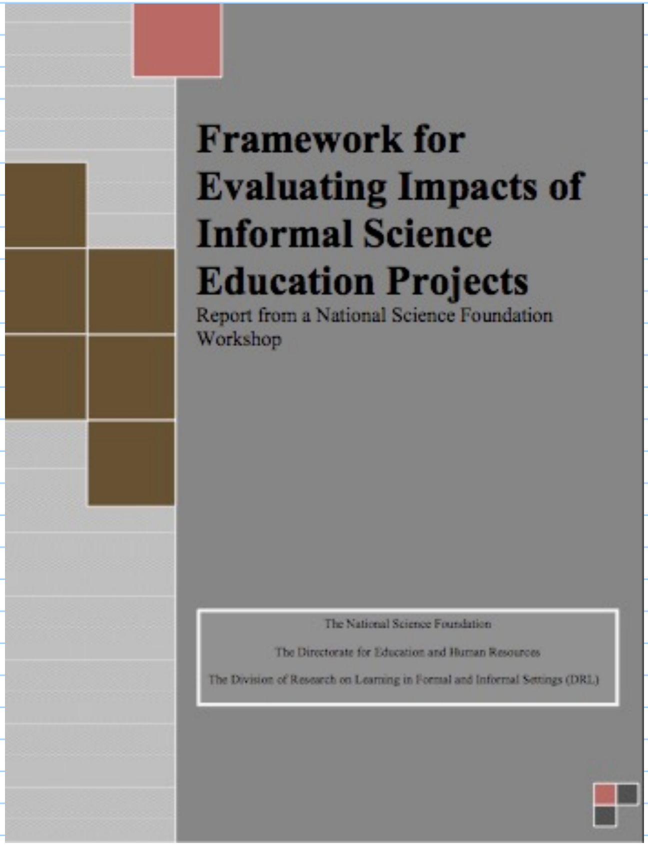
Everything You Need to Know to Get Started Evaluating Informal Science Education Media

Saul Rockman and Jennifer Borse - Rockman et al

Disclaimer:



This presentation is largely based on:


Framework for Evaluating Impacts of Informal Science Education Projects

Report from a National Science Foundation Workshop

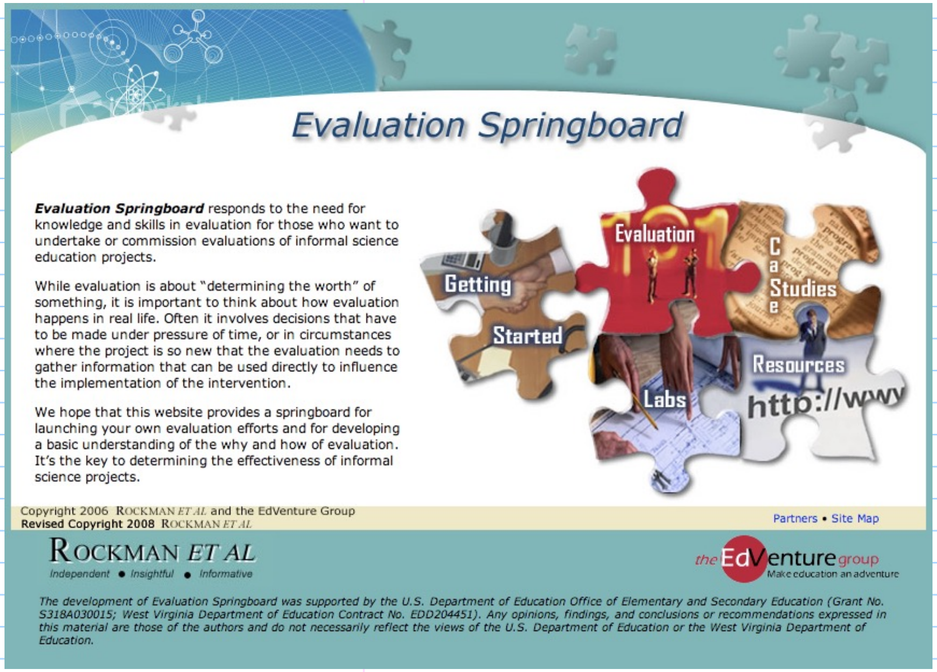
The National Science Foundation

The Directorate for Education and Human Resources

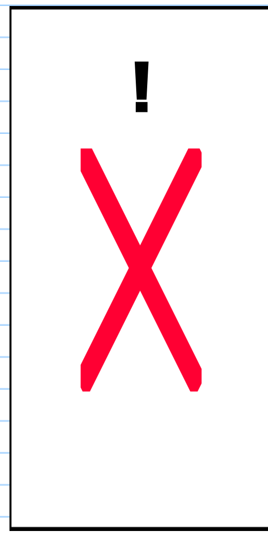
The Division of Research on Learning in Formal and Informal Settings (DRL)

And our website:

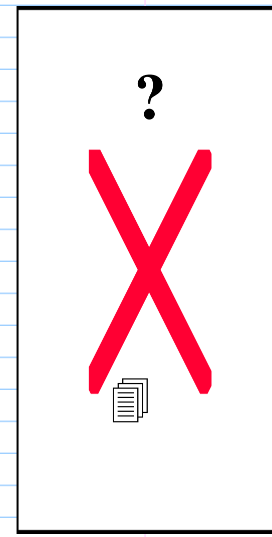
http://evaluationspringboard.org/science



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
Awareness, knowledge or understanding (of)	STEM concepts, processes, or careers	Informal STEM education/ outreach research or practice.
Engagement or interest (in)	STEM concepts, processes, or careers	Advancing informal STEM education/outreach field
Attitude (towards)	STEM-related topic or capabilities	Informal STEM education/ outreach research or practice
Behavior (related to)	STEM concepts, processes, or careers	Informal STEM education/ outreach research or practice
Skills (based on)	STEM concepts, processes, or careers	Informal STEM education/ outreach research or practice
Other	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://insci.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?

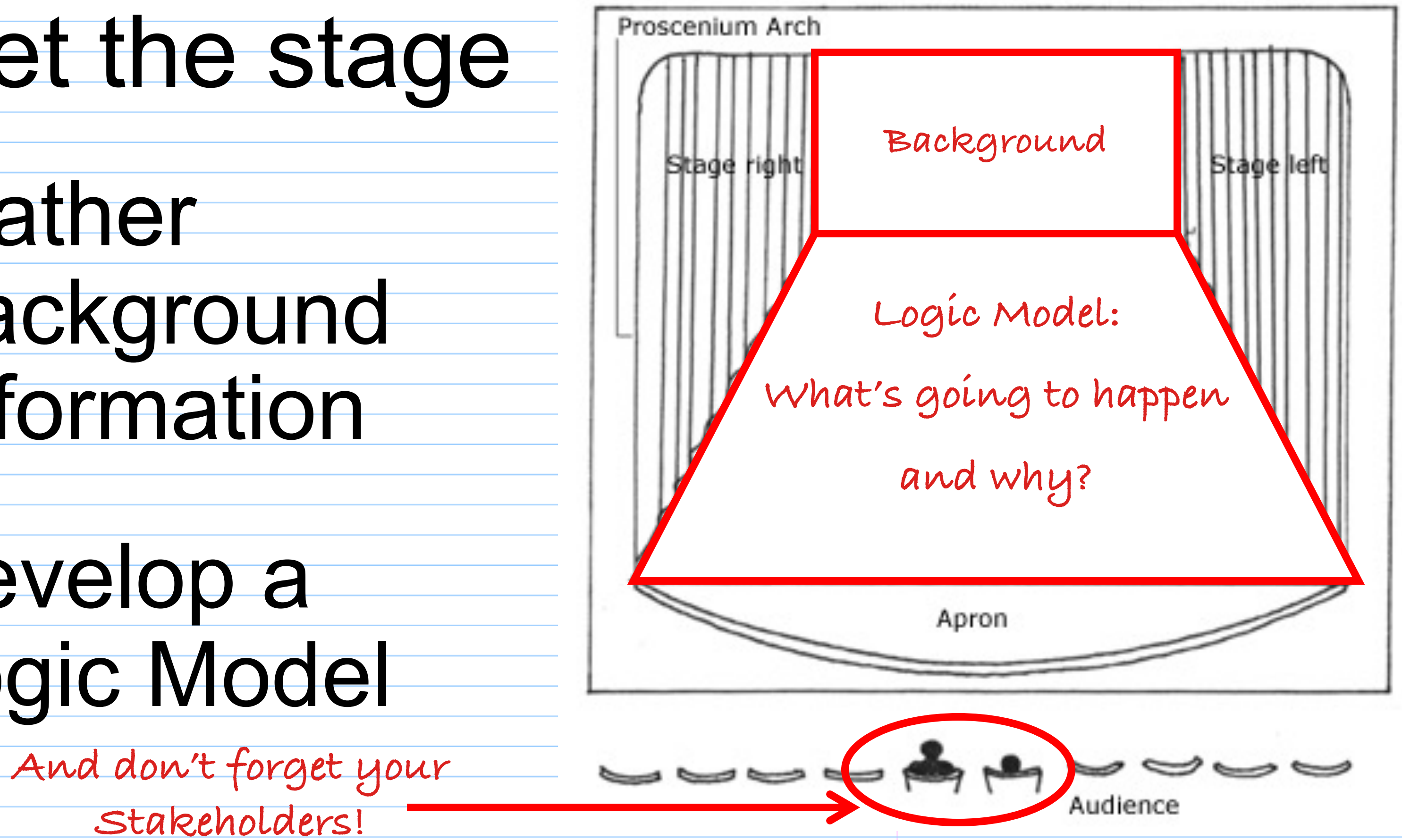
See NSF Framework **Chapter 3**
For more info about "impact."

