Section 2

Planning EE&C Programs

Chapter 6
Conducting a Rapid EE&C Assessment

Richard Bossi

To design an environmental education or communication program, it is important to begin with a sense of the history of the environmental issue, knowledge of the key institutions and individuals, and an idea of which options are possible. While local program organizers may know this information very well, asking someone with a fresh perspective to provide an outsider's view of the situation. External donor institutions rely on this type of assessment before a project is conceived.

This chapter provides suggestions for situations in which an individual or team obtains a rapid assessment of a situation—a quick, clear snapshot of the existing state of environmental education and communication (EE&C) in a particular country, region, community, or a specific development project or institution. Resources—notably financial, personnel, and time—are usually limited (the typical rapid assessment is completed in 5–10 days).

Creating an accurate portrait can be challenging. But any information and recommendations stemming from a rapid assessment can prove invaluable in helping program managers identify both the obstacles to, and potential for, upgrading EE&C technical capacity. And, when projects are still on the drawing board, an assessment can be equally useful in integrating the fundamentals of effective EE&C processes with all project components.

In GreenCOM's experience, rapid assessments are conducted by USAID staff or consultants in the early stages of a project. In some cases, more lengthy assessments are part of an overall strategy to provide regional assistance and long-term planning, as in the case at the end of this chapter will elucidate.

Simply stated, successful EE&C projects seldom result from the preconceived notions of government planners, international donors, NGO representatives, or other influentials. Rather, successful and sustainable EE&C initiatives are usually built on a combination of inputs from these groups, as well as from project recipients, beneficiaries, and stakeholders.

However, words alone are not sufficient for assessing an environmental situation. People do not always do what they say they do. The assessors should carefully observe whether actions match words.

THE PROCESS IN A NUTSHELL

Whatever the subject, determining a scheme for rapidly collecting meaningful information from various sources—existing documents, in-depth interviews, focus groups, or direct observation—is fundamental to any assessment. Time and resources must be used efficiently to benefit all parties. Any individual or team conducting an EE&C assessment in an unfamiliar country for an unknown program or organization must be prepared to answer three questions:

1. What are the environmental priorities of an agency institution, group, or project?
2. Who is/will be the likely target audience or beneficiary group of any EE&C capacity-building efforts, interventions, or messages?
3. How are both of the above (environmental priorities and target audiences) being addressed now, how were they addressed in the past, and how will they be addressed for the future?

Answers to these questions will enable assessors to determine and recommend:

- Appropriate EE&C implementation channels (e.g., formal, nonformal, or informal EE&C systems);
- The most suitable type of EE&C capacity-building activity (e.g., technical assistance, workshops or seminars, demonstrations, guided practice, experiential learning, among others); and
- The type and level of involvement of EE&C and other technical specialist(s) required to achieve institutional or project goals and objectives, as well as fit the actual situation, context (available budget, time frame, other resources, etc.) and, target audience (its environmental priorities, training needs, etc.).

GETTING STARTED: WHO TO TALK TO?

Identifying the root causes of an environmental problem will help you design a realistic and appropriate EE&C solution or response. At the outset, gaining an understanding of the situational context of all of the various stakeholders is imperative. Get respondents to discuss what they perceive as the real environmental priorities or issue. Set well-defined assumptions, ask probing questions, and develop mutually agreed-upon objectives and expectations of the assessment.

Limiting information-gathering efforts to only a single level, type, or class of stakeholder is probably one of the most common mistakes in conducting an assessment. Too frequently—usually because of time constraints—assessments focus on senior officials, high-level organizational representatives, or other prominent leaders, and influential citizens. This can result in a skewed view of a particular situation centering on an institution's outlook and perspective. To ensure a more complete picture, seek out representative comments and viewpoints at all levels of a given organization, as well as among stakeholders, beneficiaries, and groups that will be affected. It is equally important to elicit viewpoints and comments from both men and women, as gender differences can be significant (see Chapter 4). Interview roughly equal num-

bers of men and women across segments of the private, public, and NGO sectors, such as:

- Government policy and decision makers (at the national, regional, or community-level);
- Institutional/project managers, supervisors, and administrators;
- Influential leaders or opinion makers from the private sector, NGO community, and religious organizations;
- Technicians, instructors, teachers, extensionists;
- Farmers and low-skilled workers;
- Representatives of the national, regional, or local mass media (print, radio, and TV as appropriate);
- Community members, students, or well-defined groups;
- Institutional/project beneficiaries, recipients, or constituents.

Given time and budget constraints, interviewing all groups is probably not possible. To ensure a representative sample, select a number of people from each major category. Rather than relying on more people in fewer categories, cast a broad net and seek representative viewpoints from selected individuals across institutions and society to get a more balanced picture of the issue.

UNCOVERING THE FACTS

Getting people to open up and talk freely is often a challenge. Try to create a comfortable rapport with interviewees before the questioning. Naturally, this will be easier if you know local customs, language, greetings, and manners of social interaction. To facilitate entry into a new setting, have a local counterpart accompany the assessment team and handle all introductions, translate when necessary, and explain the team's reason for seeking their opinions and views.

In all instances, the old adage "honesty is the best policy," is an appropriate rule of thumb. There is no reason to trick an individual into talking. Questions or inquiries should be direct and candid, not imposing or intrusive. Interviewees should be told the exact purpose and objective of the line of

Are the EE&C products and materials part of a well-conceived strategic plan or a piecemeal, isolated, one-time product developed to meet a particular situation?

questioning and how the information will be used. Similarly, open-ended questions (where the respondent can freely answer) are more suited to assessment purposes than closed-ended questions (where answers are in categories, such as "yes" or "no"). Answers should never be put in an interviewee's mouth.

Before engaging an individual in conversation, the assessment team should be thoroughly familiar with the interview questions. This same set of questions should be asked of representatives from each of the key groups listed earlier, with vocabulary changes as necessary to ensure comprehension. All individuals interviewed should be thanked for their time and valuable insights.

VERIFICATION

When asked to explain their EE&C activity, most people run to get a set of products to demonstrate their accomplishments. Although these are reasonable indicators of a project's ability to communicate with a specific audience, they should be recognized as mere byproducts of planning efforts, and not confused with project outcomes. Therefore, to capture accurately the state of EE&C competence in an organization, ask organization representatives to do one or more of the following:

♦ Demonstrate the overall EE&C process that the institution or group uses.
♦ Demonstrate how programmers develop, test, use, and evaluate their EE&C materials. Ask how they use a particular EE&C product or material in a real-life training event, classroom setting, or in whatever channel or manner they are being used, promoted, distributed, etc.
♦ Sample the EE&C products and materials. Theses could include, but are not limited to: posters, brochures, curricula, training manuals, newspaper editorials or advertisements, or other print/graphic materials; radio spots/programs, videos television spots and programs or other mass media products and materials; games, puzzles, etc.; interpretative

materials, and signage; administrative and technical reports, documents, memoranda, etc.

These steps are important because people do not always do what they say they do; nor does their explanation of a product, event, or process always match their actual execution. Consequently, it is imperative to observe or verify what organizations claim they are doing. This is especially useful as a quick and simple way to determine whether the EE&C materials, products or processes are serving their intended purpose of raising awareness or changing attitudes or behaviors of a target group. Simply reviewing actual EE&C products and processes in use will enable an assessor to identify both strengths and weaknesses. In addition, it will provide insights into what types of EE&C capacity-building initiatives may be needed for the institution. Answers to questions in three broad areas (below) can help assess the training needs:

Diagnostic and Strategic Planning

Has a process been worked out to regularize the execution, production, or distribution of a particular EE&C activity, product, material, or message? Are the EE&C goals and objectives clearly defined? Are the EE&C products and materials part of a well-conceived strategic plan or a piecemeal, isolated, one-time product developed to meet a particular situation? Do the EE&C materials fit within the institution's vision or plan of action? Are gender considerations integrated into the overall process and various project components?

