

5

Staying Organized

Studying and Recording What You Read



This chapter is divided into four sections. Each of the initial three sections presents an instrument that can be used to organize your reading of a particular kind of research material. The first section deals with quantitative research reports, the second with qualitative reports, and the third with research reviews. The final section of this chapter presents a series of exercises designed to accelerate and reinforce your own learning by explaining research reports to others.

❖ READING AND RECORDING FROM QUANTITATIVE RESEARCH REPORTS

We know of no magic trick or intellectual gimmick that makes reading research reports an easy task for beginners. What we can offer, however, is a means for organizing the process that will reduce the initial confusion and, particularly, the tendency to become overwhelmed by the flood of details that appears in most reports.

In the process of mastering the skills needed to read research, the act of keeping a simple record of major points, in whatever order they appear in the report, seems to provide a reassuring sense that you are following the story. When that process also demands that you reduce those points to the essentials, using the least elaborate terms possible, your record also can become the perfect note card to support later recall and use.

Refined by years of use with novices of all kinds, the record form that appears on the following pages (Form 5.1) represents a work sheet for studying research reports. Some novices use it for the first few reports and then find the 12 steps so well retained that the paper-and-pencil supplement to their reading is no longer needed. Others use the form only when they want to keep a permanent record of what they find. Still others develop a revised record that better suits their needs. Finally, some use the original form on all occasions when they want to go beyond skimming to the work of closely studying (and recording) the contents of a report.

One point in our experience with learners, however, is a constant: Virtually all novices find that filling out the form is a useful support during the period when they are gradually building confidence in their ability to extract information and good ideas. Most people are not used to reading any kind of text that is so dense with details. Sorting through the thickets of information to identify essential points in the history of a study is the very first skill to be mastered, and the 12-step form is a handy and reliable guide for that process. Put simply, we urge you to *just do it* (at least until you are confident that you no longer need to do so)!

If you have access to a copy machine with enlarging capability, simply make as many prints of the first page (six steps) as you need (reducing all margins to the smallest possible size to provide maximum space for recording). Then, print the second page (six more steps) on the reverse side. You might find that the double-sided sheets are less cumbersome to use and file, although some students prefer the single-sided format because it avoids the necessity of form-flipping while recording. In either case, the restricted space for writing is what will encourage economy of expression in your record.

Of course, typing your own master form for subsequent copying has the advantage of allowing modifications that meet your own needs. Alternatively, you might wish to transfer the 12 steps to a recording system that is more convenient (e.g., file cards or a notebook computer). For most of you, however, it will be best to delay any such modifications until you have had some experience with the original form provided here.

Form 5.1 12 Steps to Understanding a Quantitative Research Report

Directions: Record notes in only enough detail to support recall in the absence of the original document. Except for Step 1, use abbreviations, diagrams, shorthand, and a careful selection of no more than what is absolutely essential to the study. Work on this sheet alone (except for Step 6), and do not be tempted to run onto additional pages.

1. **CITATION.** What study report is this? Record a complete reference citation.

2. **PURPOSE AND GENERAL RATIONALE.** In broad terms, what was the purpose of the study, and how did the author(s) make a case for its general importance?

3. **FIT AND SPECIFIC RATIONALE.** How does the topic of the study fit into the existing research literature, and how is that provenance used to make a specific case for the investigation?

4. **PARTICIPANTS.** Describe who was studied (give number and characteristics) and how they were selected.

5. **CONTEXT.** Where did the study take place? Describe important characteristics.

6. **STEPS IN SEQUENCE.** In the order performed, what were the main procedural steps in the study? Describe or diagram in a flowchart, showing order and any important relationships among the steps.

(Continued)

Form 5.1 (Continued)

7. **DATA.** What constituted data (e.g., test scores, questionnaire responses, frequency counts), how was it collected, and what was the role of the investigator(s) in that process?

 8. **ANALYSIS.** What form of data analysis was used, and what specific questions was it designed to answer? What (if any) statistical operations and computer programs were employed?

 9. **RESULTS.** What did the author(s) identify as the primary results (products or findings produced by the analysis of data)?

 10. **CONCLUSIONS.** What did the author(s) assert about how the results in Step 9 responded to the purpose(s) established in Step 2, and how did the events and experiences of the entire study contribute to that conclusion?

 11. **CAUTIONS.** What cautions does the author(s) raise about the study itself or about interpreting the results? Add here any of your own reservations.

 12. **DISCUSSION.** What interesting facts or ideas did you learn from reading the report? Include here anything that was of value, including: results, research designs and methods, references, instruments, history, useful arguments, or personal inspiration.
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We make no claim that the 12 steps included on our form cover all of the significant points in all possible kinds of reports. Most of what we ask you to record deals with essential information that commonly gets lost or jumbled when novices first begin to work their way through research reports. Several steps, however, were included for a different reason. We have found that making you pay attention to some purely routine things is good discipline—precisely because beginners too often are not inclined to do so. Recording a full reference citation, making a flowchart, and carefully noting your own response to a study, for example, fall in the category of routine good habits that will pay off down the line.

It is not necessary to fill out the steps in sequential order as you read. In fact, you will rarely find a study for which that is possible. At the least, you will be sketching in parts of the flowchart for Step 6 from the outset, and that step might not be completed to your satisfaction until all of the rest are finished.

A final word of advice here is the most important: When deciding what to write down in those small spaces on the form, *less is more!* The form is designed with the specific intent of *not* allowing you to record everything that might be relevant to the 12 questions. From the outset, we want you to practice the skill of determining what is vital to the study's history and what is simply an accessory to the story. In this case, do not sweat the details. You always can go back and add things later. If the 12-step form is to serve you well as you gain confidence in your ability to read, please do remember this point.

Because the instructions on the form are necessarily cryptic, we will now walk you through the items with some initial words of introduction, some advice, and some cautions. These, then, are the 12 steps to understanding a quantitative research report.

Doing the 12-Step

1. **CITATION.** *What study report is this? Record a complete reference citation. "Why,"* you might ask, *"make such fuss over recording a full reference citation, in formal academic form no less, if I am just practicing with a report?"* Here, we have the advantage over you, although we will try not to be smug about it. *Everyone* (and this might be one of the few absolutes in the research business) who works with reports eventually finds that he or she needs a reference, immediately, and in

full—and that he or she failed to take the few seconds necessary to jot it down when the report was in his or her hands.

It is likely that you will be no exception to that particular version of Murphy's Law. Off you will go to the library on (invariably) a stormy night to get a page number that you could (and should) have written down. At the time, no doubt, you could not imagine why you would ever need such a trivial detail as a page number, but now you do.

Those of you who are feeling smug about all this because you have the luxury of a computer link to the library, beware of another variant on Murphy's famous dictum. "When you really need to check a citation at cyberspeed, (a) the server will be down, (b) your password mysteriously will have become invalid, or (c) your search will produce nothing that even remotely resembles what you have in your notes." Thus, filling out Step 1 is at least cheap insurance against having to hear us say, "We told you so!"

If you are a student (undergraduate or graduate), the need for full citations will be all too obvious. For beginners outside the academic world, however, it is more difficult to imagine occasions when a formal reference might be demanded. For that purpose, experience is the best teacher.

It has been our experience, for example, that after you begin accumulating research-based information, you will encounter a surprising number of situations when it will be handy (or essential) to answer the question "How do you know?" with something more satisfying than "I just do!" Among the occasions when knowing the correct reference for a report might be to your advantage are exchanges with professional colleagues, employers, reporters, unions, committees, or parent-teacher associations, or the preparation of reports, memoranda, and even letters to the editor.

You will discover quickly that it usually is more effective to say, "I found that information in xxxxx," rather than to use the more common vagaries such as, "research says . . .," or "I read somewhere that . . ." To play the showoff, or to try to overwhelm others with technical detail, is, of course, both bad form and poor social strategy. Moments come, however, when nothing serves like the facts in exact detail, and a report's full reference citation is the first fact to know if you want to make effective use of what it contains.

If you have a firm affiliation with a discipline or profession, it is well worth the time required to master at least the rudiments of the citation style used in journals serving that domain. If you do not have

a particular professional or disciplinary commitment, the citation system developed by the American Psychological Association (APA) (2001) provides a reasonably clear and convenient format for recording references. Alternatively, you can fill in Step 1 by using the style employed in the report's reference list.

Whatever format you elect to use, be sure to take the time required to make a complete and accurate record. Doing so will allow you to avoid a long, damp trip to the library on that stormy night or yet another hour given to uttering maledictions at your computer and all forms of electronic retrieval.

