

■ Quality Assurance

The information you collect from your interviews will be useful in your evaluation if you have

- designed a good set of questions to guide the conversation;
- conducted the interviews consistently and without bias; and
- compiled and reduced the information into meaningful recommendations.

Surveys

A survey is any written or verbal set of questions that is the same for all participants and that typically uses mostly *closed questions* (for an example of a survey, see figure 3.2). Because closed questions supply the responses, they are easier to tally than open-ended questions. The great advantage of using a survey with closed questions is that you can handle huge amounts of information. This is important if you want to generalize your results to a larger population. For example, if you want to say that your program is successful because youngsters learn, teachers believe your program is helpful, or people go home and install water conservation devices, you need to collect very specific information from a large number of people. Phone calls to ten friends won't be good enough. In-depth interviews with 20 typical participants may not be sufficient either. You will have a more powerful story if you collect concrete and specific responses from 300 people who represent your participants. You can do that with a survey. The survey design guidelines offered in this section are designed to make sure that

- your respondents are answering the question you intended to ask;
- you reach the right respondents;
- you reach enough respondents;
- you interpret the responses as the respondents intended;
- you can use these respondents to suggest what a larger population would say, feel, or do; and
- you can compare groups of respondents.

Surveys can be used for front-end, formative, and summative types of evaluation. The following questions, for example, were distributed as part of a formative evaluation of the California Guide for Environmental Literacy, a document to help teachers implement environmental education in the classroom. These questions encouraged respondents to circle a number on a five-point scale and provide comments.

1. Is the document clear about what educators can do to develop integrated K-12 curriculum that will enhance the

- environmental literacy of students? (strongly disagree to strongly agree)
2. Are definitions and terms explained sufficiently to convey full meaning? (strongly disagree to strongly agree)
3. What is your impression of the document's ability to capture the interest of educators? (not interesting to electromagnetic)
4. Is the intent of the document clear? (very vague to very clear)
5. How thoroughly did you read the document? (not very to entirely)
6. If you only read some sections, which were they?
7. Do you agree with the underlying philosophical direction of this guide? (strongly disagree to strongly agree)
8. Did this document help you understand how to more effectively translate environmental education into classroom practice? (strongly disagree to strongly agree)
9. What is your overall rating of this document? (very poor to excellent)



3.5 APPLICATION EXERCISE

Looking again at your evaluation plan, which evaluation questions might be appropriate for a survey? What categories or topics should your survey cover (such as “attitudes toward insects” or “experience during visit”)? If your original plan does not lend itself to a survey, imagine developing one to find out what the community thinks about your programs, then generate some topics or constructs that survey questions could measure.

■ Types of Survey Questions

Evaluations can include a wide variety of question types. *Categorical* questions allow respondents to answer by selecting one item (usually) from a group of similar items. Asking if respondents are male or female is an example of a categorical question. So is asking respondents to select their age from within a range of different ages. Categories should not overlap but be discreet, complete, and exclusive—otherwise respondents will want to check “other,” and that won't tell you much. *Scales* invite respondents to select as their answer one point along a range, such as “never” to “often” or “very interesting” to “boring.” Scales of 1 to 5 are often used, with 1 on the end that means “not very much,” as it is close to zero. *Ranking* questions ask respondents to indicate their preferences by ordering the options, with 1 being the most preferred.

