

Project Implementation



Implementation

- **Pilot** the project or pieces of the project
- **Implement** the project according to the results of the needs assessment, and the criteria established in the project design, and development phases

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Application of instructional design theory and practice to the design and development of projects to affect a change in knowledge, skills, attitudes, or behaviors can ensure a good “plan of attack” to address the issue. To be effective in reaching the desired project outcomes, a project needs more than a good strategy; it also needs to be implemented.

The implementation phase of the instructional design process refers to the actual delivery of the instruction as designed. The product of this phase is an individual who has mastered the knowledge and skills presented during the learning process.

When designing a new course, the design and materials should be tested during a pilot course. This pilot course affords the instructional designer and trainers an opportunity to review and revise the course before it is fully implemented.

The trainer who actually delivers the training must be knowledgeable and skilled in the competency-based training approach used by the instructional designer when designing the course. The relationship between the instructor and the audience is also important. The audience should trust the presenter and see this person as a competent “expert” on the content.

Project implementation should be evaluated on what actually takes place and on services or products that are actually delivered. Performance measurement can help to identify (a) whether a project is reaching the appropriate audience, (b) whether its

products, services, delivery, and support functions are consistent with project design specifications, and (c) whether positive changes appear among the program participants.

Components of the implementation phase of a project:

1. Pilot the project
2. Planning and preparation for the actual delivery
3. Performance measurement
4. Performance reporting
5. Evaluation

Activity

Large group discussion:

How do the outputs and outcomes of front-end evaluation and formative evaluation contribute to project implementation?

How is performance measurement applied to project implementation? Do you have examples of when you have used performance measures?

Evaluation

Evaluation

- Use the appropriate **type(s)** of evaluation.
- Evaluate at the correct **level(s)** of impact.
- Evaluate to **determine merit and worth**.
- Make **decisions** about the project based on the evaluation results.

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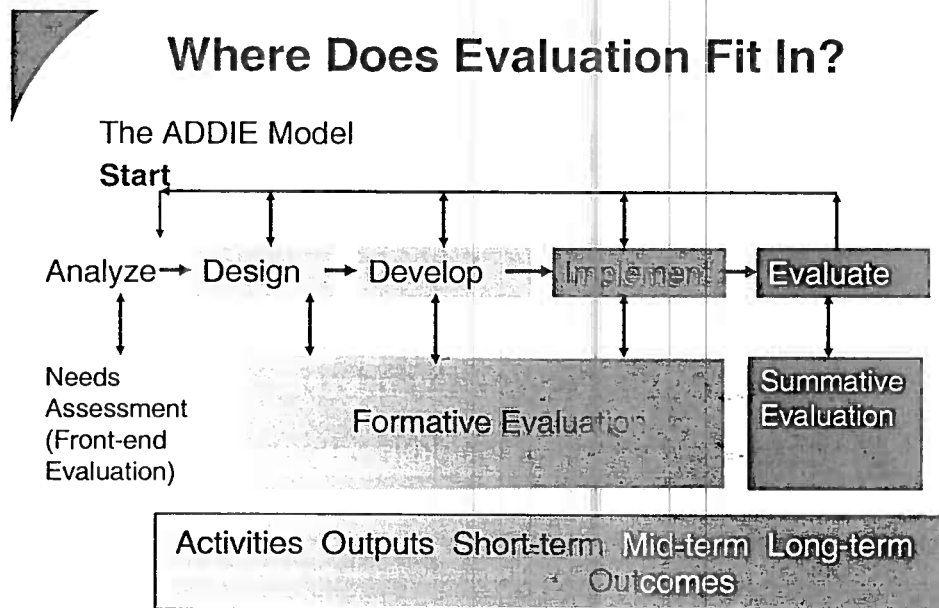
Evaluation is the systematic collection of information about activities, characteristics, and outcomes of projects to make judgments about the project, improve effectiveness, or inform decisions about future programming (adapted from Patton, 1997).

Evaluation by both project developers and the audience can provide the basis for project/activity improvement, the development of further activities, and information about the cause and effect of why a project is or is not meeting its objectives.

Projects that are structured and designed properly have objectives or elements that specify what must be accomplished, to what degree, and within what time period. Evaluation tells you whether or not this has been accomplished.

We have already discussed one form of evaluation, the needs assessment. The methods, tools, and process of assessing audience needs prior to developing a project are the same as those used to assess the project design process, project components (resources, activities, outputs, and outcomes), and the ultimate impact and success of the project.

Where Does Evaluation Fit In?



Components of an Evaluation Plan

- Program or product
- People: stakeholders, audience, evaluator
- Goals and objectives
- Systematic method(s)
 - design
 - sampling
 - instruments/tools
- Expected data and analysis
- Intended use of results

Levels of Evaluation

There are a number of levels on which to evaluate projects. Each of these levels provides slightly different information about the impact of a project, from the simplest and most immediate (reaction) to the long-term, more complex (return on investment).

Kirkpatrick's 4 levels of evaluation

According to Donald Kirkpatrick's model, there are 4 levels of evaluation: reaction, learning, behavior, and results. Evaluation should always begin with level one, and then, as time and budget allow, should move sequentially through levels two, three, and four. Information from each prior level serves as a base for the next level's evaluation. Thus, each successive level represents a more precise measure of the effectiveness of the training program, but at the same time requires a more rigorous and time-consuming analysis (Kirkpatrick, 1994).

Level 1. Reaction – What is the participants' response to the project or activity?

Level 2. Learning – What did the participants learn?

Level 3. Behavior – Did the participants' learning affect their behavior?

Level 4. Results – Did participants' behavior move the original situation toward the objective (desired outcome)?

A fifth level of evaluation, Return on Investment, was later added by Jack Phillips and is now considered a component of the Kirkpatrick model (Stoel, 2004). In many cases, this is an important level for project or program evaluations.

Level 5. Return on Investment (ROI) or Cost-Benefit* – Is the cost of implementing this project reflected in the degree of benefits received from the results?

** The 5th level, Return on Investment (ROI), is often included among the levels of evaluation, although it is not in Kirkpatrick's original model.*

It is important to note that although these methods are presented in a hierarchy of increasing complexity, that hierarchy does not indicate relative value. All these levels are useful. Which one(s) you use should be determined by what type of information is needed to evaluate the project accurately.

Evaluation levels background

Level 1. Reaction or Satisfaction*

Reaction evaluation measures the audience's immediate positive or negative response to the project or learning experience. This is the most common level of evaluation.

Often referred to as "smile sheets," they ask participants to rate their perceptions about the quality and impact of the specific program or activity. These evaluations can range from a handful of questions regarding project delivery, facility, or usefulness, to forms that ask participants to rate all aspects of the activity.

Reaction surveys or evaluations are an important tool to measure participants' satisfaction. They are relatively easy to administer, tabulate, and summarize in a results report.

* Kirkpatrick = Reaction; Phillips = Reaction, Satisfaction, Planned Action

Example Questions for Level 1 Evaluation:

Attending the workshop was:

Poor use of time 1.....2.....3.....4 Good use of my time

Length of workshop in relationship to the materials presented was:

Too long 1.....2.....3(just right)4.....5 Too short

Did you enjoy this activity (Would you return? Would you recommend it to others?)

Not at all 1.....2.....3.....4 Very much

Level 2. Learning

Knowledge evaluation measures whether participating in the project increases the audience's knowledge and awareness of the issues addressed, and influences attitudes.

A number of different tools can be designed to measure what project participants have learned. Before and after tests, simulations or demonstrations, or other in-class (observable or measurable) methods allow instructors or project designers to determine if the knowledge or skills identified in the objectives were learned. It is important to remember that regardless of the method used to determine this, the "test" must relate directly to the course objectives.