2. PURPOSE AND GENERAL RATIONALE. *In broad terms, what was the purpose of the study, and how did the author(s) make a case for its general importance?* This item occupies more space on the 12-step form not only because studies sometimes have multiple purposes, but because precisely how the purpose of a study is framed, and exactly how the component question(s) is posed, provide the motive force that drives all else. In the end, the most sophisticated methods in the world cannot make a study any better than the quality of the question that is asked. It follows, then, that if you can understand the investigator's purpose, you have a good basis for understanding subsequent decisions about study design, as well as methods of data collection and analysis.

When there are multiple purposes, nested experiments, or long lists of questions based on multiple comparisons within a large body of data, you might have to reduce what is recorded to an exemplar that captures both form (how purposes or questions are posed) and typical content. Please do not be compulsive and attempt to squeeze everything into the small space on the record form. That is pointless and a waste of your time. You already have a comprehensive account in the text of the report. What the form requires is that you understand the purpose of the study well enough to write a brief and accurate extract in the space for Step 2. To do so, you need to read with care and attend to small details—not write the Declaration of Independence on the head of a pin.

You might encounter a report in which the author(s) did not specify one or several questions as part of their preplanned design (a research plan often takes the form of what is called a *proposal*). In such cases, there should be at least a general statement of what the study is about that you can record. The author(s) will have formulated more explicit questions as data were accumulated, which means that

you will have to return and complete Step 2 after reading the entire report.

3. FIT AND SPECIFIC RATIONALE. *How does the topic of the study fit into the existing research literature, and how is that provenance used to make a specific case for the investigation?* Here, the first place to look is the introductory discussion and, particularly, the section that rationalizes the research question(s) and study design in terms of existing literature. Unhappily (we think), not all investigators write reports in a completely linear way, and you might find that the initial explanation of how the present work fits into what we already know is left incomplete. Almost invariably, this means that the topic will be addressed again in the “Discussion” section that closes the report. Because it might be difficult to follow such divided explanations of how a particular question is situated in a body of knowledge, you might have to delay completion of Step 3 until after reading the entire report.

Among the things to look for in the report are references to previous studies that called for *replication* (as mentioned in Chapter 3, this term means repeating studies with new populations or with deliberate variations in methodology). The study at hand might have as its purpose the confirmation of an earlier finding through replication. Look also for an indication that some item of research-based knowledge remains incomplete, that a theory is in need of empirical testing, or for the assertion that there is a need in some area of professional application. Any (or several) of these might provide clues about the provenance of the research question within the existing literature.

The researcher believed that doing a study would produce something new, something that advanced knowledge or improved our world (or, quite frequently, both), or that would serve simply to scratch a personal itch. That reason lies in the relationship between what we already know, or can do, and what he or she proposed to discover. Your job here is to find that link and to describe it in a brief paraphrase. Do not attempt a miniature review of the literature here—just focus on what the study will add.

4. PARTICIPANTS. *Describe who was studied (give number and characteristics) and how they were selected.* When research is directed at objects or environments, descriptions of the relevant characteristics usually are straightforward (and easy to find in the report). When people are the target, however, what is relevant among their many characteristics may

be less obvious at the outset. Among the factors that commonly do matter in designing a study are number, age, gender, training or experience, intelligence or special abilities, social status, health, physical characteristics, family background, or affiliation with membership groups.

Here, you can record simply what the author(s) treats as important in selecting who or what to study. You can add detail as the study unfolds and your understanding improves concerning which characteristics truly matter.

5. CONTEXT. *Where did the study take place? Describe important characteristics.* The importance of the study context varies substantially, ranging from relatively inconsequential to critical. For the most part, the nature of the environment (physical or social) exerts its influence through conditions that exist where data are collected. A pleasant, air-conditioned, soundproofed testing room or laboratory space is a far different environment than a third-grade classroom three minutes before the bell rings for the end of the day on Halloween.

All sorts of contextual factors can influence the quality of data collected. For example, performing any physical task in the presence of peer observers takes on an entirely different meaning than when executed in solitude. The potential for environmental contamination of data extends to the entire data record, not just to test results or other empirical measures. Participants might not even provide the same basic demographic information ("What is your age?") or facts of personal history ("How often do you eat candy?") when answering the investigator's preliminary questions in their own home, in a university laboratory, at a community recreation center, or on a park bench.

In most reports, it is unlikely that the author(s) will offer a complete description of all potentially relevant aspects of the study context (restricted journal space demands such economy), but you can at least look for clues indicating that context was a matter of thoughtful concern—and perhaps the target of some efforts at control.

6. STEPS IN SEQUENCE. *In the order performed, what were the main procedural steps in the study? Describe or diagram in a flowchart, showing order and any important relationships among the steps.* Although we always urge our own students to limit their first efforts to the small space provided on the form, this is the one item for which a separate sheet might be required. If your 12-step form is printed on two sheets, it might be convenient to use a reverse side. Not only is more space sometimes

required to maintain legibility, but false starts and experiments with alternative ways of laying out the diagram might consume space before you are satisfied with how you have mapped the history given in the report. We have already provided some rationale for using this step as part of the report-reading process, as well as some explanation of the mechanics involved in making a flowchart (see Chapter 4). Further examples can be found in Appendix B.

Describe what seem to be the most important things the investigator did in design, method, and analysis. To just list the headings from a report (Purpose, Research Question, Method, Data, Analysis, Results, Conclusions) is too general to be useful, but to duplicate all the specifics contained in Steps 1 through 5 and 7 through 10 is simply wasteful repetition. A flowchart is intended to deal with only the sequence of major methodological and analytical operations, not with the substance of questions, data, or discussion.

Imagine that, a year from now, you want to be able to glance at Step 6 and have it guide an accurate recall of the general nature of the study. Such a guide should function like a good road map, laying out a clear route from start to finish. A map that is cluttered with too many details often serves to hide the very thing it is designed to capture—how to get somewhere (or, in this case, how the researcher got somewhere). Start simple, adding information only as your comprehension allows you to identify truly important landmarks.

7. DATA. *What constituted data (e.g., test scores, questionnaire responses, frequency counts), how was it collected, and what was the role of the investigator(s) in that process?* For beginners, this is the most deceptive step. It appears simple but requires that you make some often subtle distinctions among all the details in a report.

Whatever operations were performed for the purpose of gathering information about people or objects of interest in the study, some trace of what was detected must have been captured and recorded. A single unit of that trace is called a datum, and all of the traces together constitute the study's data. Please note, the word *data* is the plural form, as in "All of the data are . . ." This usage is not consistently observed by all authors, but it does remain technically correct.

To illustrate, a standardized mathematics achievement test allows us to observe how a student responds to the question " $12 \times 12 = ?$ " The answer will be scored as right or wrong, and that indicator will influence the overall score, which sums up performance over a set of

such questions. That summed test score, in turn, will be one bit of datum in a study, and the test scores of all students who participated will then be the data (sometimes referred to as the *data set* or *database*) for the study.

The same logic applies to responses on a questionnaire, the transcript of an interview, the count of foul shots made by a basketball team during the season, the amount of cholesterol in a sample of blood, the time taken by a 60-year-old female to respond to a buzzer, or the salaries of social workers in cities with populations of more than 100,000. All are data, the recorded traces of what the investigator could see, hear, taste, touch, or smell—the processes of empirical observation (scientists generally do not restrict the meaning of the word *observation* simply to seeing, as is the case in ordinary usage).

As recorded, these traces would be called *raw data*, meaning words, numbers, or graphics that have not yet been transformed by any subsequent process (for convenient storage or as a step in analysis). Raw data must often be grouped, summed, refined, and sometimes translated in form (as in typing a transcript from a tape-recorded interview) before they can be inspected for how they reflect on a research question.

To fill in this step, you need to puzzle out what constituted data for the study. That requires you to distinguish the nature of the data from the means of observation, recording, and analysis. Do not attempt to record actual data, just describe what form (or forms) it took. After a bit of practice, this will become a simple task.

Finally, make it a practice to notice the part played by the researcher(s) in the process of collecting data. Sometimes they are merely managers of the process, maintaining a distance from their data sources and allowing intermediaries to perform the actual collection tasks. In other instances, they have a far more intimate relationship with both the participants and the collection process—even to the extent of actually being the instrument by which data are recorded, as in the case of taking notes when interviewing a subject. Keep in mind that the position of the researcher might matter. For example, when the investigator is removed from data collection, you must always ask, “How thoroughly can he or she monitor the degree to which the intermediary (a research assistant, for example) observes the protocol for acquiring data?” In the other direction, when researchers record their own data, you should always ask, “How confident am I that in the recording process the researcher did not (or could not) allow personal expectations to influence what he or she saw—or wrote down?”