FIGURE 3.2 Lagoon Quest Chaperone Survey

Thank you for helping chaperone the Lagoon Quest Study Trip. We are working with the University of Florida and Brevard County Schools to evaluate this program and understand how it impacts residents of Brevard County. We hope you will be willing to participate in this evaluation process by completing this survey and sending it to Gainesville in the envelope provided. It is anonymous and you do not have to answer all the questions, even though we hope you will. There are no risks or benefits to you for completing this survey, other than knowing you are helping to improve the quality of education for youth in Brevard County. If you have any questions about the survey, please contact Dr. Martha Monroe at (email address) or Judith Cheng at (email address)

1. Have you taken your children to the Indian River Lagoon before this school study trip?
 No Yes If yes, about how many times in the last two years? _____

2. Have you been in the water of Indian River Lagoon before this Lagoon Quest study trip?
 No Yes If yes, about how many times in the last two years? _____

3. What do you think about the health of Indian River Lagoon?
 Very poor Poor OK Good Very good

4. How safe do you feel it is for your child to walk into the Indian River Lagoon?
 Very unsafe Unsafe OK Safe Very safe

5. How was your experience as a chaperone?
 Very stressful A little stressful Neutral Enjoyable Very enjoyable

6. Did your field trip to the lagoon change your impression of Indian River Lagoon? How?

7. How does the Lagoon Quest program benefit your children?

8. Do you have suggestions to improve the Lagoon Quest program?

Thank you very much for your participation. Please return this survey in the envelope provided to the University of Florida soon after your study trip!



3.3 CHECK FOR UNDERSTANDING

For each example, state whether the item is a categorical, scale, or ranking question.

1. Please rate the presentation on each of the following criteria:

Organization	poor	fair	good	excellent
Logical sequence	poor	fair	good	excellent
Presenter knowledge	poor	fair	good	excellent
Speaking ability	poor	fair	good	excellent
Visuals	poor	fair	good	excellent

2. Please check if you invited any of the following resource people to speak with your class as a result of this training:

- Nature center staff
- Forestry agency staff
- Water management district staff
- Forest industry staff

3. How do you integrate PLT activities into your lesson plans?

- In a unit or theme on specific plants or trees
- In a unit or theme on environment
- Throughout most science lessons
- Throughout most lessons

4. How often do you use the following strategies to incorporate PLT activities in your lessons? (Circle one number for each item, where 1 = not very often and 5 = very often.)

In a unit or theme on specific plants or trees	1	2	3	4	5
In a unit or theme on environment	1	2	3	4	5
Throughout most science lessons	1	2	3	4	5
Throughout most lessons	1	2	3	4	5

5. Please rate your level of agreement with each of the following statements:

The workshop was very enjoyable.	SD	D	Neither	A	SA*
I learned about resource management.	SD	D	Neither	A	SA
The workshop gave me confidence to use this material.	SD	D	Neither	A	SA
I know how to get assistance if I have questions.	SD	D	Neither	A	SA
I would like a refresher workshop.	SD	D	Neither	A	SA

6. Please indicate the order of importance the following barriers that might prevent you from using PLT activities, where 1 = the most important barrier and 5 = the least important barrier.

- ___ I don't have the necessary materials.
- ___ I don't have access to trees.
- ___ I don't have classroom time.
- ___ I don't have planning time.
- ___ It doesn't fit my curriculum.

* SD = Strongly Disagree
 D = Disagree
 A = Agree
 SA = Strongly Agree

Answers are found in appendix A.



3.6 APPLICATION EXERCISE

Go back to the evaluation question(s) that you plan to explore through a survey (see Application Exercise 3.5), and design several different types of closed survey questions. Don't worry if they aren't perfect; just practice getting some of your ideas on paper.

If you are having difficulty coming up with survey questions, here are four strategies to help you think about all the important angles.

1. Start off by reviewing your logic model and evaluation plan. If you haven't already articulated the questions you want your evaluation to answer, consider them now. What big questions do you have about your program? If one big question is about visitor satisfaction, for example, you could develop some specific survey questions, such as the following:

- In the last two years, how many educational programs have you participated in?
 0 1-3 4-6 7+
- How satisfied were you with the instructional staff?
 Not very Somewhat Fairly Very
- How knowledgeable do you consider yourself regarding the development of habitat for native wildlife?
 Not very Somewhat Fairly Very
- How much of that knowledge do you attribute to your participation in the center's programs?
 None A little A fair bit Nearly all

2. Sometimes it is a challenge to imagine all the survey questions you will need answers to. It may be helpful to look into the future. If your evaluation questions focus on the success of your program, imagine that your program has just received an important award. You are being interviewed by a local reporter who wants to know what's so special about your program. If you were to provide the reporter with several specific facts from your evaluation that indicate the reasons for your program's success, what would they be? And more importantly, what survey questions do you need to ask in order to collect that information?