Materials Development

Are EE&C products or materials the outcome of an evaluation process that includes formative research, pretesting, and revising the materials? Do they reflect the interests and informational, educational, or communication needs of the target audience? Or are they the work of well-intentioned individuals who believe they know what their target audience needs and wants?

Are the products suited to the learning characteristics of the intended audience? Are there different messages for men and women, boys and girls, urban and rural locations, or does "one size fit all?" Are there gender or other societal stereotypes? Do the messages contain the basic elements of well-designed educational or communication materials?

Has the institution employed an appropriate educational or communication medium to meet its intended objectives with the desired outcomes? Are the products available in sufficient quantities to cover a target audience? Is product quality adequate for the intended purpose and audience? Do products conflict with, or complement EE&C efforts of other institutions addressing similar development issues?

Do recipients like or dislike the materials? Are they used? Do recipients understand the intended EE&C message? Do the intended messages accurately reflect the environmental priorities and concerns of the implementing institution as well as the audience? Do the products contain clearly understandable actions that people can easily accomplish at no or low cost?

Monitoring and Evaluation

Is there a feedback mechanism to continuously revise, modify, or improve EE&C material? Are the materials monitored for effectiveness and impact?

With these questions in mind, an assessment team can enter into an unfamiliar situation and generate a fairly accurate picture of the institutional needs.

PUTTING IT TOGETHER

Field notes are not sufficient. Data gathered must be synthesized and distilled to reveal the essence of the assessment findings and observations. This refining stage is the natural precursor to developing a concise set of recommendations.

In developing these findings, another pair of questions could be helpful:

1. Who is the intended recipient of this information?
2. What is the most appropriate and useful format for presenting your findings and recommendations to this audience?

A written report is usually the most useful form of presentation. However, before pen is put to paper, an oral discussion with key stakeholders, or a short presentation of preliminary findings, may be helpful. This practice session will allow the assessment team to receive initial comments about accuracy of the findings and identify any controversial or sensitive issues. It also serves the invaluable purpose of getting the actors together to focus on EE&C issues, problems, and opportunities for what may be the first time.

With the debriefing over, a formal written report of the findings, observations and recommendations can be submitted.

A brief assessment report should not exceed 10–15 pages. Also, a reader-friendly format, free of technical or academic jargon, is best suited for this type of report. If this is not possible, a glossary of terms is useful.

Funding issues and negotiations with counterpart institutions are usually overriding influences on the actual outcome of an assessment. Therefore, consider presenting all recommendations as a series of options for developing EE&C capacity, rather than a set of prescriptions or directives of what "must be done." This approach will permit donors and host country institutions to shape an appropriate EE&C response reflecting budget realities, time constraints, and environmental priorities. It also will allow them to consider a range of alternatives that can fit their respective strategic objectives and results frameworks.

EE&C ASSESSMENTS IN AFRICA

In 1994, GreenCOM conducted assessments of environmental education and communication (EE&C) activities in five African nations at the request of USAID's Africa Bureau and the Bureau for Global Programs. The goal was to conduct an inventory of programs, people, skills, and possibil-

ities in each nation and synthesize these experiences into one document to provide program direction for these and similar nations. The USAID missions in The Gambia, Guinea, Madagascar, Namibia, and Uganda hosted the consultants who conducted the assessments, providing them with contacts, background, and field support.

The assessments involved four primary areas of inquiry:

♦ The extent and quality of EE&C work underway.
♦ The range, quality, and capacity of individuals and organizations involved in EE&C, including government agencies, indigenous and intermediary NGOs, and donor organizations.
♦ The capacity of communications agencies to provide services (such as printing, videotaping, evaluation research).
♦ The degree to which gender is incorporated in the design, implementation, and evaluation of current EE&C programs.

These assessments were not "rapid" in one sense—they lasted four weeks. Rather than focus on one environmental issue or potential development effort, the inventories were broad sweeps of existing programs, with suggestions and recommendations from both interviewees and consultants.

THE NAMIBIA EXAMPLE

Each consultant approached the task with different resources and background, but the basic approach to conducting an assessment was consistent. In Namibia, for example, the existing Namibian Environmental Network was eager to use the results of the assessment as its own inventory of EE&C programs and possibilities (Monroe, 1994). Individuals were interested in being represented in the document with their own visions of the challenges and future, as well as suggesting other people and programs that should be documented. When no new names were provided through this "scatter gun" technique, the assessment was deemed fairly complete. Below are some of the agencies contacted by phone or visited.

Government Agencies

Ministry of Education and Culture
  Ongwediva College of Education
  University of Namibia
  Adult and Continuing Education
  Technicon
Ministry of Environment and Tourism
Ministry of Youth and Sport
Ministry of Fisheries and Marine Resources
Ministry of Agriculture, Water, and Rural
  Development
Ongwediva Rural Development Center

Environmental Education Programs and Centers

Okatjikona E.E. Center
Namutoni E.E. Center
Wereldsend Environmental
Conservo
Namibian Animal Rehabilitation
Research, and Education Center
Cleanup Campaigns
Etosha Ecological Institute

NGOs

Rossing Foundation
Namibian Nature Foundation
Wildlife Society
Namibian Development Trust
World Wildlife Fund
Onankali Nursery
GECCO
Cheetah Conservation Fund
Nyae Nyae Development Fund

Donor Agencies and Projects

USAID—LIFE and READ
US Peace Corps
SIDA—Enviroteach
Denmark—Life Science Project
GTZ—SARDEP
British Council

Other

Farmers Union

BRICKS Community Project
Social Impact Assessment and Policy Analysis
    Corporation
Radio and TV stations

In Namibia, interviews with environmental education program people used the following interview guidelines:

♦ Please describe your EE&C program, showing components as feasible.
♦ Who attends, by gender, by ethnicity, by geography?
♦ What objectives are met?
♦ How does this program fit into other learning events?
♦ Who does not attend, and why?
♦ What do you see as barriers to more effective EE&C programs in your region?
♦ What suggestions do you have for overcoming these barriers?
♦ If you could change anything, what would you change?
♦ How does this program interact with those in other regions, other Ministries, etc.?

The responses were written into a summary of each program under the following headings:

♦ Background
♦ EE&C Activities
♦ Funding and Capacity
♦ Wisdom Shared

The assessments from all five countries were compiled into a general description of EE&C in these nations, along with recommendations for how EE&C programs could be developed, enhanced, and supported (GreenCOM, 1996).

Because of the breadth and depth of interviews, many recommendations flowed from these rapid assessments regarding policy work, planning, implementation, materials development and dissemination, school-community linkages, and out-of-school youth. In addition, the researchers were able to recommend strategies for agricultural extension agents, site-based interpretation, and media and arts campaigns. (See GreenCOM, 1996 for the full list of recommendations.)

References

GreenCOM. (1996.) *People and Their Environment: Environmental Education and Communication in Five African Countries*. Washington, DC: USAID/AED.
Monroe, M.C. (1994.) *Environmental Education and Communication in Namibia*. Washington DC: USAID/AED.

Chapter 7
Formative Research

Orlando Hernández

Although it provides the program manager with basic information, a rapid assessment is only rarely sufficient for designing a program. Formative research comes next.