Learning evaluations are more difficult to design and administer than reaction evaluations. One reason for this is that they must be customized for every instructional activity or project and must reflect the conditions of the specific job or real-world application of the learning. It is also important to remember that learning evaluations measure the level of knowledge or skills of participants at the time the test is administered. These evaluations do not indicate long-term knowledge or skill retention, nor are they an indication of how these will be applied to the real-world situation.

Example Questions for Level 2 Evaluation

The degree to which the stated learning objectives for the workshop were met:

Not at all 1.....2.....3.....4.....5 Completely

Rank the degree to which the workshop increased your knowledge:

Objective 1 No increase 1.....2.....3.....4.....5 Extensive increase

Objective 2 No increase 1.....2.....3.....4.....5 Extensive increase

What type of evaluation is illustrated by this form? Why?

Front-end (Needs Assessment)

Formative

Summative

Suggest 2 performance measures that we could collect to gauge success in meeting the workshop objectives?

1.)

2.)

Level 3. Behavior or Application*

Application evaluation measures if the participant has been able to use the new knowledge and skills learned.

Level 3 is significantly more complex than the first two levels in that it requires contacting participants after they have had time to apply the new knowledge and skills. As with other evaluation levels, many different tools can be used to collect the data. Each tool has different strengths and limitations. Tools include surveys, questionnaires, interviews, focus groups, observations, and written document review. Regardless of the tool, the questions should present specific skills and knowledge areas and ask participants if and how they have applied them since learning them. Questions would focus on relevance of the program, if they have gone back and used materials provided by the learning experience, how new knowledge has been applied to their jobs, and use of new skills.

Measuring the application of the new knowledge and skills learned is becoming more accepted as a level that should be evaluated. It is important to know not only that they understood the material during the learning experience, but that they were then able to go back to their "regular" jobs and apply it. This level of evaluation provides proof of whether transfer of learning has occurred. It is much more powerful to justify a program by demonstrating that participants used the information rather than reporting the number that participated or "liked" the program. Many decision makers are now demanding increased accountability from resources spent educating the target audience.

* Kirkpatrick = Behavior; Phillips = Application

Example Questions for Level 3 Evaluation

Have you applied the skills you learned at the workshop to your current projects?

Not at all 1.....2.....3.....4.....5 Extensively

Have you referred to the materials in the past 6 months?

Not at all 1.....2.....3.....4.....5 Extensively

Do you intend to implement the action plan developed at the workshop?

Not at all 1.....2.....3.....4.....5 Extensively

Have there been barriers in applying the information learned during the workshop? Please explain your answer. No _____ Yes _____

Comments:

Level 4. Results or Business Impact*

Results evaluation measures whether the behavioral changes have an overall impact on the environment or audience's lives.

There is a constant pressure on agencies to demonstrate the efficiency and effectiveness of all their programs. To actually conclude that the project has had its desired effect, the participants will have to "successfully" apply the new skills or knowledge. The term "successfully" is defined as the new skills and knowledge leading to the desired result or impact on an audience or the environment. This level of long-term information is becoming increasingly important when priorities are being set or when decisions to continue or remove the program are being made.

Level 4 or results evaluation is typically feasible for only large-scale projects that have been designed to have specific results for a specific audience. For example, if you were trying to measure the results of teaching participants how to facilitate, you would need to go to the people who had been facilitated by the participants. This requires that the measurements be at least one step removed from the participants of your program. Because it can be quite difficult to isolate the effect of your program, this level of evaluation can be complex.

* Kirkpatrick = Results; Phillips = Business Impact

Example questions

– *After training on wetland restoration:*

How many acres of wetlands have been successfully restored?

– *After customer service training, the question would be asked of the customers:*

How satisfied are you with the level of service provided by XXX?

Not at all satisfied 1.....2.....3.....4.....5 extremely

–*Several months after a workshop on how to conduct teacher training, participants could be asked:*

Have the workshop information and skills resulted in a beneficial change to your teacher training activities?

Not at all 1.....2.....3.....4.....5 extensively

Level 5. Return on Investment (ROI), or Cost-Benefit Analysis

Cost-Analysis Approaches in Evaluation

Cost-benefit analysis (CB)

CB is the evaluation of a program or product according to its costs and benefits when each is measured in monetary terms. A program or product must show benefits in excess of costs. In selecting from among several alternatives, one would choose that particular one that had the highest benefit-cost ratio (or, conversely, the lowest ratio of costs to benefits). For example, let's say you produce a CD on nonpoint source pollution. You track the total costs of production, marketing, and distribution and the costs of beneficial outcomes. From those data you develop a benefit-cost ratio and assess the value of that product based on the ratio. (Note: The major disadvantage to CB is that it is very difficult to assign costs to benefits.)

An alternate approach:

Cost-effectiveness analysis (CE)

CE is the evaluation of alternative programs or products according to both their costs and their effects in producing some outcome. The most preferable alternative would be the one that shows the lowest cost for the desired changes in outcome. For example, let's say you produce two products on nonpoint source pollution: a Web site and a brochure with CD. You track the total costs and outcomes of both, and then compare them to determine which product provides the maximum effectiveness per level of cost (or, conversely, the least cost per level of effectiveness).

Source:

Levin, H.M., and McEwan, P.J. 2001.

Evaluation Tools and Instruments

The following table summarizes the purpose, advantages, and challenges of using different data collection tools when conducting evaluations. A few additional tools are included, as well as those that were shown in the similar table on pages 36–37.

Use, Benefits, and Limitations of Various Data Collection Instruments for Evaluations

Method	Overall Purpose	Advantages	Challenges
Interviews	To fully understand someone's impressions or experiences or learn more about their answers to questionnaires	<ul style="list-style-type: none"> • get full range and depth of information • develops relationship with client • can be flexible with client 	<ul style="list-style-type: none"> • can take much time • can be hard to analyze and compare • can be costly • interviewer can bias client's responses
Focus Groups	To explore a topic in-depth through group discussion, e.g., about reactions to an experience or suggestion, understanding common complaints, etc.; useful in evaluation and marketing	<ul style="list-style-type: none"> • quickly and reliably get common impressions • can be efficient way to get much range and depth of information in short time • can convey key information about programs 	<ul style="list-style-type: none"> • can be hard to analyze responses • need good facilitator for safety and closure • difficult to schedule 6–8 people together
Questionnaires, Surveys, and Checklists	To quickly or easily get lots of information from people in a nonthreatening way	<ul style="list-style-type: none"> • can complete anonymously • inexpensive to administer • easy to compare and analyze • administer to many people • can get lots of data • many sample questionnaires already exist 	<ul style="list-style-type: none"> • might not get careful feedback • wording can bias client's responses • impersonal • in surveys, may need sampling and statistical expertise • doesn't get full story
Observation	To gather accurate information about how a program actually operates, particularly about processes	<ul style="list-style-type: none"> • view operations of a program as they are actually occurring • can adapt to events as they occur 	<ul style="list-style-type: none"> • can be difficult to interpret behaviors • observations can be difficult to categorize • can influence participants' behaviors • can be expensive