For example, if you want to report that your program provided needed resources that were unavailable elsewhere, your evaluation should ask the following:

- How similar is this material to resources you already have?
 Not at all Slightly Fairly Very
- How important are these topics in your area of work?
 Not at all Slightly Fairly Very

Or, if you want to be able to say how many students are reached by the teachers who attend your workshop, try these questions:

- In the last school year, did you use this material with your students?
 Yes No
- If yes, how many students did you teach with this material? _____

3. As you bask in the glory of your award, the newspaper reporter asks another question: "How do you know that your program, and not something else, led to these phenomenal results?" You have the answer ready—you collected the data. What would that data be? Think about any other factors that could possibly create the outcome you are seeking, and ask the questions that will determine if those factors are, indeed, responsible.

- Were teachers introduced to this material somewhere else?
- How important is the role of chaperones on the field trip?
- How many times have children visited your center (is the first experience wildly different from the tenth)?
- How do children who have never been to your center learn about local wildlife?

4. Finally, go back to those terrific evaluation results you want to promote. Are there any other factors that would be helpful to know? For example, are teachers who have ten years of classroom experience more likely to succeed than newer teachers? Are those who teach in a school with an outdoor classroom more likely to use environmental education materials? Make sure you ask questions to provide such information.

- How many years have you taught?
- How many years have you taught this grade?
- Does your school have an outdoor classroom?
- If so, how often do you use it for teaching?

■ Question Wording

It is very easy to write a survey question that is confusing or misleading. The following guidelines will help you refine your questions and avoid common mistakes.

- Ask only one question per survey item (do not include the words “and” or “or”).
- Do not use negative questions (it is confusing to answer “none” to a negative).
- Do not use jargon or technical language that may be unfamiliar to the respondents.
- Agree/disagree items should be presented as strongly worded statements (“I am very pleased with this program”; “The presenter was very disorganized”), so that agreeing and strongly agreeing, disagreeing and strongly disagreeing, are meaningful.
- Categories should be meaningful and should not overlap. (For example, ages 1-10 and 11-16, *not* ages 1-10 and 8-16). The range of values in each category need not be identical, especially if you expect respondents to clump in one particular area and you want to know more about distinguishing differences. (For example, you could sequence age categories as 1-3, 4-6, 7-9, 10-20.)
- Questions should be complete thoughts.
- Scales should include points that are equally spaced and balanced with as many negative points as positive.
 - Rather than a scale with these points—could have been better, really good, excellent, fantastic—use a scale with these points: needs a lot of improvement, needs a little improvement, moderately good, very good.
 - Four or five points along a scale are usually sufficient.
 - Use an odd number of points on a scale if you want to provide a neutral or middle point. Use an even number if you want to force people to one side or the other.
- Use a variety of question types to make the survey interesting, but don’t mix the types too often. Avoid putting scale and ranking questions close to each other, as the opposite meanings of 1 could be confusing! (On a scale 1 signifies “least” or “lowest,” while on a ranking question 1 signifies “most” or “highest.”)
- Keep the options in a ranking question to a minimum, and use these types of questions sparingly because they are difficult to answer. They are best used when the ultimate question is really “Which one do you prefer most?”



3.4 CHECK FOR UNDERSTANDING

How can you improve the following questions or responses? For each item, identify the source of at least one problem, and write an improved version that requests similar information.