Formative research is conducted in the early stages of designing an environmental education or communication program to define: the target audience(s), the convincing messages for each audience, the packaging of the messages, the media mix, and the ideal frequency of exposure to the message. Participation of stakeholders in formative research contributes to producing a higher quality research project by keeping the focus on issues important to the community.

Formative research helps the practitioner:
♦ Identify behaviors to promote.
♦ Identify the knowledge and barriers, or the facilitators to, desired behaviors that messages need to either overcome or strengthen.
♦ Identify central themes and messages comprising EE&C interventions

Behavior identification involves selecting among the ideal behaviors. All ideal behaviors may not be possible. Reality checks should help determine which ideal behaviors are possible in certain contexts. Long lists of ideal behaviors may be reduced to shorter lists on which EE&C interventions can focus.

Once target behaviors have been identified, their *external and internal determinants* must be defined. External determinants include contextual factors that may influence whether or not people will adopt the desired behavior. They could include public policies supporting specific actions or access to technology and products. Internal determinants include: knowledge, beliefs about what the adoption of target behaviors will or not help accomplish, beliefs about social norms that exert pressure on individuals to adopt or perform those behaviors, and the skills necessary to perform them. The study of internal determinants requires comparing "doers" and "non-doers" of the target behaviors, and also requires comparison by gender.

FORMATIVE RESEARCH IS...

Formative research is any research that helps define the content of an intervention. It may be either primary or secondary research, and can be qualitative or quantitative. Often, secondary research is undertaken first to find out what previous initiatives others have done about the same issue and try to understand the barriers they encountered. Once that step is completed, primary research, strengthened by adding the results of earlier efforts, may be conducted.

The importance of formative research is reflected in the questions it can answer:
♦ Who are the target audiences?
♦ What messages will be conveyed to each one of those audiences. What major themes will be addressed, what do we want people to know and/or do, what convincing evidence will be presented to support the messages?
♦ How will the information be packaged? Who will present the messages? What format will be used to present them?
♦ Through which channels will the information be conveyed?
♦ When should the messages be disseminated and how often should they be repeated, particularly if mass media are used?

Communicators often begin with a promotional idea that may not influence behavior, and may in fact be a waste of time and money.

FORMATIVE RESEARCH IS NOT...

Formative research is not "baseline research," which is part of an evaluation strategy generally using a pre-test/post-test design to assess the effects of an intervention. Baseline research occurs before program implementation to assess target audience attitudes about particular messages. It should not be conducted to help make decisions about program content or the audience itself.

STAKEHOLDER PARTICIPATION

Stakeholder involvement is an important element of formative research and can take place in a number of ways. Stakeholders can participate in all stages—setting up research objectives, developing research instruments; and collecting, analyzing, and interpreting data. Their participation in any of these phases usually contributes to a higher quality product.

The major advantages of stakeholder participation include developing an appropriate research agenda, ensuring action-oriented research, obtaining more trustworthy information, developing information ownership, and correctly interpreting collected data. All this information will be used to translate research findings into workable EE&C programs.

STEPS FOR FORMATIVE RESEARCH

To reach its objectives, the design of an EE&C program requires several basic steps; the first three are described in this section.

Step 1: Identify Behaviors

GreenCOM recommends that intervention planners start with identifying what behaviors to promote. Communicators often begin with a promotional idea that may not influence behavior, and may in fact be a waste of time and money. If the purpose of the intervention is to change behavior, the first design step is identifying what the target audience is expected to do. For example, while the short life span of a landfill may be important to the experts, the general public will probably not find

this knowledge useful. Information about *how* to recycle, presented in the context of why it is important, may be the primary need.

Identifying the desired behaviors will facilitate both choice and segmentation of audience. Traditionally, audience segmentation has focused on socio-demographic and socio-economic variables. However, segmentation, based on environmentally-friendly or unfriendly behaviors currently in practice, offers the opportunity for more focused EE&C programs. For example, people who have tried to recycle household waste may need different messages than those who have never recycled.

Step 2: Study the Behavioral Factors

Understanding the factors that facilitate or hinder the performance of behaviors—including what the audience knows, believes, and cares about the issues—is the second step. A theoretical framework is used to establish the formative research parameters (see Chapter 2). Factors to be considered may be external or internal to the individual—external may include policies, institutional support, availability of a given product, or market incentives, while internal may include knowledge or skills, social norms, and perceptions of individuals about what others want them to do. These become the behavioral motivators that EE&C programs can affect.

Depending on available findings and the complexity of the task, the second step may be divided into two stages. During the first stage, qualitative research can help identify the range of relevant external and internal behavioral determinants. This phase may employ in-depth individual interviews using a semi-structured instrument and open-ended questions, or use focus group discussions and rapid appraisal techniques.

Data obtained during this stage can be used to construct closed-question surveys to obtain additional information from individual respondents. The findings are then used to obtain further information from target population samples. Statistical analysis of the data can help identify which factors predict the behaviors. For example, are the behav-

iors predicted by internal or external factors? In either case, which play a predictive role?

Quantitative research techniques can help explore and test the validity of "hunches" identified during a qualitative research phase. The statistical analysis will provide clarity and enable program managers to establish quantitative links between the behavioral determinants and the behaviors, as well as determine the magnitude of these relationships. This will help prioritize and select the determinants for use in the EE&C program. Consequently, results of this analysis are essential in identifying and developing message content.

Step 3: Identify Central Themes

The third step is to identify the central program themes. These may be common denominators for different aspects of the intervention that provide the context for the behaviors to be promoted. For example, a recycling program may develop a theme that conveys the importance of neighborhood improvement, or of health and cleanliness (see Box 7.1).

Communications materials promoting the central theme(s) are then produced. Normally, rough versions of those materials are pre-tested to make sure that they are understood by the target audience(s) and are sufficiently persuasive. Although some may consider this research "formative," it is described under

---

BOX 7.1

Formative Research Identifies Theme

In Machala, Ecuador, researchers developing a recycling program asked participants in a formative research study to indicate whether household waste was a problem and, if so, why. The responses were grouped into three categories: health, aesthetics, and environmental pollution. Respondents said that waste either attracted flies and rats that cause disease, or was directly responsible for people getting sick. For example, if they walked through rotting waste, got home, untied their shoes, and touched their eyes, they could end up with an eye infection. The health-related concerns were mentioned more frequently, particularly among the poor who comprised the majority of the population and lived in neighborhoods where

daily, nearly 45 metric tons of solid waste accumulated in vacant lots.

As a result, researchers suggested to program designers that health maintenance was the most important factor for the audience in resolving the solid waste problem. Consequently, the new waste collection services could be positioned as a contribution to the health of the population. With this in mind, "Better Health for All" was considered a possible central theme to serve as a consistent thread throughout the communications messages and materials (e.g., posters, flyers, brochures, decals, radio spots).

Because research also showed that a waste collection system associated with the municipality would be better accepted by the audience, the

messages could also stress that the municipality was providing the waste collection service.

Research also showed that the most outstanding benefit residents saw in an expanded curbside waste collection service was the reduced "cost" in terms of effort and time by putting out the waste on the sidewalk in front of the house, instead of taking it to a transfer station. As a result, the messages to be disseminated through the intervention could revolve around the following ideas:

To ensure better health for all, use plastic bags to dispose of your waste and place it on the curb twice a week to be picked up by your friendly waste collector working for the municipality. You will save time and effort.

pretesting in Chapter 8. A final evaluation should be conducted after the program is implemented.

SELECTING BEHAVIORS

Planners can use several methods to create a list of actions. GreenCOM has used two techniques: 1) consulting experts and 2) forming a team of stakeholders. Two cases illustrate the approaches.