Method	Overall Purpose	Advantages	Challenges
Literature Review	To gather information on the audience or the issue. Identify what previous investigators have found about the state of the knowledge, skills, behaviors, or attitudes of the intended audience with relation to the issue	<ul style="list-style-type: none"> • can provide much information in relatively little time • has most likely been reviewed or seen by audience • makes use of already gathered information • helps to chart changes over time • provides evidence about the problem • minimum effort or interruption of audience 	<ul style="list-style-type: none"> • can be out-of-date (e.g., technology needs) • data synthesis can be difficult • may not address specific questions of concern • not flexible means to get data; data restricted to what already exists • statistical data may not address perceptions of the problem, or may not address causes of the problem • reports may be incomplete
Tests	To determine the audience's current state of knowledge or skill regarding the issue	<ul style="list-style-type: none"> • helps identify a problem or a deficiency in knowledge or skills • results are easily quantified • individual performances can be easily compared • easily seen as job-related • helps determine if the problem is a training issue 	<ul style="list-style-type: none"> • limited availability of validated tests for specific situations • results can be influenced by attitudes • language or vocabulary can be an issue • people may be concerned about how results will be used • adults may resent taking tests
Concept Maps	To gather information about someone's understanding of and attitudes towards a complex subject or topic	<ul style="list-style-type: none"> • offers a more comprehensive and complex view of someone's thinking than a test does • could be a better tool for visual learners or test-phobic people • can gather qualitative and quantitative data • useful for adults and children 	<ul style="list-style-type: none"> • takes training to complete properly • takes training to administer • can be challenging and time consuming to score • can be difficult to analyze and interpret
Rubrics or Matrices (see the sample rubric in the appendix)	To assess how well someone is able to perform a task or behavior	<ul style="list-style-type: none"> • focuses an observer's observations • makes a hard-to-quantify performance quantifiable • useful to assess what people do rather than just what they know • good for collecting time-series data 	<ul style="list-style-type: none"> • development can be time consuming because it requires the identification of all the key elements of a performance • not flexible; could miss key elements if not listed on the rubric • high degree of subjectivity

Method	Overall Purpose	Advantages	Challenges
Documentation or Product Review	To gather impressions of how program operates without interrupting the program; comes from review of applications, finances, memos, minutes, etc.	<ul style="list-style-type: none"> • get comprehensive and historical information • doesn't interrupt program or client's routine in program • information already exists • few biases about information 	<ul style="list-style-type: none"> • often takes much time • information may be incomplete • need to be quite clear about what looking for • not flexible means to get data; data restricted to what already exists
Case Studies or Peer Review	To fully understand or depict client's experiences in a program, and conduct comprehensive examination through cross-comparison of cases	<ul style="list-style-type: none"> • fully depicts client's experience in program input, process, and results • powerful means to portray program to outsiders 	<ul style="list-style-type: none"> • usually quite time consuming to collect, organize, and describe • represents depth of information, rather than breadth

(adapted from C. McNamara, 1998)

Linking Evaluation Tools to Objectives

Technique/Activity	Knowledge	Skills	Attitude
Interview	(x)		X
Focus group	(x)		X
Questionnaire, survey, checklist*	(x)	(x*)	X
On-the-job observation or Demonstration/performance test		X	
Literature review**	X	X	X
Paper and pencil test, including essay	X		
Oral presentation	X	(x)	
Role play		X	X
Concept maps	X		(x)
Rubrics or matrices		X	(x)
Documentation or product review	X	X	
Case studies or peer review	X	X	(x)

(x) indicates that this technique may be, but is not always, appropriate to evaluate the indicated type of learning.

* a checklist may be applied to skill testing, if this will adequately reflect the skill.

** for comparison from past or initial condition

Adapted from ASTD, 1989.

Summative Evaluation Instrument Selection Matrix

The tables below provide a convenient reference for the selection of appropriate evaluation data collection methods for different types of projects and activities. There are three tables, one each for front-end evaluation (needs assessment), formative evaluation, and summative evaluation.

Instrument Type versus Expected Outcomes

Evaluation Tools Outcomes	interview	focus groups	surveys and tests	observation	tracking and timing	concept maps	rubrics	products (journal, portfolio)	photos/ artwork
changes in knowledge	good	poor	good	fair	poor	good	poor	good	fair to poor
changes in attitudes	good	fair to poor	fair to poor	fair	poor	fair	poor	good	poor
changes in skills	poor	poor	poor	good	fair	poor	good	fair	poor
changes in intent to behave/act	good	fair to poor	fair to poor	fair	fair	poor	poor	good	fair
changes in behavior/actions	good to fair	fair to poor	poor	good	fair	poor	poor	good	fair

Rating Scale: good = offers more benefits than limitations; fair = benefits and limitations are close to even; poor = offers more limitations than benefits;
na = tool in most cases is not appropriate for the project or activity.

NOTES

12-Step Process to Conduct a Summative Evaluation*

Planning

1. Reiterate issue and audience
2. Establish planning team
3. Establish goals and objectives for the evaluation
4. Review audience characterization and compare with actual audience
5. Perform a document or literature search
6. Select data collection methods

Data Collection

7. Determine audience sampling scheme
8. Design and pilot data collection instrument
9. Gather and record data

Data Analysis and Reporting

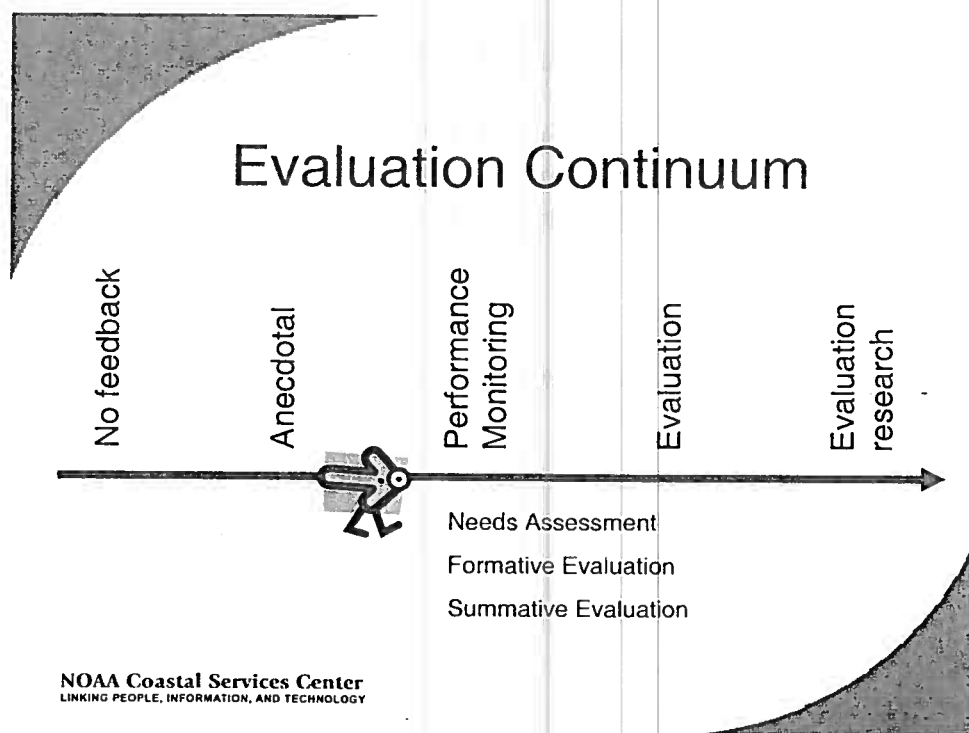
10. Perform data analysis
11. Manage data
12. Synthesize information and create report

* The 12-steps that are shown here are similar to those used for needs assessments (front-end evaluations).