1. A private company plans to build a large gold mine less than three miles from Yellowstone National Park. There are concerns that the mine could pose risks to the park’s land, water, and wildlife. Should the federal government stop the mine in order to avoid these risks? Yes No Don't know
2. How many times have you visited this refuge? 0 1-4 5-10 More than 10
3. Have you ever shot an animal out of the hunting season? Yes No
4. How do you describe your level of environmental awareness? _____
5. What’s the most you would be willing to spend for a class session like this one?
 \$1-5 \$5-10 \$10-20 \$20-25 Nothing
6. Place of residence? _____
7. What exhibit subject matter would you like to see emphasized? Check one.
 - Cetaceans worldwide (whales, dolphins, and porpoises)
 - Cetaceans of the Northwest Pacific placed in the context of differing marine ecosystems
 - Cetaceans placed in context of the marine environment of Greater Puget Sound and Washington coastal waters
 - Local cetaceans placed in context of the marine environment of San Juan Archipelago
8. How important is the preservation of our fragile habitats to you?
 Not important Somewhat important Very important
9. Do you think we should continue to support wildlife habitat and educational programs? Yes No
10. Do you agree or disagree with the following? The Fish and Wildlife Service should not permit hunting on this refuge.
 Strongly agree Agree Disagree Strongly disagree

Answers are found in appendix A.

■ Survey Development

Plan to spend a significant amount of time coming up with survey questions, wording them appropriately, pilot testing them, and improving them. It is not uncommon to take several weeks to develop a good survey. Some of that time could be spent conducting interviews to find out how people perceive the topic. Because you only get one chance to ask the questions, you have to make sure the survey is perfect.

When you come up with some questions you like, organize them into a three-section survey where the first section gets respondents thinking about your program and recalling their experience in it; the next section asks the important, meaningful questions; and the last section asks the easily answered demographic questions. Remember to add directions for the different

types of questions (e.g., “Circle the best response”; “Check all of the applicable categories”). Make sure that the answers you have provided in the closed questions are appropriate to each question. Review the survey questions with a colleague and ask what you might have missed. Write an introduction that explains the purpose of your survey and thanks respondents for their assistance. Include another thank you at the survey’s end, reminding respondents how to return the survey and by when.

Your completed survey will probably be too long. Go back to your original evaluation plan and purpose and remember what you wanted to find out from this audience. Carefully review each item in your survey and ruthlessly eliminate all items that will not help answer your evaluation question.



3.5 CHECK FOR UNDERSTANDING

Order the following questions into a reasonable visitor survey to find out what respondents think about the Habitat Program.

- ___ Are you ___? Circle one. Male Female
- ___ In which age range do you belong? Check one. a. 13-19 b. 20s c. 30s d. 40s e. 50s f. 60+
- ___ What was most interesting to you?
- ___ What was least interesting to you?
- ___ How would you rate this program on a scale from 1 to 5, with 1 meaning boring, meaning interesting, and 5 meaning fascinating? Circle one number. 1 2 3 4 5
- ___ Where did the research take place? _____
- ___ How interesting did you find the following aspects of the program?

a. Research technology and equipment	<input type="checkbox"/> Very	<input type="checkbox"/> Somewhat	<input type="checkbox"/> Not
b. The research project	<input type="checkbox"/> Very	<input type="checkbox"/> Somewhat	<input type="checkbox"/> Not
c. The animals	<input type="checkbox"/> Very	<input type="checkbox"/> Somewhat	<input type="checkbox"/> Not
d. The presentation/presenter	<input type="checkbox"/> Very	<input type="checkbox"/> Somewhat	<input type="checkbox"/> Not
e. Watching what real scientists to	<input type="checkbox"/> Very	<input type="checkbox"/> Somewhat	<input type="checkbox"/> Not
f. The habitat	<input type="checkbox"/> Very	<input type="checkbox"/> Somewhat	<input type="checkbox"/> Not
- ___ How did you know there was a program in the auditorium? Check one.
 - I saw the sign by the door.
 - I saw or heard about it at the information desk.
 - I just wandered in.
 - I heard an announcement while I was in the center.
 - I saw it in a newsletter.
 - I saw it in the local newspaper.
 - Other _____
- ___ About how often have you visited our center in the last five years (including today)? Check one.
 - Once
 - Twice
 - Three times
 - Four times
 - Five times (about once a year)
 - More than five times
- ___ How many people are in your party today (including yourself)?
 - Adults _____
 - Teenagers (13-19 years) _____
 - Children (12 or younger) _____
- ___ What was the program about? Check all that apply.
 - Fishing
 - Scientific research
 - River habitats
 - Plants
 - Technology used in research
 - Animals
 - Other topic (please specify) _____
- ___ Are you a member? Check one. Yes No