Selecting Behaviors for a Multi-Media Campaign in El Salvador

In 1995, research was conducted in El Salvador to support the development of a multi-media campaign to increase environmental awareness among the general public. As part of this exercise, six major unifying topics under consideration were pretested. One of the first findings was that the target audience was interested not only in understanding the magnitude of typical environmental problems in El Salvador, but also in having a sense of what could be done to tackle them. As a result, public and private sector representatives with extensive environmental experience met to determine actions that the general public could perform that would have a positive effect on the environment.

The meeting generated a list of 46 actions, divided into three categories, that could be implemented by: 1) everyone 2) urban dwellers and 3) rural residents. To determine their viability, eight focus groups were conducted with men and women representing the rural, peri-urban and urban dwellers from three regions of the country (i.e., Western, Central and Eastern). Focus group participants were asked to rate the proposed actions into three categories: "easy to do," "not so easy," and "difficult." They were also asked to explain the reasoning behind their choices.

As a result of this exercise, 20 of the 46 actions were classified as feasible (see Table 7.1). Criteria used by study participants to determine feasibility were:

♦ Extent to which actions generate personal gains and easily become new habits.

Table 7.1 List of Viable Environmentally Friendly Actions from El Salvador

**Target Audience Actions
(In Descending Order of Viability)**

General Public

♦ Turn off unneeded household lights

♦ Take care of trees you planted

♦ Protect wildlife and don't buy wild animals for pets

♦ Carry a plastic bag for trash generated when driving

♦ Empty trash bags in cars at gas stations

Urban Dwellers

♦ Save water by turning off faucets when not using them

♦ Save water by sweeping, not washing your floors

♦ Take out the garbage when the garbage truck comes

♦ Discard snack wrappers in trash bins

♦ Put trash in the bins and cans provided in public areas

♦ Iron only twice a week to save electricity

♦ To save gas, start your car when everybody is seated

♦ To save gas, check the tire pressure when buying gas

♦ To save gas, tune up your car periodically

Rural Residents

♦ Learn to trim trees for firewood

♦ Put out fires after cooking

♦ Use crop debris instead of wood for fires

♦ Bury garbage instead of burning it

♦ Bury your garbage instead of throwing it in the river

♦ Wash fumigation tanks away from rivers

♦ Take soap wrappings home after washing in the river

♦ Time and effort required for implementation.

♦ Cultural acceptability and financial implications.

Selecting Behaviors in a Sustainable Land Use Program in Ecuador

An ecological reserve in northwest Ecuador, Cotachi-Coyapas covers more than 200,000 hectares and ranges from 100 to almost 5,000 meters above sea level, representing multiple ecosystems (Booth, 1996). USAID funded a sustainable land use pro-

gram, the SUBIR Project, with buffer zone residents in the southeast of the reserve. One program objective was to limit agricultural expansion in the reserve by promoting intensive use of existing agricultural plots. A multi-disciplinary team—project staff, local counterparts, representatives of community groups and local farmers—identified 27 ideal behaviors that farmers in the area should implement. However, after observing which behaviors have been adopted and the reasons for their adoption, the list was expanded to include a total of 30 behaviors. Many of the original ideal behaviors were fine-tuned to fit the local conditions. The final of list of behaviors negotiated with extension agents after the field observations of farmers appears below.

Through a series of workshops and meetings, the multi-disciplinary team defined the overall goal and five objectives of the project, as well as the ideal behaviors for each of the five objectives. Research was then conducted with the target audience to answer two questions:

♦ What difference exists between ideal and actual behaviors, if any?

♦ What factors have influenced farmers implementing the ideal behaviors to adopt them and what factors have prevented non-adopters from doing so?

Two research instruments were used: structured observation and in-depth interviews. Structured observations were done using an Ideal Behavior Observation List. Fortunately, most of the ideal behaviors—such as where and when to plant, and how pesticides were used—could be observed; only a few required verbal reporting. The Observation List was pretested in the field before final use. Members of the multi-disciplinary team, including farmers, collected the data. An in-depth interview guide was developed and researchers were trained in interviewing techniques. The training addressed issues such as how to begin and end an interview, questioning and probing techniques, and nonverbal communication.

The pre-test of the instruments demonstrated that it took more than one person to conduct an interview. Consequently, interviewers worked in pairs:

one person was the interviewer and the other the note-taker. After each interview, the pair reviewed the observations and notes, compared what had been seen and heard, and arrived at agreements. Two communities in the buffer zone were selected based on the following criteria: altitude (lower vs. higher), concentration of households, and amount of time where the project had worked in the community ("old" vs. "new" communities).

Because the list of possible ideal behaviors was long, a decision was made to select project participants and non-project participants in each community. A total of 18 participating farmers were interviewed; equal numbers for project and non-project participants were retained. Thirteen respondents were male and five were female. Results were graphed and analyzed by the multi-disciplinary team.

From these observations, behaviors were selected in two workshops with the participation of local farmers. In the workshops, researchers shared the findings and their recommendations based on the application of a behavioral analysis scale. Discussions at the workshops helped decide what behaviors to focus on and helped fine-tune those behaviors (see Table 7.2).

IDENTIFYING BEHAVIORAL DETERMINANTS

Identifying the relevant determinants is an important step in developing an effective EE&C program. As seen in Chapter 2, different theories about behavior change have different assumptions about which factors are most powerful in influencing an individual to start a new behavior. Through focus groups and interviews, GreenCOM can better understand the audience and the determinants of their behavior. As noted earlier in this chapter, external determinants may be policies and regulations, access to materials, and availability of products or services. Internal determinants include an assortment of variables, such as knowledge, attitudes, social norms, skills, and competence.

Identifying determinants is a bit easier when comparing information from the selected behaviors'

Table 7.2 List of Behaviors Promoted by Sustainable Land Use Program in Ecuador

Specific Behaviors

♦ Pest and Disease Control: prepare the soil 20 days before planting

♦ Lay prepared soil fallow for a minimum of 20 days

Use pesticides and fungicides as follows:

♦ January to May: products with blue labels

♦ June and July: combine organic and green labels

♦ August and September: only organic

♦ October and November: combine organic and green labels

♦ Rotate short-cycle crops

Fertilization

♦ Use chemical fertilizer only after a soil analysis indicates it is necessary in the minimum quantities recommended mixed with organic fertilizers

♦ Cultivate at least three ecologically compatible crops

♦ Cultivate at least three income-generating crops

♦ Cultivate at least three crops for family consumption

Soil Conservation

♦ Open fire breaks before burning land for cultivation

♦ Burn only the areas to be planted immediately

♦ Burn fallow land against the wind

♦ Do not burn stubble

♦ Plant crops on the contour

♦ Plant commercially viable fruit trees or forestry species, establish live fences on the contour within the plot

Soil Quality Maintenance

♦ Incorporate organic material in soil preparation

♦ Incorporate organic material during the growing season

Multiple Use Forestry

♦ Do not cut down forest to cultivate grass or crops

Management

♦ Cultivate existing agricultural fallow land instead of opening forest areas

Water Conservation

♦ Keep trees for 50 meters around springs

♦ Keep trees for 10 meters along river and stream banks

Guinea Pig Management

♦ Raise type one (purebred) guinea pigs

♦ Raise guinea pigs in cages

♦ Feed guinea pigs: ground corn, king grass, sugar cane or corn leaves, and salts and minerals

♦ Pick the best of a litter for future breeding

♦ Put maximum ten females with one male

"doers" and "non-doers." The two following cases from Ecuador and Egypt suggest how to locate doers and non-doers, what questions to ask them, and how to analyze the resulting data to reveal the behavioral determinants.