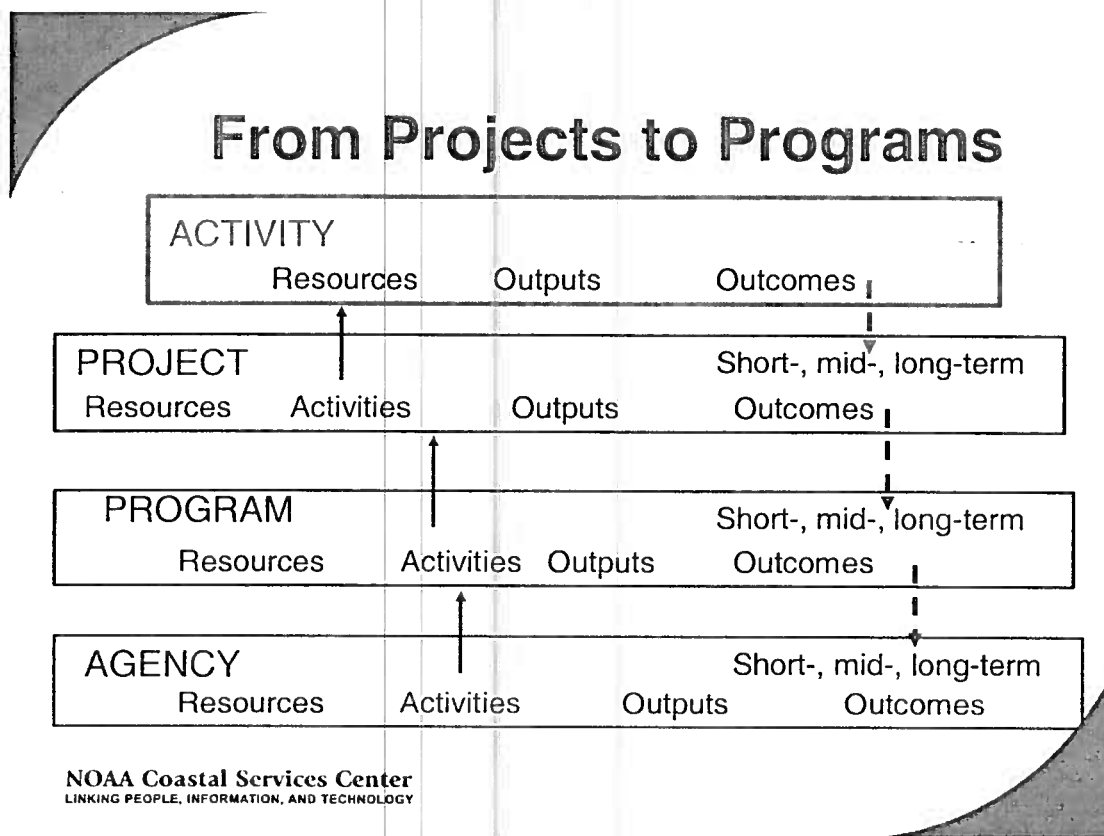
Evaluation vs. Evaluation Research

The generic goal of most evaluations is to provide "useful feedback" to a variety of audiences including sponsors, donors, client groups, administrators, staff, and other relevant constituencies. Most often, feedback is perceived as "useful" if it aids in decision making. But the relationship between an evaluation and its impact is not a simple one; studies that seem critical sometimes fail to influence short-term decisions, and studies that initially seem to have no influence can have a delayed impact when more congenial conditions arise. Despite this, there is broad consensus that the major goal of evaluation should be to influence decision making or policy formulation through the provision of empirically driven feedback.

Evaluation research is derived from scientific-experimental models. These evaluation strategies take their values and methods from the sciences—especially the social sciences—and prioritize on the desirability of impartiality, accuracy, objectivity, and the validity of the information generated. Included under scientific-experimental models would be the tradition of experimental and quasi-experimental designs; objectives-based research that comes from education; econometrically oriented perspectives, including cost-effectiveness and cost-benefit analysis; and the recent articulation of theory-driven evaluation.



MOVING FROM PROJECTS TO PROGRAMS: PROGRAM-LEVEL APPLICATIONS



Applying it to Organizations . . .

The mission(s) of the Coastal Services Center (a NOAA/NOS office)

Is/are to produce/provide techniques and tools

To/for coastal resource managers

So that they use appropriate methods to address their priority coastal resource management (CRM) issues

And will be able to increase their effectiveness and efficiency in CRM decision making

Resulting ultimately in improved management and health of coastal resources

. . . then to offices . . .

The mission(s) of Coastal Management Services (a branch of Coastal Services Center)

Is/are to produce/provide products, services, and techniques

To/for coastal resource managers

So that they are able to identify, select, and exchange information and skills on techniques to address CRM issues

And will be able to use these methods (tools, techniques, or strategies) in their work

Resulting ultimately in better management of coastal resource use

. . . then to programs . . .

The mission(s) of Coastal Learning Services, or CLS (a Coastal Services Center program within Coastal Management Services)

Is/are to produce/provide training, meeting support, and technical information

To/for coastal resource managers

So that they can identify, assess, and select appropriate tools, skills, and techniques to assist with their jobs

And will be able to apply those to CRM decision making

Resulting ultimately in improved decision making and more effective CRM

. . . and to projects.

The mission(s) of the Project Design and Evaluation workshop (a CLS project)

Is/are to produce/provide information, skills, and tools on sound instructional design and develop practices

To/for extension, education, and outreach professionals working in CRM

So that they can describe the project design and evaluation process, including logic model use and construction

And will be able to apply appropriate instructional design theory and practices to project development

Resulting ultimately in improved projects and measures of the impacts and outcomes of CRM efforts.



Take Home Message

Needs assessment drives the design of a project.

- Good design is required for meaningful evaluation.
- Design to achieve the long-term impact you want.
- No evaluation findings should come as a surprise.

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NOTES

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APPENDICES

- Sample data gathering tools (rubrics, concept map)
- Glossary of terms
- Annotated bibliography of evaluation resources
- Evaluation resources

Sample Data Collection Tools

Teacher Institute Pre- and Post-Test ***Scored by means of a rubric***

Dear Participant:

Use the format below to describe a favorite science unit that you taught for at least two weeks in one of your courses this past year. (Attach additional pages as needed.) Please return this completed form in the enclosed envelope.

The purpose of this assignment is to provide us with a "picture" of your current teaching methods. No grades will be assigned. Your response is confidential. We're asking for your name so we can compare pre- and post-institute responses.

Your name _____
School and District _____
Grade Level _____ Class size _____
Course title _____

Describe the students enrolled in this course (e.g. ability levels, previous course work in science and math, special needs).

Describe the classroom or teaching setting you used.

Topic of the unit you're describing:

Class time spent on the unit: _____ class periods of _____ minutes each.

Topic of the previous unit:

Topic of the following unit:

List or attach the unit's objectives for your students (e.g. content, skills, behaviors).

Tell us how you introduced the unit to your students.

Tell us what you and the class did each day for one week's class session (content, activities, assignments, resources used).

Tell us (or attach a copy of) how you measured student mastery of the unit's objectives, and state whether your students' performance on this unit was better or worse than their average performance on other science units.

