Your first task is to describe your problem in terms so enticing as to make the reviewer eager to examine the rest of your proposal. This job falls especially to the introduction and initial problem statement, but is shared with two other sections described in this chapter, the literature review and the questions, hypotheses, and models sections. The introductory section typically develops understanding of the problem by describing its significance in relation to the large, important problems already of concern to the reviewer and by showing the problem in the perspective of the field in which it is embedded.

This leads into a section on related research (the literature review), which further develops problem understanding and appreciation by showing specifi-
cally how the problem is solidly grounded in the previous work of the field and how this project will take a significant step beyond what has already been done.

This makes it possible at the end of the literature review for the problem to be restated in a more precise and detailed fashion with greater understanding. And from that problem statement are teased the research questions, hypotheses of the project, or, if enough is known of the causal factors, a model of how the phenomenon occurs. These are stated in such a way that their translation into project procedure, the topic of the next chapter, is natural and easy.

But first, there is the matter of choosing a topic, a matter that could consume the rest of the book. Instead, we begin the chapter by noting one of the most difficult aspects of selecting a research topic—balancing the trade-offs between the importance of the problem chosen and the feasibility of effectively addressing it.

THE PROBLEM OF THE PROBLEM

The problem of balancing problem importance with dissertation is nicely illustrated in Kathy Beissner’s proposal.

The topic in the dissertation proposal by Kathy Beissner, which is reproduced beginning in chapter 12, is a study of the Effectiveness of Concept Mapping in Improving Problem Solving. In many ways, her choice of this topic is typical of the way such dissertation decisions are made. Undoubtedly, Kathy had a personal interest in this topic, an “itch to scratch.” Since the improvement of problem solving is central to the work she does as a trainer of physical therapists, why not tackle it in her doctoral dissertation? One must give her credit for undertaking a difficult problem central to her work. Further, where researchers so often work on abstract problems primarily of interest to other researchers, Kathy’s problem is for those on the therapist-training front line.

Now comes the “but.” An individual’s problem-solving skill is developed over a lifetime; in the case of Kathy’s students, over the past eighteen to nineteen years. Her intervention, by the constraints on her own time and resources, must be comparatively small. Eisner (1984) noted that the length of the experimental interventions reported in the 1981 American Educational Research Journal averaged only seventy-two minutes. We might expect Kathy’s intervention to be of similar length or perhaps a bit longer. But this is an infinitesimally small amount of time in comparison with that involved in the habits built into problem solving over years of school. From just the title, we don’t yet know the length or the exact nature of the intervention. But Kathy has already set the problem in such a broad context—a common tendency for graduate students—that it presents difficulties in designing a study sufficiently sensitive to show any effect at all, let alone one that would have any practical significance in training physical therapists.

Kathy’s choice reflects the trade-offs both the graduate student and her faculty face: how does she define a topic with enough “bite” to be satisfying and interesting, to be more than an exercise by having practical ramifications, to keep within the scope of her own skills and resources, and to avoid areas where even top researchers have not yet found a satisfactory approach? Kathy has chosen to err on the side of possible practical significance—assuming that even a small intervention effect could later be developed into something worthwhile. Her faculty chair and committee, in approving this proposal, apparently decided they could live with this choice as well.

Each doctoral student must balance these trade-offs: finding a problem within his competencies with a reasonable and feasible approach, yet significant enough that he is not just content to work on it, but sufficiently committed to follow it through to the end. Then he must convince his committee of this choice as well. As we noted earlier, if you are still uncertain about your dissertation topic, consult appropriate readings, such as chapter 5, “Finding a Problem,” in Krathwohl (1998/2004). Use Worksheet 4.1: Characteristics of a Good Dissertation Topic at the end of this chapter to review how strong your current topic is.

PROBLEM STATEMENT

First impressions are important! The sentences with which you open suggest to the reader whether this proposal will be creative and interesting or just routine. Come back after you have a complete draft and rework your opening so that it invites the reviewer to read further. Because your initial problem description is so important, we provide the following eight guidelines to help you create a focused and effective opening statement.