8. **ANALYSIS.** *What form of data analysis was used, and what specific questions was it designed to answer? What (if any) statistical operations and computer programs were employed?* Some data speak for themselves and require little processing to provide an answer to the research question. For example, consider an experimental study of two methods used to maintain patients' compliance with a regimen of prescribed medication. If all 30 patients in Group A have the desired level of medication in blood drawn during the study, and all 30 patients in Group B have circulating levels below the criterion, it is unlikely that any further processing of the data is required to demonstrate that A works (very well) and B does not. (Of course, questions having to do with why this is the case would require analysis of other data, such as self-medication records or interview transcripts.)

Most data, however, must undergo some kind of manipulation to clarify what they might mean. The process of manipulating and inspecting data is called *analysis*. For example, one tool for the analysis of data, *descriptive statistics*, allows us to determine what is typical for a group of scores, and another analytic tool, *mean difference statistics*, permits us to determine (given certain assumptions) how likely it is that what is typical performance for one group truly is different from what is typical for another group.

To illustrate, in a study that employed both methods of analysis, we might take the raw scores of individuals, sum them, and then divide by the number of cases. That, as you probably know, would produce a single number called the average (in technical language, the *mean* of scores in the data set), a descriptive statistic.

In turn, a further analysis using a mean difference statistic could process the data by using the means (and other products of descriptive analysis) to examine the difference between the scores of the two groups. That examination would answer the question, "How probable is it that a difference of that size, between groups like those, could happen just by accident?" If such a chance event was very unlikely, we might be willing to assume that the difference truly was caused by whatever factor we were studying.

As you can see from that illustration, statistical analysis is a handy tool for helping the researcher understand what raw numerical data mean. Some kinds of statistics do involve higher mathematics and use of probability theory. In the end, however, if you understand the general purpose of a statistic, no matter how complex its operation, you know enough to comprehend the story laid out in the report.

The statistical manipulations of the data constitute the analysis, whereas the outcomes of the manipulations are the findings of a study. When the findings are used to respond to research questions, the author(s) formulates answers to the original inquiry—the purpose of the study. Those answers are often set forth as *conclusions* in the report (see Step 10 of this 12-step process).

Not all data are numerical, of course, and that point is addressed in Chapters 6 and 8 (in which attention is given to qualitative research). Whatever form they take, however, data must confront the same demands: they must be recorded accurately, organized efficiently, and analyzed carefully.

To illustrate that commonality, let us leave quantitative research for a moment and look at an example that deals with qualitative research. Consider a study in which 100 pages of type transcribed from audiotapes of 10 focus group meetings are the raw data. How do you find out what those data mean if the original research question was “Why do working women plan to vote for our candidate in the coming election?” If you want to obtain an answer that reliably reflects the opinions of the people interviewed, the 100 pages of raw data have to be reduced for efficient handling and then analyzed.

The first step might be to identify all instances of expression of beliefs relevant to the question. A second step would then be to develop some form of category system to sort those expressions into clusters of similar belief. The third step would be to inspect the content of all the categories very closely to determine exactly what rule is operating to include or exclude beliefs from each. With that clarification, categories could then be refined by merging some and dividing others. Finally, if some of the categories contain contributions from most or all of the participants, the words from several quotations within each might be woven together to create descriptions of “typical reasons given by employed women who plan to vote for the candidate.”

That is just one of the many kinds of analysis that might be used to process qualitative data in the form of text. Likewise, there are literally hundreds of formats for statistical analysis of numerical data in quantitative studies. For Step 8 on this form, the task is to identify what the report says the author(s) did to process and analyze the data (a single operation or a series of steps).

At first, you might be recording names for operations that you do not fully understand. Do not let that bother you. With practice, you will begin to recognize what different kinds of analysis are intended to

accomplish, even if the details of their calculation remain beyond your comprehension. As a beginning step, try to identify what the analysis is called (as a procedure) and, in broad terms, what purpose it appears to serve.

9. RESULTS. *What did the author(s) identify as the primary results (products or findings produced by the analysis of data)?* The results are the findings from the analysis of data. If you asked the question "Do people who drink coffee run faster than those who do not?", and a study of imbibers and abstainers shows that the former run the 100-meter dash an average of 2 seconds faster than the latter, you have a result from your analysis and, within the limits of your study design, an answer to your question. There might be (and probably are) many reasons why it could be an incorrect answer, but that is another story for another book. Results are what you get when the observations have been made and the data analyzed.

As you will see in the next step, for the purpose of the 12-step form, you should not regard results and conclusions as the same thing (even though they are inseparably related). The results are findings bare of any comment, elaboration, caution, or tie to the structure of existing knowledge. They are, quite simply, what the data say about the question. Nothing more, and nothing less. If the result is a simple one, a yes or no, or a few numbers, search it out and write it down in the space provided. If there are results from several different analyses, or if the findings require long description, write down a summary generalization and go on to the next step. The idea here is to confirm that you know what the results look like and where they can be found in the report.

10. CONCLUSIONS. *What did the author(s) assert about how the results in Step 9 responded to the purpose(s) established in Step 2, and how did the events and experiences of the entire study contribute to that conclusion?* A conclusion is a distinctly human product. It is not the output of some mechanical operation, such as data analysis. A computer can generate a result, but only a researcher can reach a conclusion. As an investigator, the researcher considers all that has happened, forms conclusions about what he or she believes has been learned, and attempts to communicate them to readers.

At the point of writing about conclusions, the results from data analysis (the findings) are the central source of testimony, but they are not the only resource at the disposal of the author(s). The entire process

of inquiry, from formulating the question through the last steps of data analysis, is part of the total experience from which the researcher can learn.

In that sense, the scholarship of discovery is best understood as a process rather than an outcome. Results are the necessary foundation for what is concluded, but, taken alone and without the context of the whole journey of discovery, they frequently are insufficient as a source of new knowledge.

Research-based knowledge, whether in the form of laws, theories, facts, information, or informed speculation, is always situated in a context. The products of research are human understandings that are specific to a particular time, place, set of operations, display of results, and, ultimately, view of the world. *Knowledge does not exist in a vacuum.*

In articulating conclusions—the act of asserting what has been learned—the author(s) steps back from the immediate detail of data and the analysis to reflect on what they mean within the larger context. This need have nothing to do with grand and sweeping generalizations. Most often, it involves returning to the author's (or authors') sense of what is already known to ask: "How does this fit in? What small change might it make in how we understand ourselves or the world?"

Also, in forging conclusions, the author(s) is obliged to consider what has been learned by the *entire* experience of doing the study, not just the results that came out of the data analysis. In so doing, the researcher situates the results in the full historical context of the study.

As a consequence of thinking about results in those wider contexts, if there is a section in the report identified as "Conclusions" or "Discussion," the author(s) might do more than simply assert that the finding answers the research question. If conclusions involve what the author(s) now thinks about the original question, the methods selected for doing the study, and everything the data have to teach, there often is a great deal more to discuss.

Some authors, for example, begin their final appraisal of what was learned by reminding the reader of the limitations imposed by the nature of the study. In some cases, their first conclusion is that the study should be replicated (i.e., be repeated by another investigator using the same methods to produce a new data set). Accordingly, when conclusions are stated, they will be posed in tentative phrasing and made contingent on confirmation through further evidence. In reports, it is also not uncommon to find experienced researchers describing rival hypotheses that might account for what was

observed, in ways that are different from the accounting they have offered in the report.

What all of this elaboration indicates is that researchers normally are very cautious about drawing conclusions, and with good reason. Conducting a study is likely to teach any investigator just how complicated the world really is and why data rarely tell a simple, univocal story.

With that in mind, your task here is to search the final sections of the report for the author's (or authors') most general statement of what was learned. On occasion, it takes the form of a personal statement revealing how the investigator now situates the findings in the context of existing knowledge. If the study puts knowledge even a small and uncertain step ahead of where it was at the outset, that assessment should be there, whether formally labeled as a conclusion or not.

Lest you be frustrated by the absence of a clearly stated conclusion about how the findings respond to the research question, we remind you, again, that there might be other important things that can be concluded at the end of a study. Among the most common of these are reappraisal of how the research question was asked, discovery that the machinery of the study did not work as predicted, or the realization that the data simply did not yield results that were sufficiently decisive to allow any reliable conclusion about what they mean. Offered as well-supported, thoughtful observations, those too are conclusions and should not be ignored in your brief summary for Step 10.

11. CAUTIONS. *What cautions does the author(s) raise about the study itself or about interpreting the results? Add here any of our own reservations.* The cautions of the author(s) are usually easy to find. If the work has been well executed, and if the conclusions are supported by the data in unambiguous ways, researchers feel no obligation for excessive modesty; they say what they think has been achieved. A conservative view about what constitutes reliable knowledge, however, is the hallmark of an experienced scholar. By sharing their reservations in the report, researchers honor the long tradition of careful science.