Rubric Evaluation Instrument for Teaching Unit

Year _____

Unit: pre post

Teacher's Name _____

Grade _____

Student Description _____

Topic _____

0 = not mentioned, not evident, didn't do
 1 = mentioned briefly, somewhat evident, weak
 2 = clearly evident
 3 = clearly evident w/ elaboration, strong

Skills	Rating	0	1	2	3	Comments
A. SETTING						
1. Includes other than own class		0	1	2	3	
2. Includes sites other than school		0	1	2	3	
3. Cooperative		0	1	2	3	
B. TOPIC						
1. Fits with previous unit		0	1	2	3	
2. Fits with following unit		0	1	2	3	
3. Focuses on habitats		0	1	2	3	
C. OBJECTIVES						
1. Student is subject		0	1	2	3	
2. For content		0	1	2	3	
3. For more than science content		0	1	2	3	
4. For skills/science process		0	1	2	3	
5. For attitudes		0	1	2	3	
6. Relate to state standards		0	1	2	3	
D. INTRODUCTION OF UNIT						
1. Consistent with objectives		0	1	2	3	
2. Activity-based		0	1	2	3	
3. Student-directed		0	1	2	3	
E. CLASS SESSIONS						
1. Consistent with objectives		0	1	2	3	
2. Includes hands-on activities		0	1	2	3	
3. Includes inquiry/problem-solving		0	1	2	3	
4. Engages students in science process		0	1	2	3	
F. CULMINATION/MASTERY						
1. Measures the objectives		0	1	2	3	
2. Activity/process-based		0	1	2	3	
3. Student-directed		0	1	2	3	
4. Cooperative		0	1	2	3	
G. OTHER						
1. Uses technology		0	1	2	3	
2. Uses real-time data		0	1	2	3	

Concept Mapping

Concept mapping is a technique that can be used to “map” knowledge. The mapping is intended to represent meaningful relationships between concepts in the form of propositions. Propositions are two or more concept labels linked by words in a semantic unit. For example “The ocean is blue” is a concept map where “ocean” and “blue” are the two concepts linked by the valid proposition that the ocean *is* blue (Novak and Gowin, 1984).

Concept mapping can be done for several purposes:

- to generate ideas (brainstorming, etc.)
- to design a complex structure (long texts, hypermedia, large Web sites, etc.)
- to communicate complex ideas
- to aid learning by explicitly integrating new and old knowledge
- to assess understanding or diagnose misunderstanding

The following is a list of steps to demonstrate and then conduct concept mapping as a learning assessment tool.

1. Select the ideas or concepts to be mapped. These may be lists of words, meaningful narratives or case studies, or other printed material.
2. Ask participants to identify the key concept(s), i.e., those concepts necessary for understanding the meaning of the material. Put the most inclusive concept at the head of a new list.
3. Continue listing in rank order, the next most general (inclusive) concepts. (There may be different orders among participants. This is OK because it illustrates that there is more than one way to see the meaning of the material.)
4. Begin constructing a concept map using the rank-ordered list as a guide in building the concept hierarchy. Have participants select good proposition words (linking words) shown by lines on the map.
5. Next identify cross-links between concepts in one section of the map and concepts in another part of the concept “tree.” Have participants select good proposition words (linking words) to cross-link ideas.
6. Examine the map and reconstruct it if participants wish to rearrange concepts or links.
7. Discuss the scoring criteria (shown below), and score the concept map that the group developed. Ask participants to identify possible structural changes that might improve the meaning or the score of the map.
8. Provide participants with the words, narrative, or case study information to be mapped. Ask participants to individually (or in small groups) construct a concept map using this information.
9. Collect and score the maps following the scoring process below.

Scoring criteria:

1. Propositions. Is the meaning relationship between two concepts indicated by the connecting line and linking word(s)? Is the relationship valid? For each meaningful, valid proposition shown, score 1 point.
2. Hierarchy. Does the map show a hierarchy? Is each subordinate concept more specific and less general than the concept(s) above it (in the context of the material being mapped)? Score 5 points for each valid level in the hierarchy.
3. Cross-links. Does the map show meaningful connections between one segment of the concept hierarchy and another segment? Is the relationship shown significant and valid? Score 10 points for each significant and valid cross-link. Score 2 points for each cross-link that is valid but does not illustrate a synthesis between sets of related concepts or propositions. Unique or creative cross-links may receive special recognition or extra points.
4. Example. Specific events or objects that are valid instances of those designated by the concept map label can be scored 1 point each. (These can be provided but are not circled because they are not concepts—only illustrations of the concept.)
5. The final score may be the total score from each map, or the total can be compared to an “ideal” or desired outcome concept map. This model establishes the criterion by which other maps will be rated. The total score for the criterion concept map represents 100 percent. Participant map scores are divided by the criterion map score to give a percentage for comparison. (Some participants may do better than the criterion map and receive a score greater than 100 percent.)

From: Novak and Gowin, 1984.

Links to concept mapping software can be found at
http://users.edte.utwente.nl/lanzing/cm_home.htm

Glossary

Needs Assessment is a systematic investigation of an audience(s) to identify aspects of individual knowledge, skill, interest, attitude, or abilities relevant to a particular issue, organizational goal, or objective.

Training refers to the act of engaging target audiences in learning experiences that build skills and knowledge using best available information tools and techniques. Learning experiences may take the form of workshops, publications, distance learning, technology, applications, demonstrations, field-based programs, signs, and exhibits.

Gap Analysis is a method used to determine the gap between the current situation and the desired situation.

Task Analysis is a detailed observation of what exactly is being done. Establishes level of performance and shows best method and sequence to complete a specific task. A task is part of a job.

Qualitative Data are descriptive rather than enumerative. They are usually provided in the form of words, such as descriptions of events, transcripts of interviews, and written documents. Qualitative data can be transformed into quantitative data through coding procedures.

Quantitative Data are numeric data. Analysis of quantitative data involves looking at relationships between quantities.

Response rates are the percentage of a selected sample from which data were collected (responses actually received). A further calculation can sometimes be made of the fraction of the population represented in the sample.

Target Population Analysis is the methodical collection of information about a population that will help decide who needs training, how specific courses must be customized to meet needs, and what class groupings are appropriate.

Skill Hierarchy is a graphic representation of the skills any learner must possess in order to meet the learning objective. It shows relationships among skills and is not specific to a particular learner. It shows prerequisites to learning new skills.

Survey Instruments are any consistent method or tool by which information is systematically gathered.

Items are individual questions on an instrument.

Population. Everybody about whom you are trying to make accurate statements.

Sample. A subset of the population from which you actually collect information.

Validity. The validity of an instrument is the extent to which it measures what it purports to measure. A test may be valid for one purpose, but not another.

NOAA Coastal Services Center
Evaluation Resources: Annotated Bibliography
(a selected list)
Part 1 (Books, Booklets/Reports and Websites)

Books

American Association for the Advancement of Science (1993). *Benchmarks for Science Literacy*. New York: Oxford University Press.

Although this book doesn't deal with evaluation theory or methods specifically, it is included here because "Chapter 15: The Research Base" is one of the best compendiums of research findings on students' understanding of a wide range of science topics. This wealth of information is a great place to start when developing an education project.

Ajzen, I., and Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behavior*. Englewood Cliffs, NJ: Prentice-Hall, Inc.

This often-cited book describes in detail the "theory of reasoned action," which can be used to predict, explain, influence, and assess human behavior (including beliefs, attitudes, and intentions). Although the examples and case studies are not environmentally related (they include weight loss, family planning, consumer behavior, and voting), education program developers seeking to make changes in their audiences could learn from the lessons in this book.

Clayton, S. & Opatow, S. (Eds.). (2003). *Identity and the Natural Environment: The psychological significance of nature*. Cambridge, MA: The MIT Press.

This edited book includes chapters by some of the most thoughtful people studying our relationship to nature, such as Gene Myers, Peter Kahn, Jr., Elisabeth Kals, Amara Brook, to name just a few. The book offers new research approaches and findings from several studies, all in a form that's readable and interesting.

Crane, V., and others (1994). *Informal Science Learning: What the Research Says About Television, Science Museums, and Community-Based Projects*. Dedham, MA: Research Communications Ltd.

