



THE RESEARCH REPORT

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This chapter gives attention to two primary topics, both of which present information about research reports. The first part deals with the many valuable things that can be found in research reports beyond the obvious—the results. In the second part we discuss what a research report is and what it is not.

FINDING VALUABLES IN RESEARCH REPORTS

Reading Reports: When to Do It

The purpose of this guide is to help people become more confident and skillful at both reading research reports and digesting (understanding and

appraising) what they find. Our audience includes such people as undergraduate and graduate students, schoolteachers, health care professionals in clinical settings, social service workers in the field, and administrators of public and private institutions. In fact, readers might include anyone who has an interest in finding reliable facts and information that could help him or her solve problems or do his or her work more effectively. But what exactly is it that you can find in research reports?

The pages that follow offer answers to that question in some detail. Our first response to the “What can you find in research reports?” question, however, is to point out that it is not our perspective that matters most—it is yours! Put simply, different people, under different circumstances and with different needs and interests, find it useful to read research reports for many different reasons. Some of those motivations we could not possibly imagine, much less predict.

What you learn from this text might open the door on a rich resource of facts and ideas, but only if you decide to step over the threshold. What research-based knowledge can do for you is an individual matter that depends on the personal perspective you bring to what you read. Our purpose in this chapter is to suggest the breadth of exciting possibilities that can be served by reading research and to honestly clarify some of the limitations to that process.

Along with that opening injunction to give first consideration to your own needs and interests, we are compelled to offer another caution. For many of the purposes served by research-based knowledge, it might be more efficient to locate what you need through the use of some other form of scholarly writing. In fact, given the investments of time and energy required, reading research reports fails the test of cost-benefit analysis for most people most of the time. As we will explain, if people want to act intelligently, there are much better ways to inform themselves than by reading original research reports.

That frankly negative assessment for the very enterprise that is central to this book is tempered, however, by one salient fact. If you are reading this, it is unlikely that you are an ordinary layperson or that this is just an ordinary occasion. Students, academics, providers of professional services, and all sorts of individuals with responsibility for making decisions about important human affairs are quite likely to find occasions when reading research is an entirely reasonable use of their time. We presume that, for whatever reason, you are one of those people.

It might be a platitude, but it nevertheless happens to be true: Knowledge is power. And one kind of knowledge, a compelling kind that

often has legitimate claim to precedence over other forms, is created by scientific research—the fruits of which are found in research reports.

Reading Research: When to Consider Using Alternative Sources

The familiar dictum about the power of knowledge applies particularly to the practical utility of research-based knowledge, the kind of knowing that begins with research reports. That observation, however, leads us to reiterate the caution about efficient use of time, for it is one that we hope you will recall when it is needed, long after you have closed this book. Whatever you are looking for, be it the power of applied knowledge, the cultivation of personal intellect, or the simple pleasure of satisfying curiosity, do not do unnecessary work. Use the form of scholarly literature that yields the most of what you seek for the smallest investment of time.

One form of scholarly work is discovery—the use of systematic investigation to explore the workings of our world and ourselves. Inquiry of that sort, commonly called research, creates a type of knowledge that can be useful in the conduct of human affairs. Accordingly, when some people read research reports, they do so with an immediate and practical need. Although curiosity and the human impulse to understand how things work do motivate some excursions into the literature of research, in most cases, the impulse is more pragmatic.

For graduate students, academics, research workers, and some technicians in applied professions such as medicine and engineering, reading research reports in their full and original form is imperative and unavoidable. Outside of those groups, however, reading reports is not the only means of access to the power of research.

Many sources provide the intermediary service of standing between the accumulation of research reports on a given topic (often referred to as the research literature or the body of research) and potential consumers of what is in those reports. The authors who provide that kind of service—including journalists, textbook authors, writers in professional journals, trainers and development workers, designers of curricula, and scholars who prepare reviews summarizing groups of reports—write materials that convert technical accounts into understandable facts and informed speculation. In other words, they put research into formats that allow most people to more easily locate, consume, and use the knowledge contained.