Chapter 1: ~~Intro to Evaluation~~

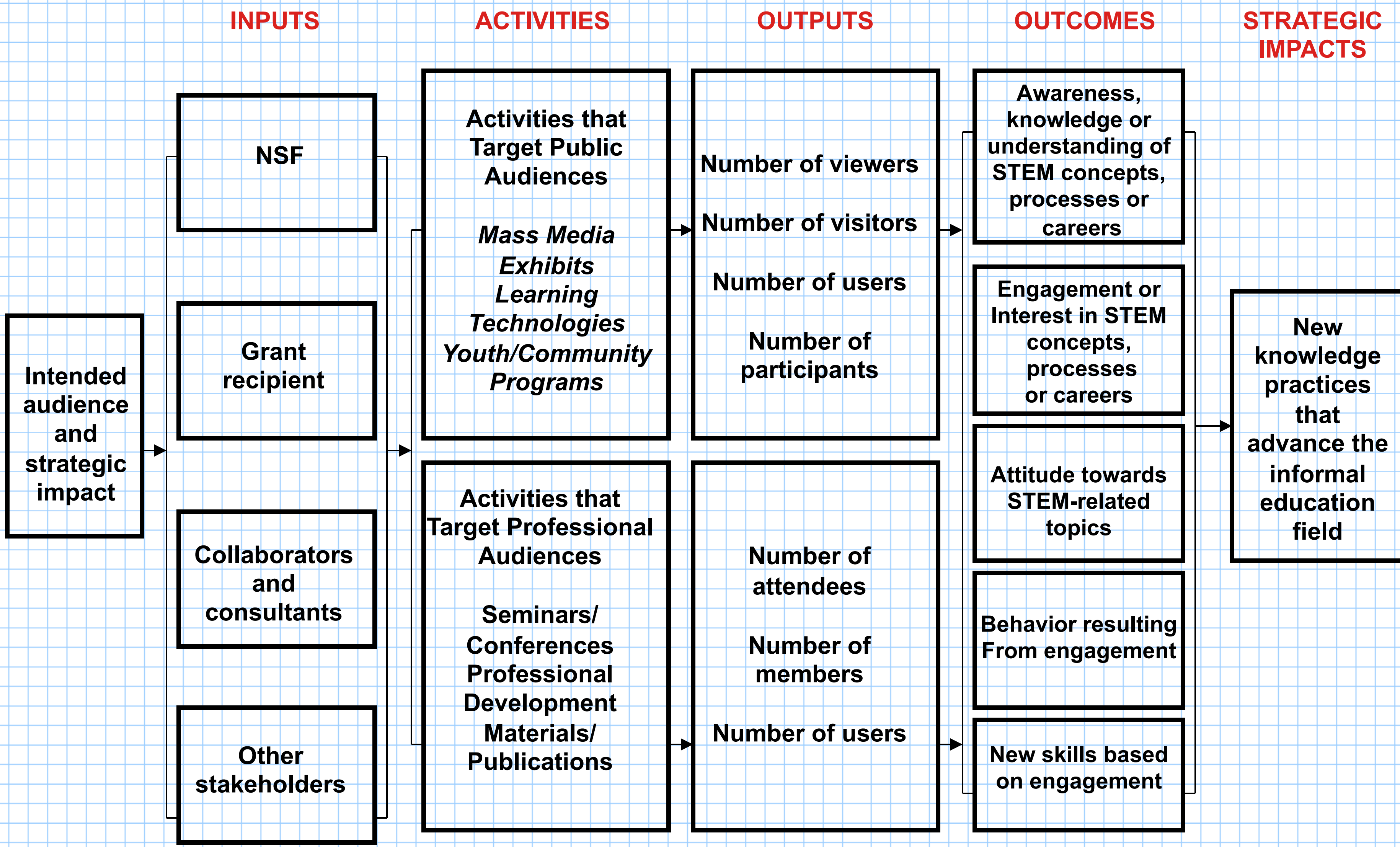
Now you're ready to start!