As the subtitle indicates, this book covers science learning at a wide range of venues. The book's greatest strength is the annotated bibliography, which summarizes impact studies (evaluations) conducted on TV, science museum, and community-based projects from the 1930s to early 1990s. There's a wealth of information here.

Diamond, J. (1999). *Practical Evaluation Guide: Tools for Museums and Other Informal Educational Settings*. Walnut Creek, CA: AltaMira Press.

This is a basic handbook for those just starting in program or exhibit evaluation at an education setting, such as a museum or a park. Chapters range from selecting samples to presenting data, and there's a thorough reference list and index.

Dierking, L., and Pollock, W. (1998). *Questioning Assumptions: An Introduction to Front-End Studies in Museums*. Washington, D.C.: Association of Science-Technology Centers (ASTC).

If you want an in-depth review of what front-end evaluation/research is and how to do it, this is your guide. Although the focus is on museums, the techniques are applicable to most informal education/interpretive settings. One of the appendices summarizes a variety of

front-end studies on (mostly) exhibit concepts at museums, zoos, and aquariums across the U.S.

Falk, J.H. (Ed.) (2001). *Free-Choice Science Education: How We Learn Science Outside of School*. New York, NY: Teachers College Press, Columbia University.

This book, an outgrowth of a conference, looks at the differences between formal (school) and free-choice (away-from-school) science learning. Chapters review the public's understanding of science, where/how they get their information, and ways to assess it.

Fetterman, D.M. (1998). *Ethnography: Step by Step*. Thousand Oaks, CA: Sage Publications.

Ethnography is a systematic way of collecting data about and then describing what's happening in a group or culture, in particular predictable patterns of human thought and behavior. It is a qualitative evaluation method based on anthropological research methods. If that interests you, this is a great introductory book.

Fink, A., and Kosecoff, J. (1985). *How to Conduct Surveys: A Step by Step Guide*. Newbury Park, CA: Sage Publications.

This is the basic book on how to conduct surveys, from developing questions to tallying and analyzing data.

Goodwin, W.L., and Goodwin, L.D. (1996). *Understanding Quantitative and Qualitative Research in Early Childhood Education*. NY, NY: Teachers College Press, Columbia University.

This is a good overview of research methods and tools to use when evaluating young program participants, a tough audience to evaluate.

Guskey, T.R. (2000). *Evaluating Professional Development*. Thousand Oaks, CA: Corwin Press, Inc.

If you're working with teachers, this book and the one below by Loucks-Horsley et al., are the best research-based resources on developing and evaluating teacher professional development. Both books offer great examples and lots of how-to tips.

Hart, D. (1994). *Authentic Assessment: A Handbook for Educators*. Menlo Park, CA: Addison-Wesley Publishing Company.

This book covers "non-traditional" program evaluation methods, such as portfolio assessments, performance assessments, and rubrics.

Herman, J., Morris, L.L., and Fitz-Gibbon, C.T. (1987). *Evaluator's Handbook*. Newbury Park, CA: Sage Publications. (NOTE: The following 8 booklets are part of Sage's Program Evaluation Kit, for which this book is the overview.)

Fitz-Gibbon, C.T., and Morris, L.L. (1987). *How To Analyze Data*. Newbury Park, CA: Sage Publications.

— (1987). *How To Design A Program Evaluation*. Newbury Park, CA: Sage Publications.

Henerson, M.E., Morris, L.L., and Fitz-Gibbon, C.T. (1987). *How to Measure Attitudes*. Newbury Park, CA: Sage Publications.

King, J.A., Morris, L.L., and Fitz-Gibbon, C.T. (1987). *How to Assess Program Implementation*. Newbury Park, CA: Sage Publications.

Morris, L.L., Fitz-Gibbon, C.T., and Freeman, M.E. (1987). *How to Communicate Evaluation Findings*. Newbury Park, CA: Sage Publications.

Morris, L.L., Fitz-Gibbon, C.T., and Lindheim, E. (1987). *How to Measure Performance and Use Tests*. Newbury Park, CA: Sage Publications.

Patton, M.Q. (1987). *How to Use Qualitative Methods in Evaluation*. Newbury Park, CA: Sage Publications.

Stecher, B.M., and Davis, W.A. (1987). *How to Focus an Evaluation*. Newbury Park, CA: Sage Publications.

The *Evaluator's Handbook* and the other booklets in this "kit" are a must-have for all program evaluators. Not only is the kit a great basic how-to set but also is a great resource for seasoned evaluators stuck on a specific question or issue.

Hungerford, H.R., Bluhm, W.J., Volk, T.L., and Ramsey, J.M. (Eds.) (1998). *Essential Readings in Environmental Education*. Champaign, IL: Stipes Publishing L.L.C.

The title says it all. This document includes articles and papers published in a variety of places by many of the top researchers in environmental education. Included are research studies and reviews of research literature. This is an essential reference for anyone involved environment education.

Jacobson, S.K., McDuff, M.D. & Monroe, M.C. (2006). *Conservation Education and Outreach Techniques*. New York, NY: Oxford University Press.

This is the latest compilation of both theory and practice for creating effective education and outreach programs for conservation. This book is loaded with tips on developing and evaluating a variety of conservation education efforts.

Kirkpatrick, D.L. (1994). *Evaluating Training Programs: The Four Levels*. San Francisco, CA: Berrett-Koehler.

This book describes using the four levels of evaluation (reaction, learning, behavior, and results) to determine training effectiveness. According to this model, evaluation should always begin with level one, and then, as time and budget allow, should move sequentially through levels two, three, and four. Information from each prior level serves as a base for the next level's evaluation. Thus, each successive level represents a more precise measure of the effectiveness of the training program but at the same time requires a more rigorous and time-consuming analysis.

Kotler, P., and Roberto, E.L. (1989). *Social Marketing: Strategies for Changing Public Behavior*. New York, NY: The Free Press, A Division of Macmillan, Inc.

Social marketing is the use of marketing principles and techniques to advance a social cause, idea, or behavior (this includes environmental protection programs and materials).

The authors view ideas and behaviors as the products to be marketed. This is a good overview of how social marketing works and includes examples of failed and successful campaigns. (Two other books that deal with this topic are: Andreasen, A.R. (1995).

Marketing Social Change: Changing Behavior to Promote Health, Social Development, and the Environment. San Francisco: Jossey-Bass Publishers; and McKenzie-Mohr, D., and Smith, W. (1999). *Fostering Sustainable Behavior: An Introduction to Community-Based Social Marketing*. Gabriola Island, B.C., Canada: New Society Publishers.)

Loucks-Horsley, S., Love, N., Stiles, K.E. et al. (2003). *Designing Professional Development for Teachers of Science and Mathematics* (2nd ed.). Thousand Oaks, CA: Corwin Press, Inc. If you're working with teachers, this book and the one above by Guskey are the best research-based resources on developing and evaluating teacher professional development. Both books offer great examples and lots of how-to tips.

Louv, R. (2005). *Last Child in the Woods: Saving our children from nature-deficit disorder*. Chapel Hill, NC: Algonquin Books of Chapel Hill. This book has become popular in environmental education circles for its comprehensive look at what our children (and culture) are losing as they become alienated from nature. The author carefully argues for more/better nature experiences equate to healthier children, and the lack thereof lead to the opposite. This is well written and thoroughly researched, although the citation of more primary resources would have strengthened the author's conclusions.