Where resources created by such intermediaries and translators exist, they should be the first place to look when you want reliable knowledge. Reading research reports makes sense only when you have reason to go beyond what is easily accessible. At the least, those generic resources are the place to begin any search. You will learn quickly enough whether they contain sufficient detail to satisfy your needs and interests.

To illustrate this point, imagine you are a sixth-grade classroom teacher working in an urban elementary school. Faced with 30 pupils of mixed racial, ethnic, and social/cultural backgrounds, you are particularly interested in finding ways to help them explore their diversity and all of its positive meanings. Part of that teaching agenda is your desire to engage them in learning how to work together effectively in ways that make use of their different backgrounds and perspectives.

Your situation would not be unusual for any teacher at any level of education. The commonplace nature of such pedagogical needs makes it highly probable that you already know about cooperative learning strategies for teaching, a format that can accommodate instruction in many subject areas. If you wanted to know more, however, about the particular uses of cooperative learning in classrooms with diverse populations, would it be reasonable to turn to research reports involving that topic? The answer for most teachers should be a firm “no” or at least a more tentative “not yet.”

There is a veritable mountain of research on cooperative learning, a substantial subset of which deals with questions and problems related to cultural diversity in elementary and middle school classrooms. That research literature, however, has been reviewed and summarized in many excellent articles appearing in professional journals designed for teachers and school administrators. In addition, much of it is treated in chapters within numerous textbooks on education. Even the curriculum guides produced in large school districts might make careful use of the research reports on cooperative learning in laying out objectives, methods, and content for school lessons.

The research-based knowledge to be found in the cultural diversity literature would provide, at the outset, all of the encouragement and initial direction you could possibly use. However, what if, in the course of using cooperative strategies in your classroom, you encounter problems or questions that are not addressed in those generic sources? For example, what if you want a means to assess, by quantitative or qualitative means, the impact of a social studies unit on the attitudes of your students toward social responsibility in their community?

It happens (at this time) that such measurement and evaluation problems are mentioned in general sources, but only rarely are any details provided. There are a few research reports, however, that tell stories of attempts to study exactly what interests you—the impact of cooperative social study units on the attitudes of school-age children. Locating and reading those reports now becomes an attractive option. Your purpose as a teacher might be served not only by what the researchers found but also by learning how they went about the task of finding it.

Put another way, starting from scratch by designing your own means of assessment would require you to do all of the work, and it would probably expose you to all of the false starts and wasteful errors that the report authors already have faced and overcome. Reading and borrowing from them—their findings, ideas, methods, suggestions, and cautions—now seems comparatively prudent as an investment of your time.

There are, of course, an endless number of circumstances that are quite different from our cooperative learning illustration. Some of those conditions might make direct use of reports an absolute necessity, especially when such reading is a course requirement in an academic degree program. Our caution leaves you to weigh the costs and the benefits, with the firm reminder that the use of more generic research-based sources often is the most efficient and effective way to find what you need.

Reading Research: What Can You Find Besides Findings?

We return now to one of the initial questions for this chapter: “What can you find in research reports?” You might have already noted our use of the particular phrase “facts and information.” That wording was deliberate and not just a peculiarity of expression.

By using constructs such as “facts and ideas” or “facts and information,” we intend to encourage a distinction between facts, as ordinarily understood, and more generic kinds of information. For example, research studies provide ample support for the assertion that schoolchildren involved in cooperative learning perform at least as well on achievement tests as pupils taught by more didactic methods. Although we can expect that further inquiry will refine and qualify that point (cooperative learning might work better, or less well, with some children than with others), it seems to be a highly probable outcome in any classroom. That is the kind of fact on which teachers can reasonably base decisions about instruction.

In contrast, a point of information in the same studies is that many teachers have reported to investigators that it was particularly helpful to observe colleagues who use cooperative learning strategies before attempting that kind of teaching on their own. That assertion was not confirmed (or even examined) in the studies, but readers often find it interesting and include it in their own subsequent thinking about the topic.