Even in the reports of novice investigators, it is not uncommon to find explanations of why the conclusions should be held as tentative or contingent on further study. In many cases, the reason for such reservations lies not in the discovery of some technical flaw in methodology but in concern about how well the results might *generalize* (be applicable) to members of a wider population. If, for example, the targets of observation

in the study were different in important ways from those with whom many of the readers will be concerned, that is a serious limitation.

What reservations do you have about the design and execution of the study and the assertions made by the author(s)? To think about such problems does not constitute an attack on the study (or the author[s]); it is a way of joining in the conversation about scholarship. That long and lively dialogue is always critical, cautious, and even skeptical. Active researchers know the rules of that conversation, and, by publishing accounts of their studies, they are explicitly inviting you to join in the thoughtful assessment of what can and cannot be learned from their efforts. It is your responsibility as the reader to be respectfully skeptical—and Step 11 is the place to exercise that duty.

12. DISCUSSION. *What interesting facts or ideas did you learn from reading the report? Include here anything that was of value, including: results, research designs and methods, references, instruments, history, useful arguments, or personal inspiration.* This is personal space in which there are no right or wrong responses. Anything goes here, and we can attest that people learn (and value) the most amazing things from reading research reports. Step 12 provides constant testimony to the diversity of what people bring to the role of research consumer. Your own experience, values, concerns, and personal history determine what is written in this space.

Over the years, our students have used this last step to confirm that research yields much more than dry facts. New names for familiar things, useful constructs, unexpected connections between ideas, good references for other purposes, artful ways to draw graphs, confirmation of long-held hunches, elegant exercises in logic, and entertaining discourse about how things work are among the discoveries. Sometimes the treasures located are more distinctly personal, as in finding weapons for arguing with significant others, encouragement to try a new course of action in professional practice, and, of course (always popular among students), evidence that smart people like researchers can do really dumb things and not appear to realize it! All of these valuables and more are among the gems that people retrieve from reading research reports. We hope that in Step 12 you further add to the zesty disarray of this collection by discovering interesting information and good ideas. More particularly, we hope you find valuable things that never could have been anticipated by the authors of your studies—or by us.

❖ READING AND RECORDING FROM QUALITATIVE RESEARCH REPORTS

It would have been possible to prepare study and reading guides for different kinds of research. For example, we could have designed forms that specifically reflected the characteristics of an experiment, a mail survey, or even a research review employing meta-analysis. We have not done so for two simple reasons. First, such proliferation of forms (and the needed guidance for their use) would unreasonably lengthen this text. Second, such close attention to the technical differences among forms of inquiry would have undercut one of our most important messages for novice readers of research—*mastering what is common among different research strategies is more fundamental (and vastly more empowering for the novice) than learning what is unique.*

Despite these concerns, we have made one exception to our decision to limit attention to what is generic in research. We think that qualitative research reports demand special attention in this guide for four simple and, to us, persuasive reasons. First, although there are many kinds of quantitative research (in this context, they are often collectively called *positivist* research to reflect their common philosophic roots), they do indeed share important elements—the ones used to construct the 12-step form presented in the previous section. Qualitative research, however, starts with different philosophic assumptions. Although some of the items in our quantitative guide would work perfectly well despite those differences, others would not. More important, we think that the use of a generic 12-step form might mislead you, making it more difficult to understand the important distinctions between the two research traditions.

Second, because qualitative research is relatively new as a way of thinking about inquiry, the tasks of reading and understanding qualitative research reports are often as unfamiliar to research teachers, advisors, textbook authors, and scholars as they are to the beginning readers who constitute the primary audience for this book. To the extent that teachers and advisors might wish to adopt this text for use, it makes good sense for us to share material that has helped students in our own classes venture into this vast and sometimes puzzling research domain.

Third, we expect that some of you are using this text to engage in do-it-yourself education about research. Within some obvious limits, we think that is both a reasonable undertaking and a laudable

ambition, and we want to support your efforts. What follows, then, is also intended to be a supplement to a good introductory textbook on qualitative research (see Appendix A for suggested titles) when it is used outside the supportive environment of a formal research class.

Fourth, and finally, unlike most of the reports and reviews that recount studies based on the assumptions of quantitative science, the text of reports based on a qualitative view of the world tend (at first encounter) to seem remarkably accessible—more like good storytelling or journalism. Such relatively easy reading, being more the rule than the exception in qualitative reports, makes it difficult to remember that, as the reader, you must bring clear expectations about what should be in the report. Put another way, it is difficult to know how to exercise the “respectful skepticism” we have recommended in the face of what often seems comfortably familiar or even self-evident.

For that reason, in Chapter 8 we give close attention to the problem of how to read qualitative research reports with a critical eye. Here, however, we can begin that process by helping you understand some basic distinctions between quantitative and qualitative approaches to inquiry and by identifying the elements most commonly encountered in a qualitative report.

Identifying Qualitative Research Reports

Qualitative research includes a large family of loosely related inquiry traditions rooted in both the social sciences (anthropology, sociology, psychology) and the liberal arts (philosophy, history, literature). Each approach differs from the others in terms of such factors as the role of the investigator, the phenomenon studied, and the means of analysis employed. The members of the qualitative family are united at a deeper level, however, by a shared view of the nature of the social world that distinguishes them from conceptions of social research that have been shaped by conventional forms of natural science.

The unique qualitative vantage point on the nature of social reality is described in Chapter 6 as part of the discussion of different types of research. At this point, however, you need a simple, quick, and reasonably reliable way to distinguish between reports of quantitative research and reports of studies that fall within the qualitative rubric. Here are some rules of thumb that help in making that identification. Because of the complexity (and general untidiness) that characterizes social research, as well as the considerable overlap between the two

paradigms for inquiry, the rules come with no guarantee for unerring accuracy. A rule of thumb allows you to be right—most of the time.

Rule 1. If the author(s) says the study is qualitative, it probably is. Such a characterization should appear in the title, the abstract, or somewhere in the introductory section of the report. If the study or the methodology is called qualitative, you can be fairly certain that it is. Quantitative researchers, of course, rarely identify their work as quantitative in nature; because that is the dominant paradigm for reports in most journals, the study simply is assumed to be quantitative unless otherwise specified.

The problem with the simplicity of Rule 1 is that the specific label for a particular subspecies of qualitative research might be employed in the report—with the more inclusive term, *qualitative*, being omitted entirely. When you encounter that circumstance, it is handy to have some familiarity with the names assigned to (or commonly associated with) alternative research traditions in the qualitative domain. A list of such labels is found in Exhibit 5.1. Although the listing is far from exhaustive (and new types of qualitative research continue to appear), if the author(s) of a report uses any of these terms to characterize the study, their own perspective as the investigator, the methodology used, or the form of analysis employed, you can be reasonably confident that you should use 12 Steps to Understanding a Qualitative Research Report (see page 100).

Please do not be distressed by the fact that you might have no idea what the words in Exhibit 5.1 mean or what sort of research each label denotes. In Chapter 6, we describe and illustrate several of the qualitative research traditions and indicate where you can find concise definitions of the remainder. You can be assured that all of the terms in Exhibit 5.1 indicate studies or study components that belong under the qualitative umbrella. For the moment, all we want to accomplish is for you to make that simple dichotomous identification—determining that a report is either quantitative or qualitative.

Rule 2. If the results are reported primarily or exclusively in terms of statistical analyses of numerical data, the study probably is quantitative; if the results are reported primarily or exclusively in terms of words, it is a safe bet that the report is of qualitative research. Of course, numbers are sometimes cited in reports of qualitative research, and investigators sometimes use interviews and record the words of their participants when engaged in

Exhibit 5.1 Labels and Descriptors for Identifying Qualitative Research Reports*

-
- Interpretive
 - Critical
 - Phenomenological
 - Ethnographic
 - Participant observation
 - Unobtrusive observation
 - Fieldwork
 - Naturalistic
 - Cultural study
 - Ecological analysis
 - Feminist
 - Marxist
 - Hermeneutic
 - Narrative analysis
 - Life history
 - Symbolic interactionist
 - Foucauldian
 - Emancipatory
 - Postpositivist
 - Postmodern
 - Constructivist
 - Deconstructivist
 - Constant comparative
 - Grounded theory
-

*Note: Some of the terms represent major research traditions, others indicate philosophic perspectives, and yet others are terms associated with particular forms of data collection or analysis.

quantitative research. The operative distinction here is “primarily or exclusively.” Rule 2 really deals with alternative ways of thinking about the world, not with whether some numbers or words appear as data in the report.