Novak, J.D., and Gowin, D.B. (1984). *Learning How to Learn*. Cambridge: Cambridge University Press. This is the best source on the use of concept maps to teach as well as evaluate programs. Included are recommendations for scoring concept maps, taking qualitative data, and transforming it into quantitative. Novak has updated his use of concept maps in a later publication, but the earlier book is still the best for getting started using this tool. Also see: Novak, J.D. (1998). *Learning, Creating, and Using Knowledge: Concept Maps As Facilitative Tools in Schools and Corporations*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Patton, M.Q. (1997). *Utilization-Focused Evaluation*. Thousand Oaks, CA: Sage Publications. — (2001). *Qualitative Research and Evaluation Methods*. Beverly Hills, CA: Sage Publications. Just about anything written by Patton is a great reference. Both publications give thorough reviews of their subjects. In the first book he does a good job of describing differences between output and outcome evaluation, as well as goal-free and goal-based evaluations. The second book is one of the most comprehensive books available on qualitative methods.

Payne, D.A. (2000). *Evaluating Service-Learning Activities & Programs*. Lanham, MD: The Scarecrow Press, Inc. Many school and community programs offer students "service-learning" credits. This book provides an overview of what service learning is and how to evaluate such programs. The appendices are especially useful because they provide evaluation instruments for everything from parent satisfaction surveys to environmental attitudes measures. This is a good general resource.

Screven, C.G. (Ed.) (1999). *Visitor Studies Bibliography and Abstracts*. Chicago, IL: Screven and Associates. This is the ultimate annotated bibliography on visitor studies, indexed by authors, topic, evaluation methods, etc. If you're developing or evaluating exhibits, programs, or materials for an informal education setting, this is the place to start your research on what's out there and what works.

Serrell, B. (1998). *Paying Attention: Visitors and Museum Exhibitions*. Washington, D.C.: American Association of Museums. This is the definitive resource for an evaluation method called tracking and timing (the unobtrusive observation and timing of visitor behavior). The book offers details on how to use the method and analyze results, as well as includes the results from 100+ studies.

Although the focus is on museum exhibits, this method can be used with visitors in visitor centers, to discovery room or along trails.

Thomashow, M. (1995). *Ecological Identity: Becoming a reflective environmentalist*. Cambridge, MA: The MIT Press.

This book offers a view of environmental studies that is based on personal reflection. The author offers insights into becoming a "reflective environmentalist" as well as educating for ecological identity.

Wholey, J., Hatry, H.P., and Newcomer, K.E. (Eds.) (1994). *Handbook of Practical Program Evaluation*. San Francisco, CA: Jossey-Bass Publishers.

This textbook thoroughly covers all the issues related to program evaluation, including data analysis and managing the process.

Booklets/Reports

- Borun, M., and others (1998). *Family Learning in Museums: The PISEC Perspective*. Philadelphia, PA: Philadelphia/Camden Informal Science Education Collaborative (PISEC), The Franklin Institute. (NOTE: The following three articles are compiled into this booklet.)
- , Chambers, M., Dritsas, J. and Johnson, J. (1997). Enhancing family learning through exhibits. *Curator* 40(4): 279-295.
 - and Dritsas, J. (1997). Developing family-friendly exhibits. *Curator* 40(3): 178-196.
 - , Chambers, M. and Cleghorn, A. (1996). Families are learning in science museums. *Curator* 39(2): 123-138.

This research study offers definitive, research-based guidelines for developing exhibits that are effective with families. The PISEC booklet includes most of the information about this NSF-funded project that was published in the three *Curator* articles.

- Fortner, R.W., and Smith-Sebasto, N.J. (Eds.) (1991). *Abstracts of Research in Marine and Aquatic Education: 1975 – 1990*. Columbus, OH: The Ohio State University.

As the title states, this publication offers a brief review of over 50 studies conducted on marine and aquatic education programs/materials over a 15-year period by one of the top researchers in the field.

- Lewis-Beck, M. S. (1995). *Data Analysis: An introduction*. Newbury Park, CA: Sage Publications.

This little booklet “aims to provide the statistical fundamentals that every data analyst needs in order to launch a quantitative research project.” It’s handy to have.

- Mager, R. F. (1988). *Analyzing Performance Problems*. Belmont, CA: Lake Publishing.

— (1988). *Making Instruction Work*. Belmont, CA: Lake Publishing.

— (1988). *Measuring Instructional Results*. Belmont, CA: Lake Publishing.

These are just a few of the many small books that Mager has written for educational program/product developers. If you follow his advice on program/product development, then the subsequent evaluations are much easier to plan and carry out.

- Marin, G., and Marin, B. V. O. (1991). *Research with Hispanic Populations*. Newbury Park, CA: Sage Publications.

If there's a gap in the evaluation literature, it is our understanding of evaluation methods that are most appropriate for different ethnic and cultural groups in the U.S. (As well as our lack of knowledge about how these diverse groups view and respond to environmental issues.) This publication is helpful when developing/conducting evaluations with Hispanic populations.

- Madison, A.M. (ed.) (1992). *Minority Issues in Program Evaluation*. San Francisco, CA: Jossey-Bass Publishers.

If there's a gap in the evaluation literature, it is our understanding of evaluation methods that are most appropriate for different ethnic and cultural groups in the U.S. This publication offers insights on developing/conducting evaluations with diverse populations.

Frechtling, J., and others (2002). *The 2002 User Friendly Handbook for Project Evaluation*. Washington, D.C.: National Science Foundation.

This is NSF's overview of evaluation philosophies, methods and reporting. It is especially useful if you're involved in a NSF-funded or other government-funded project. Even if you're not, it contains a good overview of program/project evaluation.

<http://www.nsf.gov/ehr/rec/nsfresources.jsp>

Stewart, D.W., and Shamdasani, P.N. (1990). *Focus Groups: Theory and practice*. Newbury Park, CA: Sage Publications.

This is a useful booklet on how to set-up and conduct a focus group, as well as what to do with the data.

Spector, P.E. (1981). *Research Designs*. Newbury Park, CA: Sage Publications.

This booklet offers an overview of both experimental and non-experimental designs for evaluation research. The classic booklet on this topic (although it may be out of print) is:

Campbell, D.T., and Stanley, J.C. (1966). *Experimental and Quasi-Experimental Designs for Research*. New York, NY: Houghton Mifflin.

What Research Says About Learning in Science Museums.

Volume 1: Serrell, B. (Ed.) (1990)

Volume 2: Borun, M., Grinell, S., McNamara, P., and Serrell, B. (Eds.) (1993). Washington, D.C.: Association of Science-Technology Centers (ASTC).

These two small booklets contain a wealth of information about the effective programs and exhibits at science museums.

Websites**DLESE (Digital Library for Earth System Education) Evaluation Services**

The Evaluation Toolkit (ET) project is designed to help geoscience educators and project evaluators find good resources, get feedback and help with geoscience education evaluation, and share results with one another.

<http://www.dlese.org/cms/evalservices/evaltklt/>

INFORMAL SCIENCE

This website is the product of the University of Pittsburgh Center for Learning in Out-of-School Environments (UPCLOSE). They support the field of informal science learning by providing resources to build knowledge, share outcomes and improve practice. Their databases include articles, evaluation reports and a directory of evaluators. They also have a calendar of events and discussion group links. Within a year they will have Visitor Studies Association (VSA) publications online.

<http://www.informalscience.org>

MY ENVIRONMENTAL EDUCATION EVALUATION RESOURCE**ASSISTANT (MEERA)**

This website provides evaluation resources for formal and non-formal environmental educators. Current offerings include professionally selected and reviewed how-to guides and other resources for evaluating environmental education programs as well as a discussion forum. MEERA is made possible by the University of Michigan, USDA Forest Service and the EPA.