Another important point of information, gleaned from contrasting the descriptions of cooperative learning in a number of studies, is that in actual classroom practice, the strategies designed by teachers assume a variety of forms, each with its own virtues and limitations. No single study has been directed at such instructional variations, but they are made evident by browsing studies devoted to other aspects of cooperative learning.

What we want you to notice in all of these examples is that both the facts (formal findings from studies) and the information (informal observations and ideas that turn up in study reports) would be of potential value to anyone interested in cooperative learning.

When research reports offer facts, even some that meet the most stringent tests for truth (often, the power to predict what will happen in another place, at a different time, and with other people), rarely are those facts the only important information the reports contain. Indeed, for many purposes (for many readers), such factual findings, which were the primary objective for the investigators, are the least informative and useful part of the report.

We could fill pages with arguments and assertions about the nature of truth, what does and does not qualify as scientific fact, and how to distinguish between reliable information and informed speculation. We will not do so. We do ask that you bear with us, however, through several paragraphs that serve as a bridge to the question with which this section began: "When reading research, what can you find besides findings?"

From inside the world of scholarship, issues dealing with truth are vital. Many of the disciplines in the physical and biological sciences, for example, employ research and the discovery of facts in a manner that operates additively. One fact after another is gradually established as reliably true and then is fitted together with other facts to assemble increasingly complex and complete pictures of how things work.

In such fields, reliable facts—the truthful findings described in research reports—are the coins of academic commerce. In applied fields that make direct use of such sciences (e.g., medicine and engineering), the main contents of primary interest in a research report are usually the conclusions—what the data allow the author to assert is true.

Other disciplines, particularly those in the behavioral and social sciences, do not present the same picture of cumulative assembly of facts into truth structures (theories) that explain how things work. In sociology and psychology, for example, inquiry yields reliable facts that might be limited to individuals or to groups that share a common characteristic or a specific contextual circumstance. In such areas of science, it is quite uncommon (although not impossible) to find scholars attempting to construct comprehensive models consisting of closely fitted, verified facts that can be completely generalized. Thus it is that scholars have different standards and expectations for research in different areas of inquiry. So too must readers of the reports produced by divergent traditions.

That brief side trip was intended to underscore one point. Just as so-called facts have different meanings and uses within different kinds of science, so too will they have different kinds of importance to consumers of research. The classroom teacher in our earlier illustration, for example, would not expect to find universally applicable truths about cooperative social study units for culturally diverse students in urban sixth-grade classrooms. Educational research simply does not deal with the world in that way.

Indeed, you might not even be interested in what researchers found to be true for the particular groups of students, teachers, and schools used in studies of cooperative learning. Instead, what you probably would want is some information or ideas that might be useful when applied in your own situation. For example, how investigators defined the construct of social responsibility might be helpful, as would descriptions of the different methods used to gather information about student responses to cooperative learning units (none of which would have been reported as “findings”). Most teachers would be hoping to get lucky and discover in an appendix a copy of an instrument used to gather data, as well as information about how well it could be expected to function with children of the age group represented in their own class.

We expect that a great many of you are much like those teachers who sometimes are interested in findings—the facts as they were established by the investigation or a generalizable truth about how the world works—but more often are interested in other things contained in the reports they read. The latter will be more likely if you are seeking information in research reports from studies done in the disciplines of anthropology, psychology, and sociology, as well as in applied areas such as business, education, health and social services, sport coaching, and professional development.

Here is a short list of some of the “other things” people are often looking for when they read research reports. Please understand that these items only illustrate, and do not exhaust, the great panoply of useful information that can be discovered. The treasures you may find (besides the findings) are determined not only by what you need and what you find interesting but also by how carefully you search and how open your mind is to the unexpected.