Rule 3. If the author(s) reports drawing a random (or otherwise “representative”) sample of participants for the study, and then writes conclusions as though what is true of the participants probably is true of the population from which they were drawn, you almost certainly have a quantitative study. For

the most part, researchers in the qualitative tradition focus on the participants in the study and leave inferences about other people to the reader. Accordingly, it is unusual for any form of random sampling to be used in a qualitative study. A related characteristic is that studies with very large numbers of participants (more than 50) are likely to be quantitative. Smaller sample sizes can be employed in either type of study.

Rule 4. If the investigator shows much concern about being aware of and carefully managing his or her own subjectivity (e.g., beliefs, values, perspectives, biases, past experiences), the study is probably qualitative. If the investigator reports procedures that are designed to ensure his or her objectivity (complete separation from participants or, at the least, tight control over opportunities to influence data or the results of analyses), the study probably is quantitative. In qualitative research, the investigator is often the actual instrument for data collection and analysis (and in doing so might be required to have prolonged, intimate, and sometimes serendipitous association with participants); therefore, awareness of what she or he brings to the study is a matter of central importance. For quantitative researchers, the control exerted by both adherence to tight and prescriptive protocols (scripted routines and procedures) and the use of unambiguous numeric data (the product of precise measurement) make it highly unlikely that the author(s) will feel any need to deal with details of personal subjectivity as part of the study report.

Rule 5. If the report uses data primarily or exclusively to describe how the participants understand what is happening in a social setting, it is probably a qualitative study. If data are used primarily or exclusively to construct an external understanding (usually the investigator's) of what is happening in a social setting, it is probably a quantitative study. The origins of this distinction are complex, but, put in simple terms: Qualitative researchers think of reality as a subjective entity that exists only in people's minds. For the quantitative investigator, reality exists as a phenomenon "out there," something quite distinct from the subjective states (beliefs or understandings) of participants. The quantitative view holds that with proper scientific methods, reality can be directly observed or experienced as a value-free fact. Thus, invisible entities such as minds, meanings, and understandings are not a common focus for quantitative social science.

You might encounter reports of studies that purport to combine qualitative and quantitative research traditions. In some instances, these studies employ a method of data collection that is commonly associated with qualitative research (e.g., interviewing or field observations) *without* also adopting the fundamental assumptions of qualitative inquiry. The qualitative data so produced are then used as adjuncts or supplements to a primarily quantitative data set. Such studies should be regarded as quantitative in nature and read as such.

In other instances of mixed research traditions, the investigator genuinely has tried to incorporate both qualitative and quantitative vantage points for framing the study—either simultaneously or in alternation. Such complex research designs remain the subject of considerable debate among scholars and might better be put aside until you have become familiar with the two traditions, taken one at a time. If, however, you really are anxious to know more about what are commonly called *mixed methodologies*, look ahead to Chapter 6 and Appendix A, where we have described some useful references that focus on those designs for inquiry.

What follows here is a guide designed to focus the beginner's attention on the elements that make qualitative research, research! It might begin with assumptions that are different from those accepted in conventional quantitative research, but it has the hallmarks of system, rigor, and integrity.

If you are not already taking a research course, we hope that you will seek the opportunity to learn more about qualitative research, either by taking an introductory course or by reading any of the basic texts recommended in Appendix A. (Our textbook, *Proposals That Work*, 2000, contains several sections that you might find helpful as starting places.) Until you take one or both of these courses of action, however, the following reading guide and brief instructions should suffice to open the door to this fascinating and potentially useful kind of research.

A 12-Step Guide for Understanding Qualitative Research Reports

As with the other guides for reading, it is vital that you stay flexible about the use of this tool (Form 5.2), both as a map for navigating through the report and as a recording form. Elements presumed by some of the questions simply might not be present in a particular report, or what we have suggested as a secondary concern might be foregrounded as a major aspect of the study. Again, the advice is, "Do

Form 5.2 12 Steps to Understanding a Qualitative Research Report

Directions: Record notes in only enough detail to support recall in the absence of the original document. Except for Step 1, use abbreviations, diagrams, shorthand, and a careful selection of no more than what is absolutely essential to the study. Work on this sheet alone (except for Step 6), and do not be tempted to run onto additional pages.

1. **CITATION.** What study report is this? Record a complete reference citation.

 2. **PURPOSE AND GENERAL RATIONALE.** In broad terms, what was the purpose of the study, and how did the author(s) make a case for its general importance?

 3. **FIT AND SPECIFIC RATIONALE.** How does the topic of the study fit into the existing research literature, and how is that provenance used to make a specific case for doing the investigation?

 4. **PARTICIPANTS.** Who was the author(s) (important characteristics only), and how was he or she related to the purpose, participants, and study site? Describe who was studied (give number and characteristics) and how they were selected.

 5. **CONTEXT.** Where did the study take place? Describe important characteristics.
-

-
6. **STEPS IN SEQUENCE.** In the order performed, what were the main procedural steps in the study? Describe or diagram in a flowchart, showing order, time required, and any important relationships among the steps.
7. **DATA.** What constituted data (e.g., field notes, interview transcripts, photographs, diaries), how was it collected, and what was the role of the investigator(s) in that process?
8. **ANALYSIS.** What form of data analysis was used, and what was it designed to reveal? What computer program was used (if any)?
9. **RESULTS.** What did the author(s) identify as the primary results (products or findings produced by the analysis of data)? In general, "What was going on there?"
-

(Continued)

Form 5.2 (Continued)

10. **CONCLUSIONS.** What did the author(s) assert about how the results in Step 9 responded to the purpose(s) established in Step 2, and how did the events and experiences of the entire study contribute to that conclusion?

11. **CAUTIONS.** What cautions does the author(s) raise about the study itself or about interpreting the results? Add here any of your own reservations, particularly those related to methods used to enhance credibility (trustworthiness and believability).

12. **DISCUSSION.** What interesting facts or ideas did you learn from reading the report? Include here anything that was of value, including: results, research designs and methods, references, instruments, history, useful arguments, or personal inspiration.

not panic!" Use the steps that work, flag those that do not seem to apply, and seek out explanations at a later time.

Finally, please remember that this form was designed for the beginning reader. The purpose is to provide structure while studying the report. The form requires attention to what could (and should) be noticed by any intelligent layperson and is not intended as a list of all of the key elements in a qualitative study. Such a comprehensive document can be imagined, but it would not serve the present purpose of giving guidance (and a convenient recording device) for entry-level reading.

1. **CITATION.** *What study report is this? Record a complete reference citation.* Our argument for the necessity of this first step was already made in the section dealing with the quantitative 12-step form. Just do it!

2. **PURPOSE AND GENERAL RATIONALE.** *In broad terms, what was the purpose of the study, and how did the author(s) make a case for its general importance? When reading qualitative research reports, this question is more likely to be answered in a manner that is discursive and informal than is the case with the terse and explicit announcements of purpose found in reports of quantitative studies. In addition, the range of explanations will be wider, sometimes including highly personal motivations that might be discussed quite frankly. In some cases, the study's purpose is defined in one or several explicit research questions. More often, however, the researcher identifies only the context within which interactions are of interest, and particular questions are defined subsequently through ongoing collection and analysis of the data.*

Although the deductive purpose of theory testing certainly can be pursued with qualitative means, it is the exception rather than the rule. Typically, in qualitative studies, hypotheses or theoretical explanations are inductively developed from examination of the data. Arguments for the importance of a study often flow from this latter point. If you can discern how participants understand what is going on, you have leverage for developing some sense of the regularities that are involved in a social setting. That might lead to useful explanations for why things happen as they do.

3. **FIT AND SPECIFIC RATIONALE.** *How does the topic of the study fit into the existing research literature, and how is that provenance used to make a specific case for doing the investigation? Aside from the fact that the*

absolute size of the literature base of qualitative studies is likely to be relatively small for any research topic, most of our suggestions for what to consider here were already made in the previous discussion of Step 3 on the 12-step quantitative form.

4. **PARTICIPANTS.** *Who was the author(s) (important characteristics only), and how was he or she related to the purpose, participants, and study site? Describe who was studied (give number and characteristics) and how they were selected.* Given our previous discussion about the centrality of the investigator's subjectivity in qualitative research, it will not surprise readers to find that when describing participants in the study, the investigator is included.

Qualitative research is unlike other forms of inquiry, where credibility rests on correct execution of method, allowing the researcher to remain largely invisible in the reporting process (hence, the almost universal use of the impersonal third person in writing reports of quantitative studies). Careful reporting of procedures for gathering and analyzing data *are* important in establishing credibility in qualitative research, but, because the researcher is often the only research tool involved (with no apparatus for measurement and no statistic for analysis), who he or she is and what he or she brings to the investigation matter a great deal. The form provides some suggestions about what might be relevant, but reading the report will surely suggest others.