Answers are found in appendix A.



3.7 APPLICATION EXERCISE

Go back to your evaluation question(s) that you plan to explore through a survey and to the survey questions you wrote in Application Exercise 3.6. Write additional survey questions, if needed, and check their wording and sequencing using the guidelines listed in the “Question Wording” section previous.

■ Writing Really Good Questions

Of the variety of closed question types, the most popular are scales and categories, because they tend to provide a lot of information for each question. You can also ask people to rank order a list, match items, or fill in the blanks. Please note that small differences in a question can dramatically limit the value of your data. Carefully consider these pairs of questions:

1. Are you interested in being involved in this program? (yes or no)
2. How interested are you in being involved in this program? (not at all to very interested)

The first question only has two answer options and forces people to respond in the extreme. If people are interested but unwilling to actually commit to involvement, which answer should they mark? The second question is answered with a scale of interest. You will want to contact those respondents who are very and fairly interested, which may be a much larger group than those who were interested enough to answer “yes” to the first question.

The following questions are a bit more difficult to compare.

1. I am confident I can use this material. (strongly disagree to strongly agree)
2. How confident are you in your ability to use this material? (not at all to very)

The first answer indicates only degree of agreement with a statement. The response “strongly agree” only means the respondent is very certain he or she is confident; it does not mean that he or she is very confident. The second answer distinguishes levels of confidence, which is probably what you need to know.

Now, consider this pair.

1. What is your preferred solution to the question of merging our two groups? Mark 1, 2 or 3, where 1 is your best option.
2. How supportive are you of each of the following solutions to the question of merging our two groups, where 1 = least favorite and 5 = most favorite.

These questions provide similar answer options, but in the first, respondents rank order them, while in the second they rate each one. If you really want to know their preference, it’s reasonable to use a question type that forces people to make choices and rank them. If you want to know how people feel about each choice, however, a rating scale will give you more information. You might find that respondents find two choices equally acceptable, for example, or that they regard one as far worse than the others.



3.8 APPLICATION EXERCISE

Now, revisit your survey questions. Ask a colleague if they make sense. Make sure the response choices are logical and unambiguous and that the questions are sequenced appropriately. Next, title your survey and add introductory information, including directions and a note thanking the respondent. You may find the Survey Checklist in worksheet 3.2 at the end of this chapter helpful.

■ Pilot Testing

One of the most important steps in planning a survey is pilot testing. If respondents do not understand the question, if they do not understand a key word, or if the survey is so long that no one will agree to answer it, you might as well quit before you waste everyone’s time. You will not get meaningful responses that you can use with confidence.

To pilot test your survey, identify a handful of people who are in your target audience but will not actually be completing your final version of the survey. Ask them to please complete this draft and answer some additional questions. If you plan to survey all the students in one grade, go to another school that

represents a similar student mix or pilot test in the spring and give the real survey in the next school year to a different crop of kids. Ideally, you will sit down with each person and allow them to “think out loud.” Listen for confusion and make sure you will interpret their responses as they want you to. Ask people at what point, if any, they got frustrated and wanted to stop. Ask people what they were thinking as they answered a particular question.