- Other research reports on the same topic
- New terminology and possible key words for retrieval
- Explication of the question and its origins
- Description of the context for the study
- Methods for observing and recording
- Interventions used
- Discussion of findings or development of conclusions
- Implications or recommendations for improved practice

Other research reports on the same topic. If you are in the search mode, looking for reports that appear to deal with a particular topic, then the most important finding for you might not be located in the main text of the report but in the reference list. Before explaining how that might be valuable to you, however, the subject of references leads us here to a brief detour for the purpose of clarifying how they are handled in most research reports.

Today, most research reports do not use footnotes as a way of displaying references used in the main text (although that old tradition does persist in a few disciplines). Instead, sources from which the author has taken quoted material or which are simply cited as relevant to the study appear in a reference list usually attached at the end of the report.

In contrast, a bibliography is a list of related references that the author believes the reader might wish to consult but that are not directly cited in the text of the report. Although they might be quite useful when you are searching the literature, bibliographies are found infrequently in reports.

Returning now to the discovery of additional research reports, it is possible that by reading through the reference list you will discover other reports that appear, on the basis of title at least, to be even more directly related to what interests you than the report at hand. The question of relevance sometimes can be clarified by consulting the main body of the report. Often, there is a section near the beginning in which the author discusses already existing research in the study area. Another part of the report in which related research is subject to examination is the section titled “Discussion,” which is usually near the end of the document.

In both locations, what is said about a particular reference can give you a better clue to its relevance than the title it bears.

New terminology and possible key words for retrieval. New words do not always signal new ideas. In an enterprise like research, with a rich and expanding vocabulary, one frequently encounters unfamiliar terms that turn out to be nothing more than functional synonyms for things or ideas that already have well-established names. That kind of word churning is inevitable in a lively science that is pushing against the boundaries of what is known.

Sometimes, however, new words signal new constructs. Whether they are just new to you or are genuinely fresh additions to thought in an area, acquiring more powerful conceptual tools allows you to think in more complex ways. Such improvement in your understanding of difficult problems is one of the most valuable outcomes of reading research.

A related target for your attention when reading, particularly if you are still interested in retrieving additional studies, is the language itself. Different researchers commonly employ different terms for the same thing. The reason might lie in differences of disciplinary background, time, place, funding source, or personal writing style. Sometimes, such variety in labeling has no apparent rationale whatsoever, which contributes to the confusion and irritation of anyone trying to retrieve reports.

Messy nomenclature is a fact of life, however, and wise readers keep a list of terms assigned to their target topic, or to any topic that appears closely related. Those words can then be used as key words (descriptors) when consulting indexes and computerized retrieval systems. By approaching any collection of literature with a variety of terms commonly employed by investigators doing work in the same general area, you improve your chances of discovering valuable reports, even when the words used in the titles do not clearly suggest that the study might be of interest.

Explication of the question and its origins. In a report's introductory paragraphs, through presentations of background literature and by means of the closing discussion of results and conclusions, the investigator reveals how he or she understands the research question. The same sections also delineate why the question is important, what already is known about the answer, and how the scope of the question has been defined and limited for the purpose of the study. Attending closely to this process of explication (an effort to situate the question in the ongoing dialogue of scholarship) is likely to teach you a great deal about your topic of interest.

One of the things you might learn is that despite similarities of terminology, the author was concerned about a question or problem far distant from your own interests. Also, you might discover that your own initial definition of the subject was incorrect, incomplete, or just too simplistic. Finally, it is not uncommon when reading a report to discover that what really interests you is somewhat different from what you originally imagined it to be. All of these discoveries are useful things to learn.

Why the question was important (and interesting) to the researcher, how it fits into the results from other studies, and, quite literally, where it comes from might constitute important things to learn. The phrase “comes from” encompasses answers to questions such as “Who initially raised this question, and why?” “What has been discovered so far?” “How has the question itself evolved?” and “What methods of investigation have been employed, and how well have they worked?” The answers to such questions add up to what is called the *provenance* of the research question, a word that refers to its “origins,” or, in more formal terms, to its certification as a legitimate object of study.