In some cases, investigators write little about themselves because their background and beliefs are well established by reputation. In other cases, the author(s) simply tells you nothing about him- or herself. In such reports, you have to draw your own conclusions about credibility based entirely on how carefully the study has been conducted. Whether you find that sufficient or not must be your decision. When there is nothing to enter at Step 4, that can be a tough call.

In recording information about the people selected for participation in the study, the task should be more straightforward. The people who participate in the study (usually, although not invariably, as conscious and willing collaborators with the investigator) are central points of interest in qualitative research. The substitution of the word *participant* for the usual designation of *subject* (until recently, it was a virtually universal practice to use the term *subject* in writing quantitative reports) is more than a mere change in the conventions—it reflects a difference in attitude toward the people who cooperate in the study. Referring to them as participants is intended to invest them with more

importance as individual human actors than is the case when they are regarded as passive objects of study. That distinction might not always be honored in the practice of qualitative research, but you will appreciate its intended significance much better after reading a number of reports.

At this beginning stage, just be sure you know exactly who is participating in the study because, whatever else might be true, qualitative research reports are intensely and centrally about particular people. If you need more information to complete your response at this step, the advice given for Step 4 on the quantitative form should provide sufficient direction.

5. CONTEXT. *Where did the study take place? Describe important characteristics.* Not all qualitative studies take place in a specific context that is crucial to the investigation. For example, neither interview studies nor studies based on documents such as diaries have a locale for data collection that is particularly significant. Even those, however, involve constructing a picture of what is or was going on at some time and in some place. Because context is central in most qualitative research (for reasons that are too complex to address here), what you write in this space truly is important. It will become even more so as you grow in your ability to read these studies with sophistication.

6. STEPS IN SEQUENCE. *In the order performed, what were the main procedural steps in the study? Describe or diagram in a flowchart showing order, time required, and any important relationships among the steps.* Your task here is likely to be much less complex than the mapping of an experiment or other quantitative study. In most cases, the major steps of gathering data and subsequent analysis are named in straightforward descriptive prose (the technical detail within those operations, of course, might be substantial and arcane, but none of that need be recorded here). Just follow the rule that your explanatory sketch should be such that, a year later, it could help you recall the general nature of the study and how it was performed.

7. DATA. *What constituted data (e.g., field notes, interview transcripts, photographs, diaries), how was it collected, and what was the role of the investigator(s) in that process?* Again, most qualitative reports provide this information in a straightforward fashion. You might also find it helpful to note here any procedures for transforming and managing the data.

This suggestion has particular importance in many studies because qualitative research is characterized by enormous volumes of data and sometimes difficult problems of data management.

The question of the investigator's perceived role when collecting the data can be more important than you might expect. This question applies principally to investigations that involve collecting data at a natural site in the field. Even when interviews at a completely neutral location are employed, however, there remains the question of how the investigator presents him- or herself to the participant (as collaborator, disinterested scientist, sympathetic listener, and so on).

When data are collected through entry into the context of the participant's world, the researcher might be a strictly nonparticipating observer or might elect to engage fully (or selectively) in the activities that are characteristic of the site. Each of these roles influences not only how the participants regard the investigator but what they are likely to reveal about their own perception of the context. Knowing the role assumed by the author(s) during data collection allows the reader to frame what is reported in the kind of social relationship that existed—a factor which we always make mental note of when stories are told.

It is common in qualitative reports to describe the role of the investigator in some detail, although cryptic designations such as *nonparticipant observer*, *unobtrusive participant*, and *nondirective interviewer* are not always defined the same way. Do the best you can with the information provided, and remember that it is how the study participants think of the investigator that defines his or her role.

8. **ANALYSIS.** *What form of data analysis was used, and what was it designed to reveal? What computer program was used (if any)?* If you are a true beginner, you are likely to be in exactly the same position here as you were with the same item on the generic 12-step form for quantitative research. You will have to seek out and record the names of operations that you have yet to fathom. Do not panic. Everyone has to begin somewhere, and, if qualitative research proves to be interesting, explanations of most analytic processes are only as far away as a textbook or a college course. Even better, largely because qualitative analysis does not involve complex mathematics, many reports offer explanations of process that are both lucid and complete.

9. **RESULTS.** *What did the author(s) identify as the primary results (products or findings produced by analysis of the data)? In general, "What was going on*

there?" One thing about Step 9 is apparent immediately. The space provided for recording results is relatively small—especially given the length of most qualitative study reports! The stingy space reflects something more significant, however, than just a desire to economize on the size of the form. It reflects the nature of qualitative research and a skill you will have to acquire if you are to make use of such reports—the skill of creating brief summaries that extract essential findings without completely losing the human qualities in a story.

Where the purposes of a qualitative study include deriving answers to one or more questions (whether specific or general in nature), there will be a return at Step 9 to those initial interrogatives and some effort to identify responses (although not necessarily identified as “results”). Studies that start with qualitative assumptions, however, might not have a set of explicit questions (at least, not at the outset) and thus often do not have a single set of listed results that is separate from the data. The data tell a story about what is going on in a particular social setting; the entire story is the “result” derived from analysis of the data.

For most qualitative studies, that means letting go of all the particulars that form the full text of the report you have just read. Now you must search out the deeper meaning behind the story—a generalization that often can be represented in your answer to the question, “What was going on there?” To reduce your answer to a few short sentences might at first seem unfair to the study, particularly if you have acquired a rich sense of the complexities involved and how inadequate simple generalizations might be. On that issue, we offer this advice: What you write down as the results produced by the study is not intended as a representation; rather, it is a kind of acronym that serves both to remind you of a much larger whole and to put at hand the key you found most useful in deciphering the code of meaning embedded in the story.

10. CONCLUSIONS. *What did the author(s) assert about how the results in Step 9 responded to the purpose(s) established in Step 2, and how did the events and experiences of the entire study contribute to that conclusion?* Before entering information at this step, you should review our comments concerning conclusions in quantitative studies (Step 10). One difference, however, requires your thoughtful attention.

In qualitative studies, investigators might not assert a single set of conclusions that are identified as such. The body of accumulated data,

when combined with the results from analytic procedures, forms the substance of a story about phenomena of interest. Thus, when confronted with the question "What do you conclude from this study?", a qualitative investigator often discusses points within the story that seem particularly powerful, provocative, theoretically instructive, or pragmatically useful. Rarely, however, does an author conclude that he or she can assert empirically validated and reliable truths about what has been studied. If those latter outcomes are what you seek in the report, you might have to formulate your own sense of what constitute legitimate and well-supported conclusions.

11. CAUTIONS. *What cautions does the author(s) raise about the study itself or about interpreting the results? Add here any of your own reservations, particular those related to methods used to enhance credibility (trustworthiness and believability).* Because qualitative researchers think about the problems of reliability and validity in terms that are quite different from the meanings assigned by quantitative science, they often use different terminology. The word *credibility*, as used in this question, designates the qualities of trustworthiness and believability. These are characteristics of a study that inspire a sense of trust and belief in the reader.

There are many things a qualitative researcher can do to create confidence in the reader. Some are general in nature, such as being careful and explicit in describing data collection procedures, and some are very specific, such as cross-checking information across several sources of data (a process commonly called *triangulation*). In some reports, the author(s) designates particular operations as ones that serve the purpose of improving trustworthiness. In other reports, you have to consult your own reactions as the guide to sources of confidence (or the lack thereof).

Although quantitative research deals with the problems of validity, reliability, and objectivity, you will find that, in addition to these issues, there is a great deal more to learn about issues related to credibility in qualitative research. The place to begin, however, is with what the author(s) of the report says about his or her own concerns and the reasons for your own skeptical reactions to the story told.

12. DISCUSSION. *What interesting facts or ideas did you learn from reading the report? Include here anything that was of value, including: results, research designs and methods, references, instruments, history, useful*

arguments, or personal inspiration. A primary purpose of qualitative research is to provide the reader with vivid, rich, highly persuasive accounts of human interactions, often in complex social settings. A commonly repeated aphorism about such studies is that they truly succeed when they make what is familiar to us seem strange and what is strange to us seem familiar. Making yourself aware of the points at which the report has achieved that result is an important part of learning to read qualitative research.

Our earlier description of what should be recorded for Step 12 on the quantitative form applies here with equal emphasis. Results, conclusions, and applications are important in qualitative research, but a host of other valuable discoveries are possible for a reader who is open to learning—and to being surprised.