You don’t need to pilot test with a lot of people, but you do need to keep pilot testing your improved drafts until you are satisfied that respondents understand the questions and you understand their responses. It is also helpful to ask an evaluation expert to review your survey to indicate whether or not your survey items will answer your ultimate evaluation questions. Taking these steps will improve the validity of your survey, which means that you are more assured that the respondents are really answering the questions you ask, and the questions you ask are addressing the concepts you wish to measure.



3.9 APPLICATION EXERCISE

With whom will you pilot your survey?
How will you access this group? What will you hope to discover?

■ How Many Respondents?

Surveys are good evaluation tools when you need to contact a large number of people, but 10,000 surveys are too many to manage! Through random sampling, you are able to send the surveys to a smaller number of people and then project their responses onto a larger population. The political polls that suggest which presidential candidate is the front runner typically survey about 2,000 people, yet suggest how the entire voting public will lean. There are “sample size” tables that can tell us how many responses we need in order to generalize to a population of various sizes (see figure 2.2). If your audience is fairly small, you may want to survey everyone in it.

Bear in mind that not everyone will respond to a survey, so if you expect a 30% response rate (which is often the case in survey research) and need to receive surveys from 357 respondents, then you need to send surveys to 1,190 people. If your audience is likely to care about your program, your response rate should be higher, so your sample size may be smaller.

■ Selecting the Sample

As you may recall from chapter 2, you will need to select your sample (the people who will receive the survey) *randomly* from the population (the entire group that qualifies for participation), in order to be able to generalize or project the results back to the population. Random sampling means every person has the same chance of receiving a survey. You can do this by taking every 10th name from a list or every 3rd person who walks in the door. If an address from the list is incomplete or the person refuses to participate, take the next person and continue counting from the person you originally selected. Most important is that you consistently apply whatever rules you develop for selecting your sample. You can also pull names from a hat, for example, as long as you make sure that each individual has an equal chance of being selected. See box 3.3 for an example of random sampling.

Because you are carefully selecting the sample, you want to do everything in your power to obtain responses from all of these individuals. Increasing your response rate can involve offering an incentive, sending the survey multiple times, sending reminder postcards, and so on.

You may wish to stratify the population into meaningful subsets prior to selecting a sample and then take the same percentage from each subset. If you are concerned that you will miss hearing from first-time visitors, high school students, or African American participants, you can subdivide the population by visits, grade level, or race, and sample within each group. This insures that your sample includes small groups of participants that could be missed in a purely random sample.

Consider how you will access your population. By using only a standard telephone book, you will miss people without telephones and those with unlisted numbers or cell phones. Using the property tax rolls will give you homeowners but not renters. And remember, too, that your organization’s list of members is only as accurate as the last update.

BOX 3.3

Randomly Sampling from the Tax Rolls

To understand what the community believes about using wood to generate electricity, we drew a random sample from the property tax list that is available on the Internet from the county tax office. There were a total of 45,746 single-family home owners and 4,901 mobile home owners on the list. We hoped to get 300 returned surveys but anticipated a somewhat low response rate and, therefore, took a fairly large sample. Our sample size was 1,550, which meant taking every 33rd residence on the list. To make sure residents were included from across the county, we sorted the list by zip code and took every 33rd residence in each subgroup. If the owner's address did not match the property address (indicating a rental unit), we addressed that envelope to "Resident" and also took the next owner's address in the list. We continued counting 33 from the original point. Within two weeks of the mailing we had 218 responses. We sent a reminder postcard two weeks later and ultimately received 302 responses.

Source: McDonell (2006).