Getting a sense of the provenance of the question that interests you is one of the essential steps in learning about it. Moreover, establishing the pedigree of the research question usually is attended to very carefully in a report.

Description of the context for the study. Research in the social and behavioral sciences always involves someone, somewhere, doing something that is observed and recorded—whether that observation is direct or through intermediate artifacts such as a questionnaire concerning parental attitudes, records of patients’ participation in therapeutic exercise, or a videotape of a worker’s hand motions on an assembly line. Immediately, then, good reports direct the reader’s attention to the where, what, when, and who of the study. Those contextual factors are the bridge between the researcher’s observations and your own experience. If your interests are specifically related to sixth-grade children, then discovering that the report actually deals with a study of college sophomores might make it less attractive.

Before you make the determination, however, of whether it is worth reading a study that deals with people, places, or conditions different from those of your primary interest, we remind you that such reports can still be valuable. At the least, the reference list, the formulation of the research question, and the means of gathering data might provide information that transfers perfectly into your collection of useful ideas, even if the people and places do not.

Methods for observing and recording. You might have no intention of ever engaging in research yourself, but surely you will be observing events within the context that concerns you. One of the lessons you can learn from a report is how to watch the things that matter and how to do so accurately and efficiently.

Studies often involve creating a record of what is observed in some sort of code (numbers, words, symbols, or even electrical traces on a magnetic disc or tape). The recorded code (collectively called data) is retained for subsequent inspection and analysis. To accomplish the process of creating data requires very careful decisions about what to collect and how to record it. Those decisions can tell you a great deal about how to be a good observer, as well as what you might wish to record for yourself when working to solve a problem. Consistency and accuracy are not just necessities in research; they are concerns whenever people want to obtain a reliable account of what is going on.

Interventions used. In experiments and quasi-experimental designs for research, something is done to intervene in the normal course of events. Often, the targets for such action (commonly called the treatment) are people. Such interventions, always carefully designed and described in detail in the report, might be precisely what you are looking for. They are significant not because you intend to do a study but because experimental treatments often represent possible alternatives for acting upon problems in the real world of your own work.

How well (or poorly) the treatment works in an intervention study is a function of many variables, not least of which is the particular measure of success that is employed. For that reason, if you happen to value outcomes that are somewhat different from those covered by the measures used in a study, an intervention might still be worth trying, even if it did not prove to be highly successful. Likewise, if your own situation differs from the context of a study in some important way, you still might be interested in adapting an experimental strategy for your needs, even if the intervention was unimpressive when tested under the conditions of the study. Finally, authors often identify the problems encountered with their effort to intervene on a problem, thus allowing you to make improvements on the application in your own setting.

In summary, even when the data fail to provide a clear answer to the research question, it is possible for the reader to discover valuable facts, information, and ideas in the report. Defects in treatment procedure, observation of the wrong outcomes, or even improperly defined questions might not advance the cause of science (although they sometimes do),

but they certainly can be useful in deciding what might be done about practical affairs of concern to the reader.

Discussion of findings or development of conclusions. We have emphasized the fact that you can learn from aspects of a research report other than the findings. It is important to stress that point because it is one too often missed by beginners—to their great disadvantage. Nevertheless, to the extent that the research question truly interests you, the findings are the centerpiece of any report and deserve your closest attention. Moving from what was observed (findings) to how those observations should be understood (conclusions) is one of the most difficult points in writing any report, especially because it is all too tempting for researchers to reach the conclusions they expected (or would prefer) rather than those that are dictated by what was actually observed. The wary reader watches the transition from findings to conclusions with special care.

Nothing, however, can be more exciting (and encouraging) than to discover that someone has given clear definition to a problem that exists in your own practice, invented a solution, and demonstrated (convincingly) that it worked. Although you should respect the fact that results do not always transfer perfectly from one setting to another, there is surely no better place to start inventing a better mousetrap than with the plans for one that actually worked.