Step 1:Prepare

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



Logic Model for the ISE Program



Step 2:Design Plan

- Framing questions

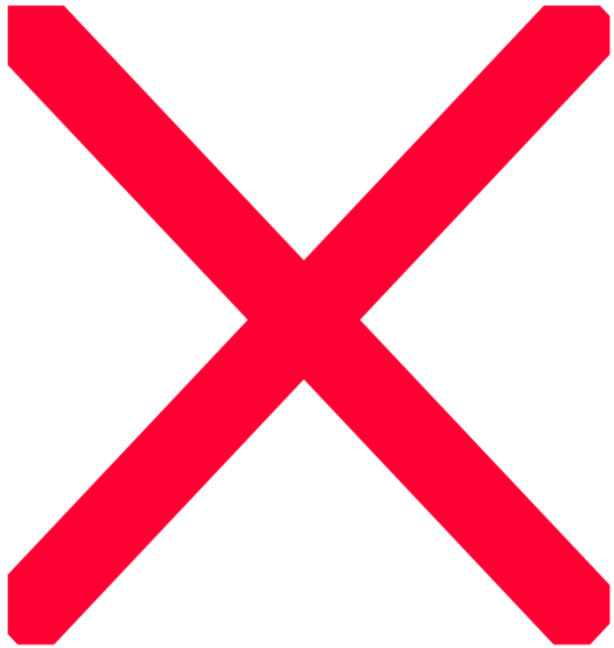
  Identify key questions that will guide the evaluation –
  What do you want to know (Remember the 3 Big ?'s)
  Consider: Audience, Resources, and Time

- Organizing tools

  Constructs: concepts that can be measured

  Indicators: examples of success that can be measured

Intended Impacts, Indicators and Evidence



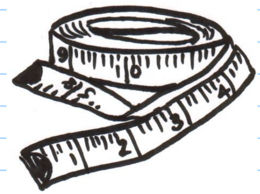
Question/Method Matrix

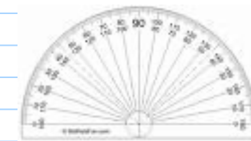
Alignment of Research Questions, Constructs, and Data Sources for a Youth Media Program (NSF)

	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
Formative assessment	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	✔	✔	✔	✔						
Summative assessment	What is the impact of participating in the STP Digital Technology Institute on participant media and technology engineering craft skills and competence?	21st 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.)					✔	✔	✔	✔	✔	✔