■ Implementing the Survey

Once you determine how many responses you need and how many to send, the next critical step is to entice all those folks to respond to your survey! Some people use incentives like coupons, raffle tickets, or money. Others rely on goodwill and the opportunity to improve a valued program. Explaining why the survey is important and thanking people for their participation are essential. It is typical to send a postcard three weeks after the survey is mailed out



3.10 APPLICATION EXERCISE

Return to the evaluation question(s) for which you are developing your survey and your evaluation plan. Using the information you recorded in the "Design and Sampling" column on your Evaluation Plan (worksheet 2.1 at the end of chapter 2), think through these questions: What is your population? Do you need to sample from within it? How many respondents do you need? How large should your sample be? How will you select that sample? What is the best way to assure that all relevant subgroups are represented? Make revisions to your plan as needed.



3.6 CHECK FOR UNDERSTANDING

Respond to these questions using the information in figure 2.2 in the previous chapter.

1. Your residential camp program is available to all 6th grade students in the three surrounding counties (225 classrooms), but only 60 classrooms can take advantage of your program because of space constraints. You are conducting a teacher survey to explore topics for a new program. (Assume there is one teacher per classroom.)
 - a. What is your population size? ____
 - b. How many completed surveys do you need? ____
 - c. What should your sample size be, assuming a 30% response rate? ____
2. You designed a new self-guided trail at a county park that gets an annual 10,000 visitors, who stop at the entrance gate to pay a fee. You have permission to collect their addresses and you wish to know how many visitors used the new trail and what they learned as a result.
 - a. What is your population size? ____
 - b. How many completed surveys do you need? ____
 - c. Assuming a 30% response rate, how many surveys should you send? ____
3. In the previous example, assume you end up with only 4,385 addresses.
 - a. How many completed surveys do you need? ____
 - b. Assuming a 30% response rate, how many surveys should you send? ____

Answers are found in appendix A.

to remind people to return their completed surveys and to thank those who already have. If you want respondents to return their surveys by mail, give them a self-addressed, stamped envelope or a business-reply envelope. If you are conducting the survey in person, train your surveyors to be gracious, polite, consistent, and friendly.

■ Assessing Nonrespondents

If you did not obtain a 100% response to your survey, you need to know if those who answered are different from those who didn't in any way that is important to your evaluation. If people who love your program didn't bother to respond, you certainly don't want to make huge changes based on the responses of only the complainers. Your response rate helps tell you if the responses you got can be generalized to the whole population. A response rate is calculated by dividing the number of completed surveys (including partial completions) by the number of eligible respondents. Exactly what constitutes an eligible respondent is rather fuzzy.

To be eligible, people need to match your sample parameters. If you wanted your sample to include local residents, for example, someone who recently moved out of the region would be excluded. If your survey never reached a particular person (because of a bad address, a busy signal or an unanswered phone call, a bounced e-mail, and so on) the attempt would not count, and that person would be ineligible. Similarly, Web survey companies can report the number of people who did not access an online survey. Those folks would not count in your sample and, likewise, would be considered ineligible (Couper, Traugott, and Lamais 2001).

The term “nonrespondents,” then, applies only to eligible persons who choose not to answer your questions.

You can calculate your response rate with this formula:

$$\frac{\text{\# of surveys received}}{(\text{\# of surveys sent} - \text{\# of bad addresses})} \times 100 = \% \text{ Response}$$

See box 3.4 for an example of calculating nonresponse and assessing nonrespondents.

Acceptable levels of response vary widely. If your response rate is below 75%, try to determine how different your nonrespondents are from respondents. Consider one or two critical questions from your survey, such as “Are you satisfied with the program?” or “How many times have you visited the center?” If you can contact 10% of the nonrespondents, either by postcard or phone call, you can ask just a few questions in order to determine if they are similar to your respondents (which will enable you to generalize to the whole population) or if they are different (which means you can only report results as the opinions of respondents).

If it is not possible to contact the nonrespondents, you can also compare those who responded immediately to those who responded after the reminder postcard. If late respondents are similar to early respondents, nonrespondents probably are too. If you have information about the participants from your population list (such as zip code, house value, or length of membership) you could compare respondents to nonrespondents on these demographic characteristics.