Implications or recommendations for improved practice. Not all reports contain a discussion of the implications that findings (or conclusions based on the findings) might have for improving practice. Some research is motivated, at least in the short term, by intellectual curiosity and not practical needs. Nevertheless, within the types of research most likely to be consulted by readers of this handbook, it is rare to find one that lacks any clue about how the results might be put to use.

Some studies, of course, are motivated by an immediate need to find a solution for a problem. Reports of such research often have a complete discussion of the results as practical concerns, and they might even have a section that contains explicit suggestions for improved practice. It is always true that the match between the study context and the people, places, and conditions that concern you must be considered. Nevertheless, among the types of research that are designed to maximize the transferability of results, you might discover some with robust findings that support generalization to settings such as your own.

We have observed that even when researchers are primarily concerned with the basic problem of figuring out how the world works, it is quite

common for them to close their report with a note about possible applications of their findings. Sometimes, this information is for the consumption of their funding source; researchers always have to reassure their benefactors that their line of inquiry has some potential (at least in the long term) for bearing practical fruit. At other times, however, it seems clear that the author simply has been seduced by the sudden realization that what has been found just might make a difference if someone could figure out how to put it to work. That someone, of course, could be you.

At this point, having urged you to believe that valuable information and ideas can be retrieved from research reports, it is necessary to dispense with one vital matter before proceeding to the obvious next question—"How?" We must share a common understanding of what a research report is before we can answer procedural questions about what to do with one.

WHAT IS A RESEARCH REPORT?

The question posed in the heading was central to our writing of this handbook, and it will be central to how you can use our text to help in your search for facts and good ideas. Just as there were limits to what we intended to write about, there are limits to the ways you can use this book. The definition of what is (and is not) a research report establishes those boundaries.

In our most general use of the term, a research report is defined here as a written document that gives the history of a research study from start to finish. The particular characteristics of the history provided in a report vary with the kind of inquiry involved and with the conventions for writing that have evolved for investigators working in that area of scholarship.

Any attempt to give a more specific definition of a research report, in a way that takes into account all of the individual variations required by each kind of research, would fill many pages and would probably be unreadable. In contrast, a definition such as the one in the preceding paragraph, which was written to be sufficiently generic to cover all traditions of inquiry without being explicit about the unique characteristics of any one of them, ends up seeming bland, imprecise, and not very informative.

Nevertheless, we had to have a working definition in hand as we began work on this book. In the end, we found that what worked best for us was a middle-ground definition. As you might expect, such a definition would

not be completely satisfactory to any research specialist. It has the virtue, however, of including a large slice of the territory that is common to all forms of research reporting. If you are going to follow our arguments, understand our instructions, and consider our advice, then it is essential that you understand exactly how we answered the question "What is a research report?"

Research Reports: A Middle-Ground Definition

A research report must give a statement of the question pursued by the investigator, as well as its provenance within the research literature. In addition, it must provide a reasonably complete description of all operations performed to gather, organize, and analyze data. An account must be made of the findings in a manner that clearly reveals how the outcomes of analysis respond to the research question and, in turn, how they form the substantive basis for any conclusions, assertions, or recommendations that are made.

All of this sounds quite pedantic and stuffy. A shorter version certainly sounds less ponderous and will be easier to remember as you read. Here it is.

A research report gives the history of a study, including what the researcher wanted to find out and why it seemed worth discovering, how he or she gathered the information, and what he or she thought it all meant.

What Fits Under the Umbrella?

At this point, some of you have no doubt begun to wonder about the extent to which different kinds of research can be accommodated under the umbrella of our middle-ground definition. That question is not as trivial as it might sound on first encounter. For example, if we say that a research report is a clear, concise, and complete history, then do historical studies produce documents that qualify as research reports? More important, will using this handbook help you read and digest articles in history journals? And what about books and articles dealing with philosophic inquiry, or accounts of careful study in areas such as aesthetics and ethics? Will they be considered in these pages?