Waste Separation: Doers and Non-doers in Quito, Ecuador

In 1993 the Municipality of Quito initiated a pilot recycling program in 11 inner-city neighborhoods. The program required participants to separate garbage into three categories: organic kitchen waste, recyclable paper, plastic, glass and metal trash, and non-recyclable wastes. Waste was collected by type on different days. Neighborhood micro-enterprises were responsible for garbage collecting and disposal, reducing the cost of transporting the waste to a landfill outside Quito. Some micro-enterprises used organic waste to produce compost and sold recyclable waste to intermediaries.

However, recycling rates dropped over time in the neighborhoods that had participated the longest in the program. GreenCOM's study explored ways to reverse these deteriorating recycling rates.

The study was conducted in four neighborhoods. Selection criteria included socio-economic level, access to alternative garbage collection systems, and population density. Qualitative data were gathered through focus group discussions

Non-doers viewed waste separation as a hard, time-consuming, and dirty task.

with neighborhood committee members, in-depth interviews with micro-enterprise managers, and focus group discussions with household residents in both program control neighborhoods. Table 7.3 lists the interview questions. Pilot program participants were divided into two subcategories: doers (who followed the collection regime) and non-doers (who did not). Individuals were assigned to a category based on information from their garbage collectors and verified by a research team examining content of curbside garbage put out for collection by the micro-enterprise collectors.

The study revealed that perceptions about waste separation could be grouped into four areas of concern: financial, development-related, self-growth and self-image, and the time and effort required to separate waste.

Followers differed from non-followers on a number of beliefs such as the benefits of sorting waste for recycling. Doers perceived waste separation as a fast process that made handling waste easier, since wet and dry garbage were deposited in separate containers. Non-doers viewed waste separation as a hard, time-consuming, and dirty task. Non-doers had the misperception that separation occurred after different waste products had been deposited in one container. For them, separation implied sticking their hands in the garbage to separate the waste. In addition, a striking contrast between doers and non-doers was the role attributed to self-image. For the former, waste separation gave them a positive image with neighbors and family members. For the latter, waste separation was a demeaning task fit only for scavengers.

Findings from a subsequent quantitative study, using a pre-coded questionnaire with a sample of residents from neighborhoods participating in the pilot program, revealed that social pressure to separate wastes is part of the mix of determinants. However, the sources of that social pressure vary by gender. While social pressure from neighbors is a predictor of waste separation for men, social pressure from both neighbors and family members is a predictor for women.

Table 7.3 Formative Research Questions asked in Quito
♦ How would you define waste?
♦ What types of waste are there?
♦ How many places to dispose of waste are there in your house?
♦ Where are they located in the household?
♦ What types of waste disposal containers do you use in your house?
♦ Who in your household is in charge of handling the waste?
♦ What happens to the waste you dispose of? Where is it taken?
♦ What does it mean to separate waste?
♦ Why would one separate waste?
♦ How does one separate waste?
♦ Is waste separation practiced in your house?
♦ Who does it?
♦ What advantages do you see in separating the waste?
♦ What disadvantages do you see in separating the waste?
♦ How do you get rid of cardboard? Newspapers? Glass? Metal? Plastic? Kitchen waste? Bathroom waste?
♦ What made you get rid of cardboard that way? (Same questions with newspapers, glass, metal, plastic, kitchen waste, and bathroom waste)
♦ Who has say in how you dispose of the waste generated in your house? Who else?
♦ Who would approve of us separating waste?
♦ Who would approve of giving different types of waste to collectors on different days? Who else?
♦ Why?

Efficient Water Management: Doers and Non-Doers

GreenCOM helped the Ministry of Public Works and Water Resources (MPWWR) in Egypt implement a campaign to make the general public and farmers aware of a nationwide water scarcity. For centuries, the Nile River had provided Egypt with an abundance of water. However, with the construction of the Aswan High Dam, Egypt agreed to share the

waters of the Nile through a pact with neighboring countries. The amount of water Egypt can release from the High Dam is now 55.5 BCM (billion cubic meters) per year. As a result, in the past 10 years Egypt has gone from having a water surplus to a water deficit. The nation now finds itself using more water than the treaty allows, necessitating the reuse of water that is not overly polluted.

MPWWR requested assistance from Green-COM to develop a communication intervention based on the concept that Egypt had a fixed amount of water available and, as the population increased, each individual share would be more limited. This strategy was to serve as a base for future interventions directed at helping users conserve water. The basic assumption of the first campaign was that increased awareness about water scarcity would lead to the adoption of water use efficiency and conservation practices by farmers.

Formative research was conducted to guide decision-making for the first campaign. GreenCOM trained staff from the Water Communication Unit (WCU) of the MPWWR in qualitative research methods, data analysis, and interpretation. Data were analyzed and interpreted by staff with guidance from GreenCOM.

The research was conducted in three cities in different regions: Damietta, Al Fayyum, and Aswan, with each region having different levels of access to irrigation water. Data were obtained through focus groups and in-depth interviews with both male and female farmers interviewed separately in each region.

Prior to conducting the research, MPWWR technicians suggested that the communication intervention focus on the following topics:

♦ The Koran tells us that water should be used wisely
♦ Egypt has limited water sources, the Nile is the major source
♦ Past droughts have had negative consequences on agriculture in the Nile River
♦ Basin Water supply is fixed by treaty to 55.5 billion cubic meters per year
♦ Demand for water has increased over time, given a growing population in Egypt

♦ The increased demand comes from different sources: industry, farmers, and domestic users
♦ Per capita consumption of water in Egypt is different from that of neighboring countries
♦ Water scarcity in the past has been associated with wars in the region. Future regional conflicts could also be associated with water scarcity
♦ Several policies and projects have been implemented by the public sector to conserve water and prevent water pollution
♦ Irrigation water overuse may not increase productivity, yet it may reduce water availability and aggravate water scarcity

The formative research was designed to find out whether farmers were already engaged in water conservation practices, the role that awareness about water scarcity played in motivating farmers to perform those practices, and to identify what other psycho-social and contextual factors influenced farmers' decisions to conserve water.

The research indicated that farmers were already highly aware of national and local water scarcity problems and had established the connection between the two. Study participants were also acutely aware of how the water supply had changed in recent years, the problems around water pollution; and the impact of population growth on water resources and food security.

Research results also indicated that local issues about water scarcity had the strongest influence on decisions farmers made about water use. Furthermore, water conservation and water management practices were known and had been adopted. They included: irrigating at night to reduce evaporation, leveling the land to facilitate water flow, choosing crops that require less water, and cleaning irrigation canals to facilitate water flow.

According to the research results, the major motivations for the doers included taking care of growing family needs, self-sufficiency, and food security for family members. Farmers practiced these methods because they wanted to conserve water for the future to meet growing family needs. They valued self sufficiency in food and water for the family.

Based on these findings, researchers developed a set of new messages that reflected the motivation of the Doers, the farmers who were already carrying out the desired behaviors. They also eliminated some messages from the original list because the farmers did not relate to them. Table 7.4 shows the new messages as well as the messages retained and eliminated because of the formative research.

Formative research contributed to developing the messages conveyed through this campaign and helped program staff see the need to modify their original messages. In addition to helping create a more effective communication campaign with messages that resonated with the intended audience, formative research saved the project time and money by limiting topics.