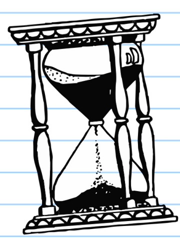
** Existing instrument in use by the youth media program

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

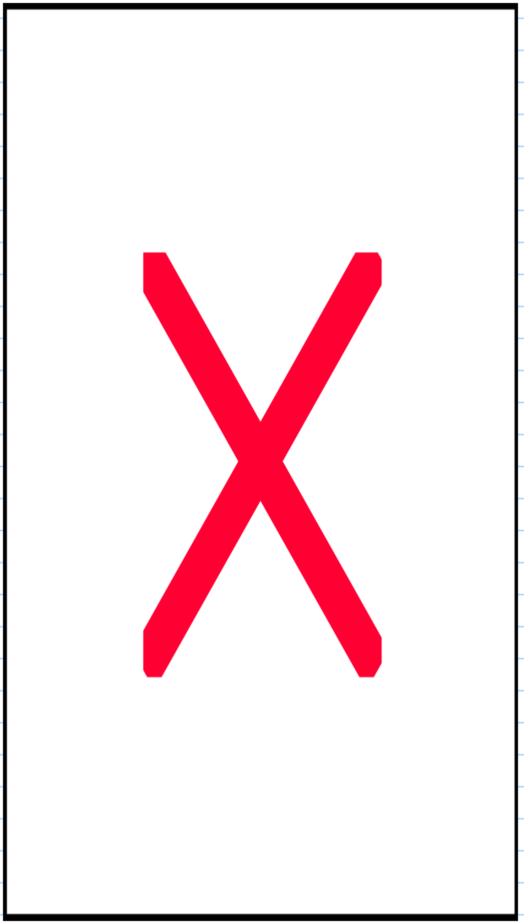
- Analyze a large quantity of dat
- Findings are more generalizable

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

- Get a more in-depth understanding
- Helps with interpretation o 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