<http://meera.snre.umich.edu/>

NSF (National Science Foundation)

The purpose of this website is to provide NSF grantees, and potential grantees, with an understanding of what NSF means by, and expects from, an evaluation and to direct interested individuals toward useful resources for meeting these expectations.

http://www.nsf.gov/ehr/rec/eval_of_projects.jsp

OERL (Online Evaluation Resource Library)

This library was developed for professionals seeking to design, conduct, document, or review project evaluations. The purpose of this system is to collect and make available evaluation plans, instruments, and reports for NSF projects that can be used as examples by Principal Investigators, project evaluators, and others outside the NSF community as they design proposals and projects. OERL also includes professional development modules that can be used to better understand and utilize the materials made available. OERL's mission is to support the continuous improvement of project evaluations.

<http://www.oerl.sri.com/>

Outdoor Education Research and Evaluation Center

This site provides resources about outdoor education and related programs and methods, such as residential camping, experiential education, environmental education, and adventure therapy. The goal is to provide online access to academic resources such as articles, essays, papers, and theses about philosophical, theoretical, research, and evaluation aspects of outdoor education. There is a section dedicated to the evaluation of outdoor and experiential education.

<http://www.wilderdom.com/evaluation.html>

Place-Based Education Evaluation Collaborative

This site offers a matrix of 75 evaluation tools and resources compiled in July of 2004 by the San Francisco Bay Area Environmental Education Evaluation Learning Community (BEEC). Nearly all the resources can be accessed directly from this page either by clicking the link on the title of the tool, or by downloading the document from the very bottom of this page.

http://www.peecworks.org/PEEC/PEEC_Inst/S006D6299

The Evaluation Center, Western Michigan University

The Evaluation Center's mission is to advance the theory, practice, and utilization of evaluation. This site provides evaluation specialists and users with refereed checklists for designing, budgeting, contracting, staffing, managing, and assessing evaluations of programs, personnel, students, and other **evaluands**; collecting, analyzing, and reporting evaluation information; and determining merit, worth, and significance. Each checklist is a distillation of valuable lessons learned from practice. The site's purpose is to improve the quality and consistency of evaluations and enhance evaluation capacity through the promotion and use of high-quality checklists targeted to specific evaluation tasks and approaches.

<http://www.wmich.edu/evalctr/checklists/>

University of Texas at Austin, Instructional Assessment Resources

The resources below are designed to guide you in the assessment of instructional technology. Most of the resources are also applicable to non-technological instructional activities, innovations, and programs. The website offers tutorials and tips sheets.

http://www.utexas.edu/academic/diia/assessment/iar/how_to/index.php

W.K. Kellogg Foundation

The W.K. Kellogg Foundation is a granting organization established "to help people help themselves." The website offers great self-help information called toolkits. The evaluation toolkit is designed to provide grantees with guidance, but anyone who is seeking to design an effective, useful evaluation can benefit from this material. For more, visit the website, under the Knowledgebase menu, click on Toolkits, then click on Evaluation.

<http://www.wkkf.org>

**NOAA Coastal Services Center
Evaluation Resources: Bibliography
Part 2 (All)**

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Project Design and Evaluation Workshop

Host: _____ Date: _____

The NOAA Coastal Services Center is committed to delivering timely and effective training to the coastal management community. We would appreciate your feedback both positive and negative so that we might improve future courses. **Please complete the following questions and submit before leaving.**

1) Which of the following best describes your organization or company? (Check one.)

- | | |
|---|--|
| <input type="checkbox"/> Federal Government - NOAA (including contractors) - NOAA Line Office _____, Program Office _____ | <input type="checkbox"/> Sea Grant |
| <input type="checkbox"/> Federal Government - Non-NOAA (including contractors) - Federal Agency Name _____ | <input type="checkbox"/> National Estuarine Research Reserve |
| <input type="checkbox"/> University/Academic, excluding Sea Grant | <input type="checkbox"/> National Estuary Program |
| <input type="checkbox"/> State Coastal Zone Management Agency | <input type="checkbox"/> NGO/Non-Profit |
| <input type="checkbox"/> Other State Government | <input type="checkbox"/> Private |
| <input type="checkbox"/> Local Government | <input type="checkbox"/> International |
| <input type="checkbox"/> Military | |
| <input type="checkbox"/> Other (please specify) _____ | |

2) Which of the following best describes your primary role? (Check one.)

- | | |
|---|---|
| <input type="checkbox"/> Data Management | <input type="checkbox"/> Volunteer |
| <input type="checkbox"/> GIS | <input type="checkbox"/> Program Management |
| <input type="checkbox"/> Communication/Outreach | <input type="checkbox"/> Commercial Use |
| <input type="checkbox"/> Extension/Education | <input type="checkbox"/> Recreational Use |
| <input type="checkbox"/> Student (Area of study?) _____ | <input type="checkbox"/> Community Planning |
| <input type="checkbox"/> Other (please specify) _____ | <input type="checkbox"/> Research/Science/Engineering |

3) How did you hear about this course? (Check one.)

- | | |
|---|-------------------------------------|
| <input type="checkbox"/> NOAA Coastal Services Center Web site | <input type="checkbox"/> Supervisor |
| <input type="checkbox"/> NOAA Coastal Services Center publication | <input type="checkbox"/> Conference |
| <input type="checkbox"/> Other (please specify) _____ | <input type="checkbox"/> Local Host |

4) How well were the following objectives met? (Check one box for each objective.)

Can you...	I am not able to do this.	I was able to do this prior to the course. The course DID NOT improve this ability.	I was able to do this prior to the course. The course DID improve this ability.	I am able to do this because of this course.	Not Applicable (Cannot rate)
Describe the context of project design and evaluation within the scope of agency and organizational missions, strategic plans, and established program niches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apply appropriate instructional design theory (ADDIE) and practices to project design.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Explain the role of logic models in project design and evaluation, and create logic models for your projects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Describe different evaluation models and levels of evaluation and select the appropriate model and level for given objectives.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Understand how performance measurements contribute to project evaluation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5) Workshop Pace

The pace of the class was	Too slow 1	2	Just right 3	4	Too fast 5
The time allotted for discussion was	Too short 1	2	Just right 3	4	Too long 5

6) Workshop Format**(circle the most appropriate response)**

Presentation materials (slide shows, flip charts, overheads, etc.)	Detracted from understanding	1	2	3	4	Enhanced understanding
Course manual	Detracted from understanding	1	2	3	4	Enhanced understanding
The presenters were	Poorly prepared	1	2	3	4	Well prepared
The presenters communicated concepts and ideas	Poorly	1	2	3	4	Very well
There was a good balance between lectures and activities	Strongly disagree	1	2	3	4	Strongly agree
I would recommend this course to another coastal professional	Strongly disagree	1	2	3	4	Strongly agree

7) Value and Applicability**(circle the most appropriate response)**

I gained knowledge and skills that I will apply in my job.	Strongly disagree 1	2	3	Strongly agree 4	NA	
I will use the knowledge and skills gained to more systematically design, monitor, evaluate, and adjust resource management efforts at my workplace.	Strongly disagree 1	2	3	Strongly agree 4	NA	
Attending this course was good use of my time.	Strongly disagree 1	2	3	Strongly agree 4	NA	
Prior to this course what was your level of understanding of the material covered?	0%	20%	40%	60%	80%	100%
After this course what is your level of understanding of the material covered?	0%	20%	40%	60%	80%	100%

8) Content and Learning**A. What type of evaluation is illustrated by this form? Why?**

Front-end (Needs Assessment)

Formative

Summative

B. Suggest two performance measures that we could collect to gauge success in meeting the workshop objectives?

1.)

2.)

9) What topics/skills would you have liked more information on?**10) Other comments, suggestions, ideas?**