GENDER CONSIDERATIONS

While the importance of gender considerations in program design are more fully addressed in Chapter 4, it is important to keep in mind that behavioral determinants may differ for men and women. It is imperative, therefore, that data be collected from both men and women separately and that a gender analysis be conducted to determine differences. Multi-disciplinary program teams should, of course, include both men and women—it is important to compare not only "doers" and "non-doers," but also female "doers" and "non-doers," as well as male "doers" and "non-doers." Interventions need to be sensitive to the concerns of both men and women, since messages designed to persuade one group may not necessarily speak to the other.

The importance of understanding different gender perspectives was made clear in GreenCOM's experience with a waste collection project in Quito, Ecuador, presented earlier in this chapter. An analysis of results obtained through formative research to design a recycling intervention in that city revealed contrasting results for men and women. The major differences observed by gender were connected to the following issues: who reaps the benefits of recycling, the self-image that waste separation enhances, and the health implications of

Table 7.4 How Formative Research Changed the Campaign Messages

New Messages Developed through Formative Research

♦ Conserve water for the secure future of your family

♦ Enough water means enough food for your family: conserve water now

Messages Retained from the Original List

♦ The Koran tells us that water should be used wisely

♦ Egypt has limited water sources, the Nile being the major source

♦ Past droughts have had negative consequences on agriculture in the Nile River

♦ Basin Water supply is fixed by treaty to 55.5 billion cubic meters per year

♦ Demand for water has increased over time, given a growing population in Egypt

♦ The increased demand comes from different sources: industry, farmers, and domestic users

♦ Irrigation water overuse may not increase productivity, yet it may reduce water availability and aggravate water scarcity

Messages Dropped from the Original List

♦ Per capita consumption of water in Egypt is different from that of neighboring countries

♦ Water scarcity in the past has been associated with wars in the region. Future regional conflicts could also be associated with water scarcity

♦ Several policies and projects have been implemented by the public sector to conserve water and prevent water pollution

waste separation. Men believed that if their family participated in the recycling program, outsiders would obtain the revenue from recyclable sales. The implication was that those funds should be collected by the members of households where the waste was generated.

Women, on the other hand, believed that recycling would generate funds for use in neighborhood development projects and supported the program on those grounds. Whereas men believed recycling to be a demeaning task, women generally

felt that recycling would foster their image as industrious neighbors, and, for their relatives, as responsible family members fulfilling their household duties.

Most men did not mention the health implications of separating waste. Women noted that waste separation eliminated vectors and odors and made their houses look prettier. Women against the program also mentioned health implications, particularly with respect to bathroom waste. For them, the program required retaining that type of waste too long in the household, a measure believed to be unhealthy. Surprisingly, women also showed a knowledge of how recycling could benefit the country's economy, such as the fact that providing recycled materials to industry could diminish the demand for imported material, and that recycling could contribute to national development. Neither of these two benefits was suggested by men.

In general, men appeared to be more critical than women. However, women critical of the program expressed opposition for different reasons: the expense of plastic bags, a perceived intrusion into household management, and forced collaboration with neighbors they disliked.

The implications of these results were obvious, as the program had to pay particular attention to men, and to try to bring them on board with the program objectives.

References

Booth, E.M. 1996. *Starting With Behavior: A Participatory Process for Selecting Target Behaviors in Environmental Programs*. Washington, DC: USAID/AED.

Chapter 8

Pre-testing EE&C Products

Martha C. Monroe

Consider these scenarios.

Before printing a new environmental education teaching guide, the organizers asked some teachers to test a few of the activities. The teachers' comments were thorough, (e.g. it is hard to find clear plastic boxes for the groundwater activity, it takes much longer than the specified 45 minutes for students to practice this play, the illustrations imply that all teachers are women, and it would help immensely if the materials provided suggestions for assessing student knowledge after completing each unit). Grateful for such specific suggestions, the organizers incorporated them into the final version of the guide before the production deadline…

The authors of a comic book on water pollution struggled to illustrate the concept of "pollution" without making the character overly negative. In focus groups, non-literate adults and teenagers commented on six potential characters: "This one looks sick; that one looks like a grandpa." After another round of testing, the authors settled on a pollution character who looked serious and sick rather than grandfatherly or mean…

As these scenarios illustrate, a critique of draft material by the intended audience—well before production deadlines—is a vital step. Equally important is asking the right questions so that audience feedback makes a helpful contribution.

The previous paragraph sounds so simple that it should be common sense. It is repeated often in this manual for good reason, however. Time and time again, materials production runs into writing delays and then production deadlines that squeeze out the crucial step of pre-testing. Deadlines are real: publications need to be distributed before the end of the school year, radio plays must be finished for World Environment Day. Sometimes a squeezed budget forces a decision to move the pre-testing money into production. Yet, despite the challenges, pre-testing all education and communications products is vitally important.

To repeat the obvious, high-quality environmental education and communication (EE&C) products result from pre-testing draft materials well before production deadlines. This chapter explores the type of information that pre-testing can provide, strategies for obtaining this information, important differences between using and reviewing the materials, and helpful tips for program managers.

WHAT PRE-TESTING PROVIDES

The process of asking the intended audience to review, comment, talk through, or try out an EE&C product enables the program manager to ask a variety of targeted questions. Some sample questions are provided below in Table 8.1.

Very different information is collected if users are asked to apply the materials in their work—conduct a workshop, teach students, facilitate a meeting—and respond to a series of questions from their experience. This procedure is in fact a much better test of the material. Are directions written clearly? Are the objectives really accomplished? Are the handouts and overheads sufficient? Can the participants follow the delivery? Do the materials meet the needs? Are the materials adaptable to different situations? In this case, a survey or follow-up meeting will help focus the users on the questions that should be answered.

Expert reviewers form another category for pre-testing. Although technically not users, they can

Table 8.1 Pre-testing Questions	
For a communications product, ask the intended audience...	♦ Would you use this? Why or why not?
	♦ Would you need training to feel comfortable using this?
♦ What do you think the main message of this poster/ad/radio spot/etc. is?	
♦ To whom is this message directed?	**Rather than asking teachers questions about their student's reactions, ask teachers to conduct the activity and record students questions, comments, or activities. In addition, students could fill out a response sheet.**
♦ Could it be you? Why or why not?	
♦ Does the main character remind you of someone you know? Why or why not (which may be prompted with specific questions about hairstyle, clothing, gender, etc.)?	♦ Did you alter the activity from what was written? If so, how?
	♦ Did boys and girls respond differently? If so, how?
♦ What would prevent you from doing the suggested behavior?	♦ Please give some examples of the questions that students asked.
For an educational product, ask teachers or administrators...	♦ Please give some examples of student reactions to the activity. Were they engaged? Did they stay on task? Were they confused?
♦ Is this activity/poster/filmstrip/booklet something you could use in your class?	♦ Did you achieve your objectives? Did your students gain knowledge or skill?
♦ For what grade level is it most appropriate?	
♦ For what subject is it most appropriate?	**For any product, ask experts...**
♦ Are the illustrations appropriate? Gender-free? Ethnically appropriate?	♦ Is the information conveyed here accurate?
	♦ Is the message conveyed appropriate?
♦ Is the vocabulary appropriate?	♦ If people adopted this behavior, could it make a difference in the problem?
♦ Will the activity help you meet your curriculum objectives?	

provide critical information that the authors might miss. Distance has a way of providing a valuable perspective.

Drawn from the GreenCOM/Egypt experience, the following example illustrates the pre-testing process and underscores the value of this step in communication materials development.