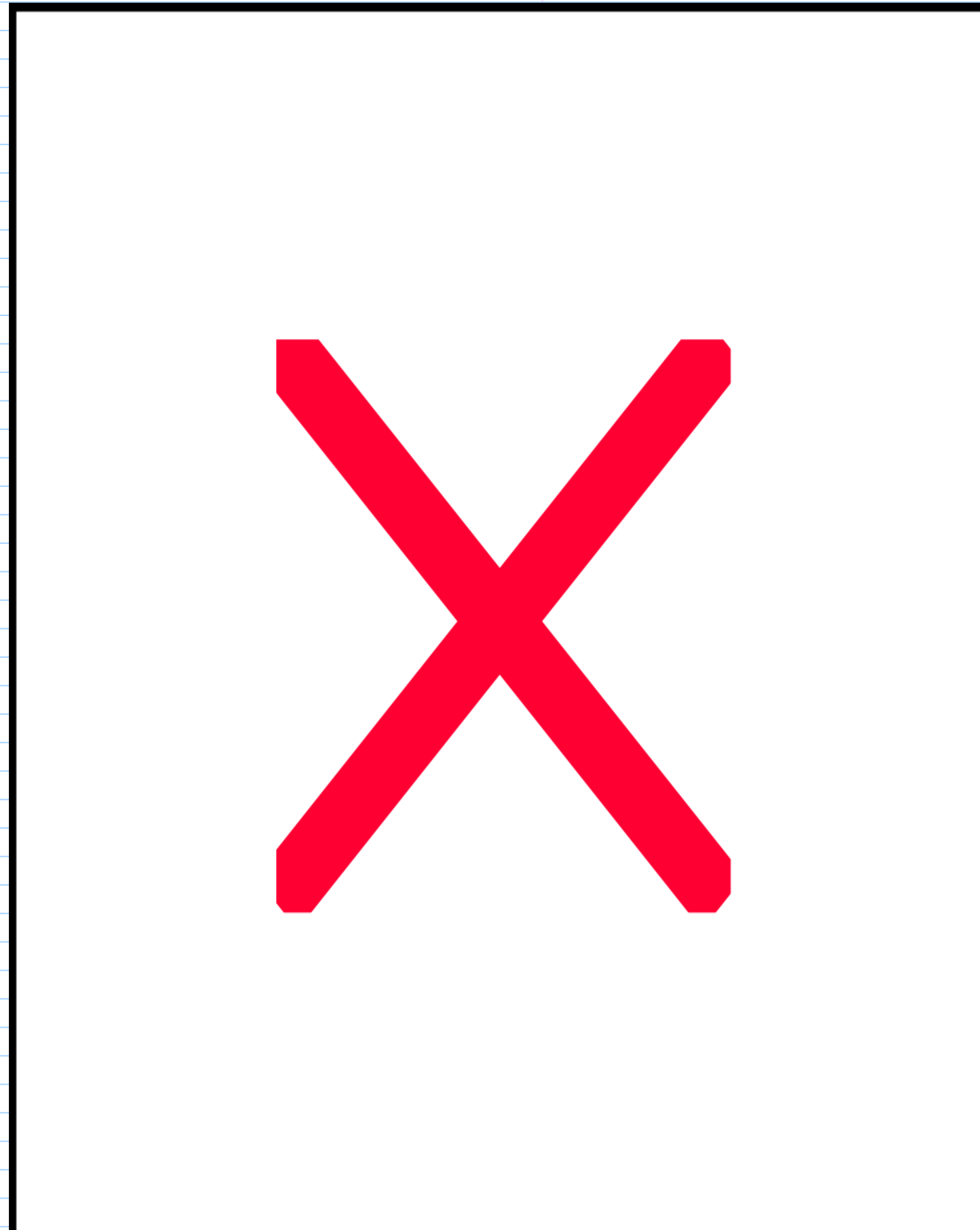
Mixed Methods Evaluations

Step 4:Collect Data

Surveys

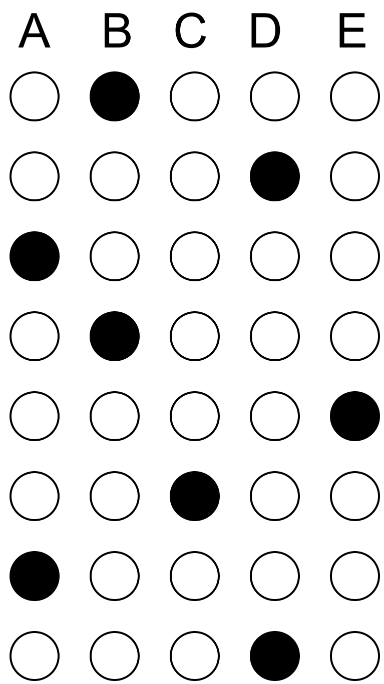
- Types of questions
- Word Choice
- Sampling
- Pilot!
- Anonymity
- Personal questions
- Keep it short
- Strategies for collection

Types of Survey Questions



Step 4:Collect Data

Assessments



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

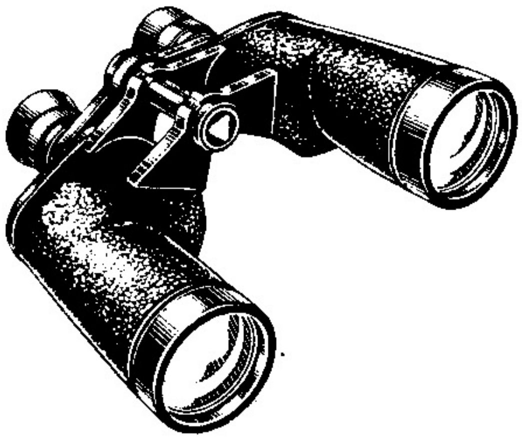
- Structured vs. In-Depth
- One-on-one or pairs

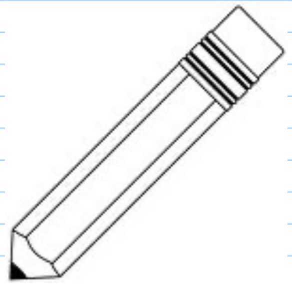
- Small group (8-12)
- Find group consensus
- Encourage diversity in responses