BOX 3.4 Running the Numbers

A survey of teachers who attended a Project Learning Tree workshop was designed to discover if and how they used the program materials. Of the 8,673 people who attended a workshop between 1993 and 1999, the organizers had complete addresses for only 2,931 people who were teachers at the time of attendance (a large number of workshop participants were students who did not supply permanent addresses). With 2,931 as the population, the organizers needed to hear from about 325 people. Since the list was old and very unreliable, they assumed a low response rate. At 30%, they would need to send the survey to 1,083 teachers. Again, because there was no way to know which addresses were good and which teachers still lived in the state, a survey was sent to everyone on the list. Of that group, 219 unopened envelopes were returned, signifying wrong or insufficient addresses and reducing the total accessible population to 2,712. After a reminder and second survey were sent to those who had not yet responded, a total of 874 surveys were returned, for a response rate of 32%. Thirty-nine surveys were not useable because of missing data. Telephone interviews, conducted with a random sample of 22 nonrespondents, asked several key questions from the survey. Because the responses from the 22 phone interviews were similar to those from the mailed surveys, the results of the survey can be applied to the population.

Source: Easton and Monroe (2000).

■ What Next?

When the surveys come back, you code them, enter the information in a spreadsheet, and analyze the data to understand what people told you. At the very least, you should look at frequencies (How many people said yes; how many said no?) and means (What is the average response on a scale?). You can also correlate one variable to another (As number of visits increase does appreciation for the site also increase?) and look for differences between subsets (Do 4th grade teachers have a more successful field trip experience than 2nd grade teachers?). Your analysis should strive to reduce the data to some meaningful summary statements of what you found and then relate this back to your evaluation questions. See chapter 5 for more on this process.

■ Quality Assurance

The information you collect from your survey will be useful in your evaluation if you have

- designed and pilot tested a good survey;
- achieved a high response rate from a randomly selected sample; and
- compiled and reduced the information into meaningful recommendations.

Tests of Knowledge

Many educators want to know whether or not audience members learn from their programs. Of course, you can always ask people if and what they learned, but such self-assessment is not as convincing as an objective measure of audience knowledge before and after a program. A test of knowledge measures knowledge and understanding that could be the result of participation in your program. You are more likely to use a test of knowledge in formative and summative than in front-end evaluation. Prior to development of your program, you may not know enough about what it will cover to design

a good test. In this case, it would be more helpful to learn what the audience knows about your chosen topic through interviews and surveys.

The challenge in using tests of knowledge is designing questions that are fair, reasonable, and appropriate to the program. If there is information unique to your program that participants could not have learned anywhere else, use it. For example, Monterey Bay Aquarium used these questions to assess visitors' knowledge after they watched a program in the auditorium about the aquarium's research activities:

- Who was doing the research?
- Where did the research take place?
- What was the program about?

As it is unlikely that visitors could have known the answers from any other source, these questions would help evaluators know whether people were paying attention to the program and whether they remembered its main ideas.

If your program information could be obtained from many sources—watching TV, reading the newspaper, attending school—then you need to ask learners a few key questions before and after their program participation in order to determine whether it was your program, and not something else, that increased their knowledge. In fact, many tests of knowledge are conducted using this pretest-posttest design to enable evaluators to say that the information gained is due to a particular program. The question in figure 3.3 was used in pretest-posttest fashion to reveal what respondents believe about woody biomass and fossil fuel energy sources before and after a program. A portion of a test of knowledge is provided in figure 3.4.

One challenge with using pretests and posttests to measure knowledge is that program participants will be alerted to important concepts from the pretest and will be more likely to pay attention to that information during the program. For this reason, some educators use assessment tools like this as a regular part of their programs—they help learners learn!

FIGURE 3.3 Sample Knowledge Question

Please check how burning wood to generate electricity compares to burning coal for each characteristic.

	WOOD IS BETTER	THE SAME	WOOD IS WORSE	DON'T KNOW
Air quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Global warming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local jobs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cost	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>