PRE-TESTING A FARMER'S SURVEY IN EGYPT

In 1998 the GreenCOM/Egypt mesqa or irrigation canal project targeted farmers with a national, comprehensive survey of knowledge, attitudes and practices that included important questions previously unasked on a systematic basis.

GreenCOM designed a pre-test to check many elements of the survey design: the sample frame (a listing of farmers on 240 canals nationwide), the

questionnaire, and fieldwork logistics. All would be modified based on the pre-test experience.

The research firm set up the pre-test sample using canals similar to but outside the main sample to avoid using any farmers targeted for the survey. Over 100 respondents were interviewed during the pre-test.

As a result of the questionnaire pre-test, we decided to:

♦ *Reduce the complexity of some questions*— The pre-test questionnaire tried to do too much, asking about both the farmer's practices on canal-side land, and about land holdings elsewhere. This was burdensome on the respondent, and certainly would have made analysis and report writing very taxing. The final questionnaire asked only about land owned on that particular canal.

♦ *Make the questionnaire more concise*—It is hard for any researcher to pass up the oppor-

tunity to capture every aspect of the subject under investigation by increasing the number of questions. During the pre-test, it became clear that some questions designed to get at different aspects of a subject were interpreted as the same questions, proving burdensome to the respondent and not providing additional substantive information. As a result, these questions were combined.

♦ *Settle for more general answers*—One set of questions asked how large a fine a farmer would pay in the case of four hypothetical conflicts among farmers. The pre-test showed that farmers found it difficult to specify an amount, so the question about an amount was dropped, leaving simply the fact that a monetary fine would be exacted. Even this lesser level of detail provided rich material for the analysis.

♦ *Reduce the sensitivity of questions*—One question was so sensitive that it had to be deleted. Increasing farmer participation through cost sharing is an important Green-COM Egypt sub-objective, so the survey sought to measure the willingness of farmers to share in the costs of upgrading the irrigation system. In fact, the Ministry has not adopted this policy, since cost sharing is a highly sensitive matter. The project worked closely with an economist to draw up two apparently simple and straightforward questions concerning willingness to pay to provide continuous flow and to upgrade the drainage system which, through statistical analysis, would yield exact amounts or ranges that respondents were willing to pay.

But during the pre-test, respondents interpreted this question as an indication that the Ministry was contemplating charging for a natural resource, and they responded angrily. This response led the research firm to conclude that the quality of the questionnaire would be compromised by retaining the questions. The Ministry and the project replaced them with two yes/no questions on willingness to pay. The results suggest that the question was not as biased as one might expect, with around 75 percent of male farmers and 50 percent of female farmers saying they were willing to pay.

After the revisions, the questionnaire was used to produce some ground-breaking research. Compromises led to a better rapport between respondents and interviewers, and paid off in results that may be less biased and of higher quality and reliability than those produced by a questionnaire less extensively pre-tested and rigorously modified.

Chapter 9
Evaluation

Orlando Hernández

This chapter provides guidance to EE&C project managers who work with evaluators. It will introduce you to some of the techniques and terms evaluators use, but most importantly it will show you how to design a project that can have meaningful evaluations, not only at the end of the project but throughout its life to keep it on course.

Most project managers make the mistake of not bringing in the evaluator until the end of a project and then not giving him/her a goal against which to evaluate performance. Asking an evaluator at this late stage, "What should we be evaluating?" is meaningless. The evaluator can only measure whether you have stayed on course—he/she cannot suggest destinations.

When involved in a project from the beginning, a good evaluator can regularly tell the manager whether the program is on course or, if not, in what direction it has strayed. With this information, the manager can decide how to get back on track (see Box 9.1).

A mantra for managers is: "Start with the results." If you don't have a precise vision from the outset of how things will look at the end of a successful project, you will have trouble with the evaluation.

Developing this vision is not easy. Indeed, it may be the most difficult part of management. The process should be participative, at least with a management team, sometimes with a wider group representing the target audience. It is usually a long, and sometimes exhausting, process at the end of which everyone commits to the vision and wants to be assessed in terms of it. Once agreed upon, the vision become the program's North Star.

Evaluation is usually categorized as *summative* evaluation, which measures the project success or failure by comparing outcomes with the original goals, or as *formative* evaluation, which measures project progress against ongoing benchmarks and allows the manager to make course corrections.

Formative evaluation is more useful to a program manager, because it provides information that helps the program succeed. Summative evaluation, coming after the program is over, gives a verdict about whether the program achieved its goals, but is of no help to the manager in achieving those goals. (Of course, the results of summa-

---

BOX 9.1
Keeping the Desired Results in Mind

In Nicaragua, sea-turtle experts were convinced that if local residents just understand the rapid sea-turtle population decline, they would be less likely to harvest eggs. A storybook was written and approved by the biologists that did an excellent job of explaining all the potential disasters that stalk the young turtles until they reach maturity: egg predation by herons, crabs, and coyotes on the shore; sharks; shrimp nets, and even turtle hunters. After giving the story to readers, the program manager developed an evaluation survey that asked about their attitudes regarding egg collection and abiding by the quota system. Only then was it clear that the storybook was not about egg collection and did not even mention the quota system. Fortunately, there was still time to rewrite the story.

A mantra for managers is: "Start with the results."

tive evaluation can be useful for people designing new projects.)

DEVELOPING DESIRED RESULTS

The statement of the project's vision—or more specifically its *desired results*—guide the evaluation process, just as they have driven the program development. By operationalizing desired results into measurable statements, the evaluator can reflect upon the degree to which the program achieves these results. Well-stated desired results for educational programs are specific to the situation and share these elements:

1. Each objective targets one and only one thing: a fact, an attitude, a skill. Limit the statement to only one measurement.
2. Each objective specifies an outcome that the participant will be able to perform. The objective is not written from the perspective of the leader (teach about turtles) or the program coordinator (host the workshop). Use appropriate action verbs to define the outcome.
3. Each objective spells out what will be measured in order to meet certain criteria (80% success, three out of five reasons).
4. Each objective is set in a context or a condition (when asked, when given a list of 10 items, where ascertained, which population…).

OBTAINING BASELINE MEASURES

Since the evaluation is designed to measure change, some technique to measure the "baseline" situation is necessary. The following activities may provide this initial information.

♦ Use the literature or existing data in the agency
♦ Survey people
♦ Observe people
♦ Interview people
♦ Use information from a comparable site or a former program
♦ If you didn't do a baseline study, at least ask people at the end of the study how they think they've changed

TOOLS FOR COLLECTING INFORMATION

Each information-collecting tool has a niche in evaluations, and just like an organism in a functional ecosystem, each is best suited to a particular condition. The program manager must match the tool to the need. A variety of equally good evaluation designs can use different tools. As a rule of thumb, choose the tool that is least expensive in time and resources. There are many ways to maximize the advantages and minimize the disadvantages of each option (see Table 9.1).

What is a Research Design?

To evaluate is to compare. Comparisons are needed to determine if an intervention had the desired impact. A research design tells the researcher how many measurements should be done to determine impact, and when those measurements should take

Table 9.1 Information Needs and Evaluation Tools	
Data Collection	records, logs, journals, clicker counts
Program Quality	expert review, observation, staff self-analysis, staff performance
Participant Reaction	drawings, photographs, journals, logs, post-it boards, suggestion boxes, comment cards, testimonials, anecdotes, observation
Participant Knowledge and Behavior	surveys, interviews, concept maps, observation, artifacts, photographs, focus groups
Action Research	journals, tape-recorded sessions, observation, etc. to support participant reflection and analysis
Media Impact	phone or mail surveys, count calls, visits
Materials Quality	readability tests, pre-tests, observation
Participant Involvement	participatory rapid appraisal techniques such as discussion groups, engineering models, mapping, sorting photographs, calendars, time lines, trend lines, ranking, pie chart, matrix

place. The various comparisons needed to determine net effects of an intervention make up a research design. Designs also dictate whether or not comparisons will be limited to study groups exposed to the intervention or if they will also include groups not exposed to it (control groups).