Show the problem’s importance. The opening statement should convince the reviewer that the project is important. For example:

Just as overseas adaptations of the United States’ social-psychological discoveries have contributed to their industrial success, so our failure to use that knowledge has compounded our problems in competing with foreign goods. This project seeks modifications in the use of this knowledge that will be effective in our culture. The reason I think this is possible is . . .

or

A universal problem at federal, state, and local levels is ensuring that funds intended for a program are used to enhance it rather than merely substituted for program funds already allocated. Accountants are extremely resourceful at moving money around to defeat legislative provisions intended to ensure enhancement. This project will search for successful legislative practices, both here and abroad, that accountants haven’t been able to defeat.

Contrast these brief examples with the opening statements in Warters’s paragraph 1 in chapter 11, which gets to the problem in the third sentence. But
even Warters could be sharpened; consider this alternative first sentence: “If therapists who treat men who batter their wives view their problem differently from the batters themselves, clearly the effectiveness of treatment is likely to be affected.”

**Show the problem in the perspective of the larger field in which it is embedded.** Management practices as a part of our lagging in international economic competition, accounting procedures as a facet of making government intervention effective. Warters does this in his tenth paragraph.

**Show the problem’s generality.** Although the dissertation’s place in the graduate program has become that of a learning experience, it was originally conceived that it should be a contribution to knowledge. And many dissertations still are. If you think yours is or could be, indicate the generality of the problem and the generalizability of the research. A good way of doing this is to point to the project’s contribution to theory and to knowledge of the phenomenon. Indicate how the project builds on previous theory or contributes new aspects. Relate it to the large, important problems of the field. If you can, describe the value of some concrete applications of the knowledge as well as the potential importance of these applications.

Note, however, that a generalizable project does not necessarily require a national sample. The sample’s characteristics must be known, however, in order to show how and to whom the findings might be transferred. Similarly, the research situation must have enough characteristics in common with other situations that locations to which the findings might transfer can be recognized.

Look at Warters’ statement of significance beginning with paragraph 2 as an example of how one embeds the problem in a larger context and shows the generality of the problem.

**Limit the problem.** Learning to focus a study is a skill. Novices often believe that only by encompassing large pieces of a problem can they avoid triviality. Doctoral dissertation proposals are often rejected three or four times as the project is successively reduced in scope; yet it is only by focusing on the manageable, on the critically important aspects of problems, that progress can be made.

**Don’t dwell on the obvious.** One of us recently read a proposal that used its first eight pages to convince the reader that research in the field was necessary. If the reader were not already aware of this, he would not have been asked to be a reviewer or should not have agreed to be when asked. Assume your reader’s interest in research in the area.

**Find the balance between completeness and brevity.** Some researchers are too brief, taking too much for granted concerning the reviewer’s knowledge of the topic (e.g., knowledge of the job market for technicians in a technician employment survey). Conversely, one may make this initial problem statement extra long on the assumption that if one sells the reviewer on the importance of the project, flaws in the remainder of the proposal may be overlooked in order to get something going in this field—that isn’t likely. In this section of the proposal, as in several others, find the balance between completeness and brevity; adjust the length of this section to correspond to the way the rest of the proposal is developed.

**Give the reader perspective on the whole proposal.** Include a two- or three-sentence sketch of the approach you are planning to use. Also, briefly point out the merit of this approach. Foreshadowing what is to come can be used throughout the proposal to good effect, serving to integrate it. In this and other sections that tend to be lengthy and unbroken by headings or subsections, it is especially important to help the reviewer find a succinct statement that summarizes the points being made. Underlining and paragraphing are especially useful.

Here again, take a look at the first paragraph of Warters’s proposal, chapter 11.

**Set the frame of reference.** The problem section establishes the frame of reference and the set of expectations that the reviewer will carry throughout the proposal; be sure they are the correct ones. Unfamiliar terms or words used in unusual ways may cause problems. If such terms cannot be avoided, work their definitions into the presentation early and prominently so that the reader learns them.

**RELATED RESEARCH**

The related research section of the proposal builds further understanding of the problem by showing that the proposal is solidly anchored in past work yet moves beyond that work in important ways. It is an excellent place for you to give an indication of your scholarly competence. Writing this section well is a sign of professional maturity. It indicates your grasp of the field and your methodological sophistication in critiquing others’ research. It shows the breadth and depth of your reading.

Qualitative and emergent dissertations may differ in the way they handle the literature review from what is described below, particularly if they are oriented toward “It is best not to be influenced by the past literature until I know what is of significance in the situation I want to study.” Those of you adopting this point of view will still find this section of value, since you will do a review of the literature during the dissertation research, if not for the proposal. Discussion of qualitative proposals and the place of the literature review in them are included in chapter 7.
What to Include

No project starts de novo. The extent to which the researcher builds the project upon what has already been done shows command of the current state of the field and the extent to which the proposed project moves the field ahead in some significant manner. Some section of the proposal should, therefore, deal with how the project contributes to this forward movement. The section on related research provides such an opportunity.