Step 3:Collect Data

Observations

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



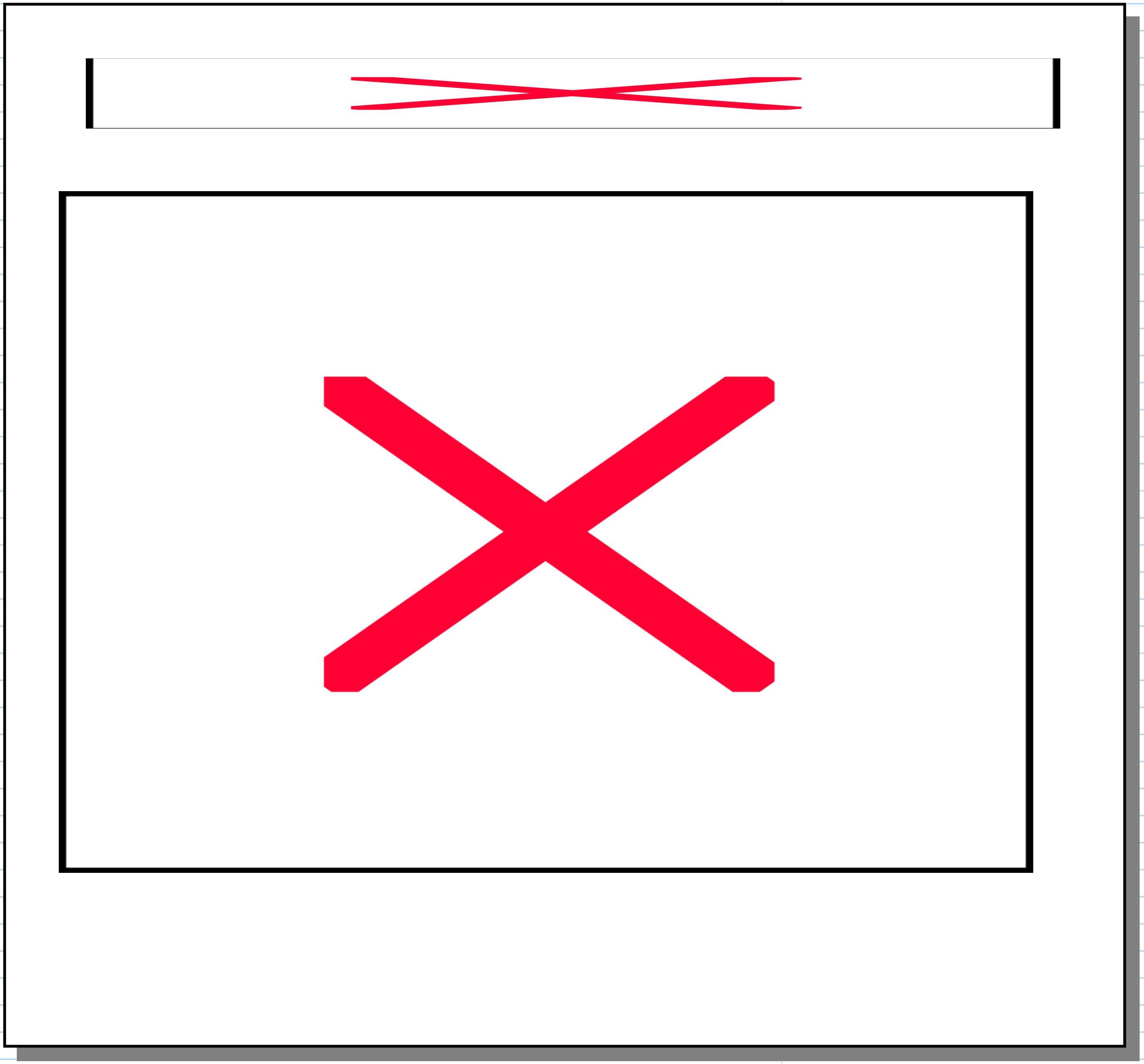


Step 5:Analyze Data

- 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



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