Our response to all these questions is “no”—we did not have those forms of scholarship in mind when we wrote this book. We have attended here to the kinds of quantitative and qualitative research that are empirical in nature, by which we mean inquiry that requires actually observing and recording (as data) entities, events, or relationships that appear to the investigators’ senses when they study a particular aspect of the world. Reports of inquiry that involves only thinking about the world (no matter how systematic and precise that thinking is), as distinct from inquiry that involves directly examining that world, are not the subject of this text. If you find our comments or advice helpful when reading such non-empirical reports, we will be pleased but also surprised.

About Publications

Looking back at the second paragraph of this section, you will see that the word *history*, as we use it here, simply means a reasonably complete account of what was asked, done, found, and concluded in the course of an empirical study. You still might ask, however, what was intended by our stipulation that research reports be “written documents.”

In general terms, we intended little more than might have been indicated had we stipulated that the report be published. There are, however, some important distinctions to be made among different kinds of printed sources.

First of all, there is an entire class of serial publications (periodicals) that are not a source of what we consider to be research reports. Most notably, there are numerous magazines that are designed, primarily, for the members of a particular profession or vocation: nurses, teachers, social workers, foundation executives, auditors, addiction counselors, and the like. It is not uncommon for such publications to contain articles that make extensive use of research findings to document discussions about professional practice. Such content may even provide limited descriptions of where, how, and by whom the studies were done. Finally, some of those publications use the word *journal* in their title, as in the common usage, “The American Journal of Textbook Authors.” Nevertheless, those are not research journals, their research-based articles are not the equivalent of research reports, and despite occasional exceptions to the rule, they are not a reliable place to find the material you will need to use this book.

The publications that concerned us in writing this text were those research reports that appear in what are called refereed research journals.

Such journals are the primary outlets for research in areas of professional or disciplinary scholarship. Books, monographs, conference proceedings, and a variety of periodicals do sometimes contain material that fully qualifies as original research reports, as do computer-based archival systems such as ERIC or MEDLINE.

Those sources, however, usually differ from refereed research journals in one important respect. Publications that are not refereed do not provide the author with the services of peer review or the reader with the quality assurance produced by that process. Through peer review, the manuscripts submitted to a journal are read by established scholars in the topic area and screened for quality of both the research procedures employed in the study and the history provided in the report. Although such adjudication does not guarantee the absence of errors, it does go a long way toward ensuring a minimum standard of quality for what appears in a journal.

Furthermore, feedback from peer reviews often allows the author to revise and resubmit the report. The opportunity to use criticisms and suggestions made by competent peers as the basis for revisions can produce improvements that bring a manuscript up to the journal's qualitative standard and lead to subsequent publication. Through this process, peer review again works to the advantage of both author and reader.

When we prepared this handbook, the peer-reviewed research reports that appear in refereed research periodicals were uppermost in our minds. Accordingly, although this text might help you read and comprehend any research report, including those found in other print or electronic sources, those were not the "written documents" we had in mind. More to the point, some of the procedures and recommendations in this guide are specific to the nature and format of reports found in refereed research journals, and they might have little utility with other kinds of documents.

The notable exceptions to our focus on refereed journals are government reports containing full accounts of empirical studies that were funded with public money, and books or monographs (particularly in the areas of social science) that report studies which the investigator chose not to publish in a periodical outlet. Such items may or may not have benefitted from peer review, and a thorough description of such processes may not be provided. Accordingly, although such documents may have an important place in scholarly literature, it is our advice that for the present purpose you stick with the sources that will be reliably appropriate and readily available—refereed research journals in the field of your interest.

Criteria Characteristics: What Has to Be in a Report?

To close this brief section, we want to return to our middle-ground definition and parse it in a way that might help you to begin recognizing the essential elements in all genuine research reports. We do so with a reminder that different research traditions have different orderings and emphases for the elements, as well as different terminologies.