In writing this section you should:

- survey a select group of studies that provide a foundation for the proposed project,
- discuss these studies in detail sufficient to provide an understanding of their relevance,
- describe how they contribute to this study, and
- indicate how this study moves beyond them.

Beissner’s literature review, paragraphs 19 and 20, is an example of citing apparently relevant literature, but then she doesn’t make the connection to her study. This is a common error.

Obviously, the review should encompass the best and most recent literature in both content and method: an outdated review hardly adds to the impression of scholarliness. Similarly, dependence on secondary sources such as other literature reviews may be appropriate, but the scholar must review key pieces of the original literature herself. Work in your original findings from the basic literature to indicate this.

In discussing studies, point out their technical and methodological flaws and show how these pitfalls will be avoided in your work. State whether the authors correctly interpreted the findings of their studies and how their findings impact your study.

If there is a theoretical base for your study, be sure to discuss it here. Science is a systematically accumulated body of knowledge. Theories interrelate individual findings and permit greater generalization. This section is an excellent place to convey your grasp of how theory is currently being developed and tested in your area and to critique the solidity of the structure being erected.

See Warters’s section on theoretical issues beginning with paragraph 26 as an example.

Be highly selective in this section, citing only those studies that form the base from which your study is building. More is not necessarily better. The most common error is including too many references and doing too little with them. Proposals are often submitted with lengthy bibliographies on the research topic rather than selected references that relate directly to the proposal. Such a comprehensive list does little to convince the reader that the researcher has any skills other than the ability to use an index.

It is what you do with the references that is the basis for judging this section. The skill shown in selection, the technical competence used in evaluating contributions, and, above all, the originality displayed in realistically and constructively synthesizing the conceptual bases of past and proposed work are what will impress readers.

Don’t give up and say that the literature is too large to summarize easily; this is another point in the proposal where you must find the balance between the extremes of being too broad and too narrow.

Except for studies you are sure your readers will be familiar with, summarize the pertinent information needed to understand the study’s contribution to the work being proposed. Do not expect readers to go to the library to look up references.

Warters’s paragraph 6 is an example of citing relevant material but not going far enough with it nor showing its relevance to the study.

Become aware of relevant literature from disciplines other than your own. It is surprising how often researchers who could benefit from learning what each other is doing proceed on parallel tracks in different fields completely unaware of each other’s work. Review research in related disciplines using bibliographic sources that extend broadly, such as the Social Science Citation Index. Discuss your proposal with colleagues from other disciplines. Use of colleagues in other fields alerts you not only to relevant literature, but also to the jargon these fields use to discuss your problem, thus helping you use journal indexes much more successfully.

If possible, include studies currently under way that are likely to overlap your project. Knowing what is currently being investigated in one’s field is another sign of competence. Show how your project differs from such studies and/or meshes with them in a constructive way. The various government agencies have set up Web sites (you can access them from http://www.firstgov.gov [accessed September 29, 2004]) on the Internet and usually post newly funded projects there. The Chronicle of Philanthropy Web site (http://www.philanthropy.com [accessed September 29, 2004]) also lists grants by foundations and individuals and is searchable.

Sometimes the literature review section is an afterthought. After the “fresh, new idea” has been developed into a project, one may go to the library to complete the sole remaining section—related research. Such a practice makes it difficult to reconcile past research with the “new” project. If past studies are taken into account during the planning stage, the project is much stronger.

Being human, researchers naturally want their ideas to be their own, to
claim them as original, unrelated to what others have done. However, research programs cannot go on "rediscovering America" to satisfy the egos of individual investigators. All too often readers will encounter the statement that this is a "new idea" and that "nothing has been written" that bears on the problem. This is a red flag! Your chairperson and committee members know that few projects start from scratch, and they know how often the "wheel has been reinvented" by someone who did not do the proper background research. They are likely to feel challenged to search their memories for relevant studies. If they find some, they may be inclined to question the thoroughness of your scholarship and, perhaps, your technical competence as an investigator. Therefore, if you state that "no research bearing on the problem exists," cite the closest research you found and show how it falls short. Also indicate under what headings and in which references checks were made.