Three Commonly Used Research Designs

GreenCOM has used three well-known research designs (listed below) to evaluate how education and communication programs changed the audiences' knowledge, attitude, skills, or beliefs. Each one of these designs has different advantages and disadvantages regarding the sources of error. Each can be used in formative or summative evaluation.

Design 1: Pre-Test and Post-Test (Before and After) Studies

This design compares the same type of study participants at two points in time, separated by a period of participation in a program. Differences in scores between one point in time to the other are taken as an estimate of the net effects of an intervention (Rossi and Freeman, 1988).

There are two versions of this design. One version known as the "one-group pre-test post-test design," uses the same group for both measurements. The other version, known as a "separate sample pre-test post-test design," tests people from different groups at each measurement point.

The one-group version is commonly used in education and in communication. It can be used when an intervention affects a specific target group. Despite its popularity, this design embodies several confounding factors that can jeopardize the validity of its results. For example, it does not clearly establish that the intervention caused the measured change in the population. Other variables may have caused any difference detected between the two measurement points. As Rossi and Freeman (1988) have concluded, "the main deficiency of such designs is that they ordinarily do not permit disentangling the effects of extraneous factors from the net effects of the intervention." See "Cautions to the Evaluator," below.

The "separate sample design" offers some improvement over "one-group pre-test post-test designs." If study participants are randomly selected for each measurement, the effect of testing is controlled for. *Maturation issues* (see below) are controlled if the distribution of age is the same in both samples. However, in a separate group pre-test/post-test design there is still a questions as to whether external events that affected all participants might have had an influence.

Design 2: Pre/Post-Test with Experimental and Control Groups

This design is similar to the pre-test/post-test design, but a control group has been added. Thus, the experimental and control groups are both measured before and after the intervention. If an external event influences all participants, it will show up in results from the control group as well as from the experimental group. As before, this design has two forms, one where study participants have been randomly assigned to the study group (the pre-test, post-test control group design) and one where they have not, (the non-equivalent control group design.) In both of these designs it is imperative that the same study participants take the pre-test and the post-test (Fisher, Laing, Stoeckel and Townsend, 1995).

Design 3: Post-Test Only Control Group Design

Post-test only designs are appropriate when baseline data have not been collected, are lost, or are inaccurate, or when the introduction of new subject areas makes pre-testing impossible. This design requires that two study groups be researched after an intervention has ended. The experimental group is exposed to the EE&C intervention and the control group is not.

There are two types of post-test only designs that differ in how study participants are chosen. When there is no random assignment of participants to each study group, the design is called a "static-group" comparison. When participants are randomly assigned to the study group, the design is called the "post-test only control group."

Campbell and Stanley (1966) argue that under the static-group comparison there must be a method of assuring that the two groups would be equivalent had it not been for the treatment. The randomization element added to the post-test only control group design corrects that deficiency. Campbell and Stanley (1966) also argue that randomization can suffice without the pretest in the case of the post-test only control group design.

Rossi and Freeman (1988) define randomization as the chance assignment of potential targets in order to obtain equivalent treated and comparison groups. Randomization requires that every unit in a target population has the same chance to be selected for either the experimental or the control group. An important aspect of randomization is the elimination of the possibility of self-selection. Randomization is different from random sampling. Random sampling allows the selection of units in an unbiased manner to form a sample from a population. Random sampling can be used to choose individuals to participate in a study. Randomization is used to assign each member of the resulting sample to the experimental or control group.

Cautions to the Evaluator: Common Sources of Error

Research designs are chosen based on the sources of error that must be avoided. Common sources of error are listed below.

Contextual events

Contextual events are between two measurements taken to evaluate an intervention that may have influenced the knowledge, attitudes, beliefs, intentions, and behaviors targeted by the EE&C intervention. The changes that may be observed between the two measurements may be due to these events not to the intervention.

Maturation of Study Participants

Study participants may change over time and those changes may influence the results. If there is a time difference between measurements, study participants may have gotten tired or hungry, or, if there

is a long time between measurements, gotten older and more mature.

Loss of Study Participants

All participants involved in the beginning of the study may not be available at the end because of migration, loss of interest, or even death. The key question is: are the remaining subjects in subsequent measurements representing either the best, the worst, or the average study participants of the first sample? (See Box 9.2.)

Repeated Testing

The more individuals are exposed to the same questions, the better they may become at answering correctly. When an evaluation instrument is applied before and after an intervention, the first evaluation has an impact on the second one. Responses obtained during the second measurement may be better than those obtained during the first measurement, simply because of the testing effect. Repeated exposure of study participants to study instruments may invalidate research findings. Campbell and Stanley (1966) report that on achievement and intelligence tests, "students tak-

---

BOX 9.2
Evaluating over Time

A three-year study was conducted to evaluate a program promoting soil conservation practices. Measurements were done at each cropping season to see if study participants were using soil conservation practices such as minimum tillage and contour plowing. At each measurement point, 10–15 percent of the study participants were lost. It was difficult to determine if the participants that were lost were the best or the worst soil conservation farmers. Consequently, it was impossible to determine what impact their loss had on research findings and changes observed over time.

Evaluation is difficult because it involves a great deal of thinking, planning, and imagining the future.

ing the test for a second time, or taking an alternate form of the test, usually do better than those taking the test for the first time. These effects, occur without any instruction as to scores or items missed on the first test."

Modifications of Evaluation Instruments and Increased Experience of Evaluators

Evaluation instruments may be refined or modified between measurements either by accident or intention. From one measurement to the next, an original question such as "Can you mention the days when waste is collected in this neighborhood?" can be changed to "Are you aware when waste is collected in this neighborhood?" The changes observed between measurements may be due to the way in which the question was asked each time and not the result of an awareness-related intervention. The experience of evaluators, interviewers and observers can also have a great impact on results. Observers may differ in their accuracy and severity. Both factors can affect results and invalidate findings.

CONCLUSION

Evaluation is difficult because it involves a great deal of thinking, planning, and imagining the future. At the beginning stages of program design, it is often challenging to identify measures of success for each activity. Each of these measures could

become a desired result that will guide the development of the program and determine how the program is evaluated.

The broadest definition of the evaluation process begins with program planning. As needs are assessed and formative research conducted to determine initial knowledge, attitudes, and behaviors, a type of evaluation is in progress. Baseline data, collected before the intervention, will help measure changes that can be attributed to the project.

As the project evolves, pretesting is critical for keeping activities on track, by testing elements, making revisions, trying new techniques, and reorganizing activities to best meet the desired results. Observations and interviews help record information about the experiences of the participants.

At the conclusion of the project, a summative evaluation can measure its merit.

Remember, start planning by imagining the results you want.

References

Campbell and Stanley. (1966.) *Experimental and Quasi-Experimental Design for Research*. Boston: Houghton Mifflin Company.

Fisher, A.A., J.E. Laing, J.E. Stoeckel, and J.W. Townsend. (1995.) *Manual para el Diseño de Investigación Operativa en Planificación Familiar*. Segunda Edición. New York: The Population Council.

Rossi, P. And H. Freeman. (1988.) *Evaluation: A Systematic Approach*. Fourth Edition. Beverly Hills, CA: Sage Publications.