The characteristics present in most research reports are as follows:

1. Research reports contain a clear statement of the question or problem that the investigator addressed and that guided decisions about method of inquiry throughout the study. Most commonly, the question or problem was defined prior to data collection. However, when the question or problem was defined during the course of the study, its source and development are fully explicated.
2. To the extent possible, research reports situate the purpose of the study, and the research questions employed in designing the study, in the existing body of knowledge.
3. In many reports (though not all), the investigator explains the set of theoretical assumptions with which the research question and consequent data were framed (and understood) and upon which the analysis and conclusions were based.
4. Research reports describe data collection procedures that were planned in advance (although, in some cases, they might have been modified in the course of the study).
5. Research reports offer detailed evidence that the observations and recording of data were executed with a concern for accuracy and that the level of precision was appropriate to the demands of the research question.
6. Research reports demonstrate that the quality of data was a central concern during the study. Such reports confirm the quality of data by providing information about the reliability and validity of measurement procedures or about other qualitative indexes related to the particular type of research involved.
7. Research reports discuss how data were organized and specify the means of analysis.
8. The results of data analysis are explicitly related to the research question or problem.

9. Conclusions concerning the findings are reported as tentative and contingent upon further investigation.
10. Conclusions, assertions, and recommendations are stated in ways that make the limitations of the study clear and that identify rival ways of accounting for the findings.
11. Research reports are made available for review by competent peers who have experience and expertise in the area of the study. (This final characteristic is not found in the reports themselves but in the processing of them by the journal's editorial staff and their protocols for review.)

These 11 elements provide an overview of the characteristics of most of the reports that we have defined as research. One of the objectives of this text is to help you learn how to quickly identify whether or not all 11 characteristics are present in a document—that is, whether or not you are reading a genuine research report.

The skill of identifying a genuine research report is important because, as you can imagine, there is a great deal of published material about research studies, research findings, research as an enterprise, practical implications of research-based knowledge, and even research that does not qualify as a research report. Included among those materials are most articles in newspapers and popular magazines, the majority of articles in professional journals, and even the content of most research-based college textbooks.

We make this point not to disparage any of these forms of communication. They can be serious, accurate, insightful, and even important contributions to discourse about particular scientific issues. They are not, however, research reports, and that is not a trivial distinction for our purposes or for yours.

To make the distinction clear, we remind you that research reviews that appear in scholarly journals are usually subject to full peer review, yet they are not, in themselves, research reports—although they might be of enormous value both to people who want to make use of research and to active researchers themselves. In other words, some very serious writing about research topics is not contained in research reports.

For this book, we generally ignored that latter genre of research-related publication. The single exception is the one used in the illustration above—the research review. Because research reviews are such a powerful adjunct to the reading and use of individual reports, we have devoted Part IV to our advice on reading and making use of research reviews.

In some fields, it is common to encounter printed materials (and sometimes entire publications) that represent borderline cases. The content of such items clearly meets some of the criteria for a true research report but just as clearly does not meet others. In almost any area in which you are searching for facts and useful ideas, you will encounter examples of such mixed cases. The most common form is a brief description of a study, with particular reference to the findings, reported (often at some length) as part of a discussion of some issue or problem.

Even though this handbook does not attend directly to such items, it should help you read and think about them, particularly with regard to how much credibility you are willing to award them, given what they do not include. Although all sorts of research-based publications can be useful in the search for ideas, their credibility among serious scholars often is low, and for good reasons. Incomplete reports do not allow us to judge the adequacy of the methods used in the study and, thereby, the credibility of any conclusions derived.

In a similar vein, your own confidence in the assertions made in such publications should be tempered by the grains of salt with which you must season what you learn. Accounts that have only some, but not all, of the vital elements present in true reports give you a selected version of history. Often, you really need to know the rest of the story.

Having now raised the matter of your confidence in the content of a research report, it is appropriate to address that issue head on. How can you tell whether a given report is a trustworthy source of information? In fact, it is not improper to raise an even deeper question. Are there compelling reasons to believe that the research enterprise itself is, by any aspect of its nature, worthy of our confidence? In one sense, this book is our response to that question. For the immediate purpose, however, you need a more utilitarian answer, so in the next chapter we turn to an examination of the sources of credibility in research reports.