❖ READING AND RECORDING FROM RESEARCH REVIEWS

As promised in Chapter 2, we include here a brief section on the reading of research reviews. The inclusion of reviews in this guide reflects four facts about the research literature: (a) reviews appear in virtually all disciplines and active areas of investigation; (b) reviews often are the best place to begin when you want a sense of what has been studied and learned with regard to a particular topic; (c) for some purposes, good reviews can provide information sufficient to satisfy your needs without having to read the original reports; and (d) reviews are highly diverse creatures (in format, method, and scope) and can be very complex technical literature. In other words, reviews can be enormously valuable and efficient as resources, but the novice reader might require some assistance in learning how to make use of them.

Reviews can often be found in the same journals that publish research reports. In addition, some periodicals publish only research reviews (e.g., *Review of Educational Research* or *Psychological Review*). In yet other cases, reviews are included in or appended to other documents, such as doctoral dissertations, grant proposals, technical yearbooks, monographs, encyclopedias, and research compendiums for particular disciplines (e.g., *The Handbook of Research on Teaching*, Richardson, 2001).

Reviews vary along a number of dimensions: (a) *scope* (number and kinds of reports included); (b) qualitative control over *selection* of studies; (c) *framework* for organizing and integrating studies;

(d) method for *assessment* of studies; and (e) primary *purpose* (most commonly some combination of summary, methodological critique, development of theory, or derivation of applications or implications for practice). As you might expect, reviews also vary in both degree of technical detail and quality of writing—factors that influence the demands made on the reader. Like research reports, reviews are prose documents that range from awkward, obscure, and poorly organized to lucid and transparent expositions that are as economical in format as they are graceful in expression.

Despite that great diversity, at the bottom line, the majority of reviews do share a small set of common characteristics that define the genre. First, all are retrospective examinations of studies done in a particular area or, less commonly, studies that employ a particular method. Second, all reviews attend (albeit in different ways) to the question of what can be learned from the studies examined. Third, most reviews comment on how the findings of the studies (collectively or individually) fit into the fabric of existing knowledge. Fourth, and finally, most reviews give some attention to persisting problems for the conduct of inquiry in the research area and what might be done to improve the yield of theoretically or practically significant knowledge.

A 12-Step Map for Reading Reviews

The reading guide that follows is not intended to serve the same purpose as the 12-step forms for understanding research reports that were previously presented in this chapter. The latter were intended not only as organizational instruments and record forms but also as tools for the practice of specific reading skills. In contrast, we do not suggest that our 12-step map for research reviews should be used as an exercise tool for building competence in reading such documents. As literature, reviews simply are too heterogeneous to support any notion that one can learn how to read them by acquiring a single set of skills.

Instead, we have provided a mapping device that, through a series of questions, will help you identify familiar landmarks common to many review styles (Form 5.3). Even though not all of the 12 questions might apply to each review you encounter, we are confident that enough of them will do so to make the map a useful aid for improving your navigation. Particularly in complex reviews that are dense with detail, having a prespecified set of review functions to look for as landmarks can help you avoid the feeling of being lost or overwhelmed.

In addition, the 12-step map can serve as a record form and can be particularly helpful in reminding you to notice important mechanical features of the review that you might otherwise overlook. Because this form is already crowded as a three-page document, we have made little attempt to provide for different kinds of review formats (or purposes). As your familiarity with this form of research document increases, you will have little difficulty in recognizing which items do not apply to some reviews or in creating customized versions of the generic map for your own use.

Navigating Through Reviews With Your 12-Step Map

We tried to make the language of each question as self-explanatory as possible. If you have a classmate or colleague who is using the map to study the same document, you will have an opportunity to discuss any uncertainties that emerge from your first efforts. With that source of clarification, we doubt that any of the 12 steps will create serious difficulty.

Much of our general advice about the earlier 12-step forms also applies to the use of the review version. Most notably, you should be flexible about the order in which you try to complete the 12 steps. Also, if something in the text is impossible to understand (or if one of the items on the form appears not to be present in the review at all), do not panic. Just flag it and get on with the task. Above all, limit your recorded answers to brief reminders of key points. As with the other guides, becoming compulsive about squeezing all of the information onto the form is self-defeating. You can always retrieve the review document itself if you later find that you need precise detail.

Finally, we draw your attention to the brief instructions at the top of the form. Although you might soon acquire the confidence to complete the form at a single reading (certainly, there are short, nontechnical reviews that require no heroic effort), our experience suggests that the strategy of skimming first (reading only headings, introductory sections, and topic paragraphs), followed by intensive reading and use of the form, is good advice if you are not a veteran reader of reviews.

Also, our suggestion about the importance of noting other review features not encompassed by the 12 steps is not gratuitous. We make no claim to have invented the comprehensive format for reviewing all research reviews. This is a navigational aid, not a holy writ. Keep your eyes and your mind open. It is entirely possible that, for your own

purposes, other key questions should be added or substituted to create a better 12-step map. Please be our guest.

❖ EXPLAINING RESEARCH: A TOOL FOR LEARNING HOW TO READ REPORTS

In this final section, we present a series of group exercises that involve explaining research to others. The process of “teaching” a report can serve as a powerful device in learning how to read and understand research.

Teaching Is the Best Way to Learn

Anyone who has had to give verbal instruction, either formally as a teacher in a public or private school, or informally as a member of any sort of study group, will not be surprised that the best way to learn (and to test for learning) is to have to teach what you think you know to somebody else. Experience already will have taught them that lesson. It takes only a small shift of context to realize that the same rule applies to the task at hand.

In explaining the study described in a research report to someone else, you are almost certain to learn more about the investigation. Furthermore, if you can accomplish that feat with demonstrable success (e.g., when your listener can give back a reasonably accurate account of the study), it is likely that you really did understand what you read.

Explaining research provides the opportunity to accomplish a number of desirable outcomes. Although the benefits vary by individual, five that we have most commonly observed are noted here:

1. The social nature of the task ensures that you actually will read the entire study. Indeed, if you are normally sensitive to the opinions of others, you probably will work really hard at comprehending any study you have to explain—even to an audience of one.
2. In explaining a study, you will test whether you actually understood what you thought you had assimilated. Impressionistic and subjective evaluations of our accomplishments sometimes outrun the actuality. Having to explain, out

- loud and in detail (rather than sketching quickly in the privacy of your own mind), is an unforgiving reality check.
3. If the time consumed by your explanation is limited (our own rule is that explanation exercises must be completed in 12 minutes), you will be forced to identify the essentials in a report. This is a process that requires you to develop a clear conception of exactly what happened in the study.
 4. If the test of a good explanation is that the listener can remember the essential elements of the study, then, in devising your instruction, you will have to give close attention to some of the basic principles of sound pedagogy. Among other things, you will have to decide the order of topics to be covered, at each new point answering the question, "What do listeners really need to know *before* they can understand what I am about to say?" Also, you will have to pace the presentation (not going too fast or overloading any part with too many details), devise illustrations for difficult constructs, find ways to make main points stand out vividly, and, throughout, monitor for the "glazed-eye syndrome" that signals when you have lost your audience. By the time you have devised and delivered an explanation that meets even these simple criteria, you will know more about your study than you ever thought possible.
 5. Perfect or imperfect, an explanation is the ideal basis for a fruitful discussion of a study. Not only can you get feedback from your audience concerning what seemed cloudy in your recounting of the investigation (and probably *was* cloudy in your mind), but you can have the luxury of exchanging ideas about the study with someone else.

How to Give an Explanation: Rules of the Game

From trial and error over the years, we have discovered some simple rules that allow beginners to get the most out of giving an explanation. Some of them might seem arbitrary or a bit fussy, but, for your first round of reports, we ask you to try it our way. Modification of the rules can come later. As a convenience in writing about this particular exercise, we have given it a name. Whenever we are referring to the explaining exercise described in this chapter, we have simply capitalized the first letter, as in the "Explanation."

Rule 1. Observe a strict time limit of 12 minutes from start to finish. Yes, you could give a more complete account of the report in 13 minutes, but experience has taught us that after you go beyond 10 to 12 minutes, Explanations of research reports invariably begin to deal with nonessentials (things the listeners should read for themselves if they are sufficiently intrigued by your overview).

Rule 2. The audience, whether one or many, should limit itself to listening attentively, asking only for clarification of major points. Comments and discussion should be reserved until after the 12 minutes are up.

Rule 3. You are free to use any visual aids that will help your audience understand or that will allow you to economize on limited (and thus valuable) presentation time.

Rule 4. Never, *ever*, read your Explanation. Look the audience in the eye and talk to them! Note cards or lists of key words (whatever works for you) are fine, but do not insult your listeners by paying less attention to them than you pay to anything else, including your own insecurity about remembering everything you intended to say.

Rule 5. After finishing your Explanation (in under 12 minutes) and the applause dies down, take time to get some detailed feedback about what people did and did not understand. Not only will that help you improve the quality of your next presentation, it might identify spots in the report that you still do not grasp—a sign that you now might need some external assistance. In addition to soliciting feedback, however, go beyond critique of your performance and exchange views about the study with your audience. Audience members might have some insights that will enrich what you have learned.

Formats for the Explanation: Pairs, Teams, and Solos

We suggest that your Explanations should progress through a series of three types, moving from easy to demanding. All three require a minimum of one or two partners who also are engaged in learning to read research reports. You need not worry about reciprocity, however, because it is built into the sequence of explaining tasks.

Type 1: The shared pair. For your first Explanation, use a study that both you and your audience have read. Pairs are perfect for this exercise (although triads also can be used). Each pair selects two reports, and then each member of the pair reads both but is assigned to explain only one. Everyone gets to play the roles of both explainer and listener. In the process, you cover (thoroughly) two studies in an hour or less—feedback and discussion included.

Although it might seem socially awkward to engage in explaining to someone what (ostensibly) he or she already knows, you will quickly discover an interesting fact. For the most part, this problem does not exist. Not only would your partner probably explain the study differently, but beginners do tend to understand reports in distinctly different ways. You can be quite confident that even though your partner has read the study, he or she will not be bored by your Explanation. In fact, for your first attempts, your partner might be wondering whether you both read the same report!

Type 2: The team task. The second, and more demanding, type of Explanation requires a triad of beginners and three studies. There are two levels of the team task. Level 1 requires everyone in the triad to read all three studies. Two members of the group are assigned the task of explaining one study as a team, as in A and B explain Study 1 to C; then B and C explain Study 2 to A; and finally, C and A explain Study 3 to B.

In preparing for the team task at Level 1, each pair is allowed 15 to 20 minutes to consult, compare reading notes, devise simple graphics, and agree on a division of labor during the Explanation process. With the usual 12-minute limit, and a following discussion of 10 minutes for each study, the three studies can be covered in about 2 hours of intensive work. If you add a short break, it will extend the total time but reduce the symptoms of battle fatigue.

Again, you might ask why team preparation is subject to an arbitrary time limit. Certainly, the Explanation could be done more elaborately if there were more time to prepare, but would it really be done better? From what we have observed, our answer for most team efforts is a firm “No!” Although planning time is a variable with which you can experiment, please do try it our way first.

At Level 2 of the team task, you simply increase the pressure on each team to do a good job. The third member of the triad, the assigned listener, does *not* read the study in advance. Everyone reads only two

of the three selected studies, keeping him- or herself innocent of one. Thus, following the pattern above, C does not read Study 1, A does not read Study 2, and B does not read Study 3. We think you will be surprised at how much the simple shift to having a naïve listener alters the perceived (and real) difficulty of the task.

Type 3: The solo explanation. Here, it is best to begin with a return to the paired format, graduating to larger audiences only as you gain confidence (and competence). Working alone, you now explain a study that the listener has not read. Everything is on your shoulders, but you get all the glory when the job is well done.

Most people are satisfied to do a few solo trials and then end their Explanation careers. However, those of you who are preparing for jobs that involve using research on a regular basis (academics, researchers, technical authors, staff development specialists, grant consultants) should press on—at least to the level of working with a larger audience. It is in the triad, where each member is the sole reader of a study and then presents it to two naïve listeners, for example, that you will first encounter the problem of meeting the learning needs of more than one consumer within the same time limit. That will test both your grasp of simple teaching skills and the depth of your own understanding of the report.

How to Give an Explanation: Handy Hints From Hard Experience

Hint 1. A 12-step form is a good place to begin mapping out your Explanation, but do not slavishly limit yourself to the exact order of its items. There is no reason why you should not begin your Explanation of a quantitative study, for example, with the results, Step 9 (as in, “I am going to tell you about a study that unexpectedly found that . . .”), or with who was studied, Step 4 (as in, “This is the only study I have found that actually involved asking children what they thought about working on computers in the classroom.”).

Hint 2. Most studies contain problematic elements for the reader. Thus, most studies have elements that are also problematic for anyone trying to explain them. Ambiguous terms, incomplete accounts of procedure, missing information, apparent errors of fact, or debatable assumptions—they all are going to be encountered. With these problems, you will have to do what all research consumers have to do (in the short

term)—make note of the problem to your audience and get on with the job. If you are willing to explain only perfect studies, you will not get much practice.

Over the long term, if it really matters, you can track down more complete accounts and the clarification, if not resolution, of most deficiencies. For the present purpose, it is far more important that your Explanation be clear and correct than it is that the study itself be perfect.

Hint 3. Being respectful of the author(s) is your obligation, just as it is your responsibility to flag for your listeners the points that fall short of the ideal study or perfect report. All research reports, whatever their flaws or acknowledged limitations, were produced by people who were struggling with the problems of doing good research and the no-less-difficult task of creating a sound written account of it. All were investigating questions that mattered (at least to them), and all had something to say that should be of interest to an audience if given a proper presentation. An Explanation is always more effective when it respects the author(s) and maintains a positive tone.

Hint 4. Always practice with a stopwatch. In an Explanation, nothing is more embarrassing than to discover that you have 2 minutes left at the midpoint of your presentation. Take pride in crafting a presentation that finishes with time to spare.

Hint 5. We are told on good authority that there are three main factors in selling a house: location, location, and location. Likewise, we assure you that there are three main factors in the design of an effective Explanation: simplify, simplify, and simplify. Remember that your first loyalty in this task is to your listeners, not to the author(s) of the report. A researcher's words are not sacred objects, and neither are his or her ideas about appropriate priorities in using space within the report. For example, if you do not really need to introduce a technical term that will be unfamiliar to your audience (because there is a perfectly serviceable common word), then you have no obligation to do so—even if the author(s) did. Your simplifications and deletions might mean that the audience misses out on some of the nuances, rich elaborations, technical detail, and secondary analyses, but getting a really clear picture of what happened in the study is worth a lot more. Again, less detail usually means more understanding.

Hint 6. A flowchart of steps in the study makes a good visual aid with which to map progress through your Explanation. It does not help, however, if it contains so much detail that it requires prolonged scrutiny or if it is allowed to distract attention from the main points of your presentation.

The Bad Explanation: Five Fatal Flaws

As with many problems in human communication, a relatively small set of presentation flaws accounts for a large portion of the failures. In our experience, when beginners have difficulty with the Explanation task, one or several of the following are likely to be the cause.

Flaw 1. Reading, and thus insulting (or boring), the audience.

Flaw 2. Not putting things into a sequence that makes it easy to follow the steps of the study.

Flaw 3. Getting hung up on what is not in the report or in critiquing the study before explaining it.

Flaw 4. Trying to explain too much in a limited time.

Flaw 5. Assuming that the listeners know things that they do not know (often a result of not monitoring the audience).

The cures for each of these flaws do not require an advanced degree in communication studies. In matching sequential order, they are the following:

Cure 1. Do not read. Talk to your audience.

Cure 2. Define new terms *before* using them, use a clear temporal order for events, and always ask yourself, "What has to come first if my audience is to follow this explanation?"

Cure 3. Flag problems briefly and then get on with the Explanation.

Cure 4. Simplify complex operations and delete what is not essential for a basic understanding.

Cure 5. Watch for puzzled expressions and glazed eyes. Find out what the problem is and adjust your Explanation. If you have

planned to leave several minutes of unused time, small in-course adjustments to the needs of your audience will fit comfortably.

The Purpose of Explaining

At first, the Explanation can be an anxiety-arousing task. There is an interesting therapeutic value, however, in having to listen to other beginners fumble through their first attempts. You quickly learn that nearly everyone faces a learning curve for this exercise. You also will notice how quickly performances improve.

That rapid growth in competence is a satisfying outcome. For some, giving effective explanations (without, of course, the artificial time constraints and other trappings of the training exercise) might even have practical utility in their careers. For everyone, however, as you gradually master the craft, you can be increasingly proud of your accomplishment. It is no small thing to be skillful at giving short, clear explanations on *any* topic, much less research reports.

Learning to give classmates or colleagues good explanations was not, of course, our primary purpose in putting you through the rigors of these exercises. The purpose remains what it was at the outset—helping you learn how to read and digest research. Toward that end, you will have learned some very specific skills.

When you read a report as a veteran of Explanation training, your practiced eye will automatically sort through the details, looking for the essential elements that drive a study. As you work through the story of an investigation, your explainer's ear will listen for the order of things that makes the most logical sense (not necessarily the ordering of the author[s]). Your critical senses will be alert to ambiguities, gaps, and dubious assumptions or conclusions that should be flagged for later consideration. And, during all of this, you will be rehearsing increasingly complete explanations—for *yourself*. When all of that comes as second nature, you will no longer need the assistance of this, or any other, guide to reading research reports.