Although various fields have their own conventions, most use the *Publication Manual of the American Psychological Association* (2001) format of author and date of publication in parenthesis—for example, (Smith, 1981)—to identify reference sources in the text. That is the method used in this book. Accompany it with an alphabetical list of the references. In contrast to numbering the references, this saves flipping pages back and forth to see who was referred to. Reference list format should also follow the format used in your field. Again, this book uses the *Publication Manual of the American Psychological Association* format (American Psychological Association, 2001; also see http://www.psywww.com/resource/apacrib.htm [accessed September 29, 2004]).

If you refer to an obscure or difficult to obtain reference that is very important to your argument or research method, it may be helpful to your chairperson and committee to supply copies in an appendix.

SEARCH STRATEGIES AND INFORMATION SOURCES

Figure 4.1 is a diagram that summarizes the information sources that are discussed below. Refer to it to see where you are in your literature search and to suggest sources not yet used.

Cooper (1998) is an excellent updated compendium of the earlier very thorough reference on the skills of literature search in the third section of Cooper and Hedges (1994). In the latter, White (1994) discusses the use of reference indexes and abstracts, and M. L. Rosenthal (1994) covers how to find fugitive literature.

Use of the Internet and World Wide Web

The Internet has changed searching forever and is likely one of the first sources to which the computer literate student turns. Using search engines (browsers such as Microsoft Explorer, Netscape, Safari, or Opera), you can use key terms to search for relevant material on such postings as faculty and methodology
they do that may result in different responses for the same query from unlike search engines. These differences arise primarily from three sources:

1. **The interface provided you to describe your query.** Engines may interpret the same query differently and/or use unique codes for advanced searches. Soople provides an interface for Google.com that makes it easier to access some of Google's advanced features (http://www.soople.com [accessed September 29, 2004]).

2. **Their use of different indexes.** Some use proprietary software to create their index; some contract for one. Indexes differ in what sites they index and what they harvest from each site. Boardreader.com, for instance, indexes only message boards on the Web. A number of such specialty search engines exist; see http://www.searchenginewatch.com/links/article.php/2156351 (accessed September 29, 2004).

3. **The proprietary software used to evaluate matches, rank, and present responses.** Even search engines using the same index may present different responses depending on their selection, ranking, and presentation procedures.

Clearly, with queries for which there may be more than one recognizably right answer, consult multiple search engines or use a metasearch engine like Vivisimo.com. Learn to use special search features (called "advanced searches" in some; go to http://www.searchenginewatch.com/facts [accessed September 29, 2004] and see "Power Searching for Anyone"). Type "search engine reviews" into a search engine to learn about new ones, to learn what a particular one does, or to find comparative reviews. One-click access to a variety of specialized information sources is available at http://www.extremesearcher.com/ [accessed September 29, 2004].

**Research Strategies Before the Internet**

The Internet is useful, but suffices in only rare cases because some of the best indexing and abstracting services are proprietary. The traditionally used sources are still needed, though most can now be accessed through the Internet. According to White (1994, where he cites Cooper, 1985, 1987, 1989; and Wilson, 1992), here are the strategies experienced authors found most useful and widely used in searches before the advent of the Internet:

- consultation,
- traditional indexing and abstracting services, and
- "footnote chasing" (tracking down the cited references in articles on the topic of interest)

Browsing through library shelves and citation indexes were more helpful but less widely used.

**Consultation**

Cooper (1985) had reviewers rate sources for their centrality (significance or centrality of references found) and utility (number of references yielded). When one combines these two ratings, the most helpful, widely used strategy involved consulting others: persons who regularly share information with you, contacts at conventions and with other students (highest combined utility and centrality), and formal requests to those active in the field. White (1994) quotes a noted author on scientific communication: "If you have to search the literature before undertaking research, you are not the person to do the research" (p. 48). That is much, much too strong, but his point, as White notes, is "you may read to get to a research front, but you cannot stay there waiting for new publications to appear you should be in personal communication with the creators of the literature and other key informants" (White, 1994).

Once you have located who these persons are, you can contact them through phone, e-mail, or correspondence. You may find contacting information in the directories of professional organizations. Many of them are available online. Such individuals will almost always be willing to send you references, possibly reprints of prior publications, and usually new manuscripts (return the favor for the latter by sending them helpful comments).

As White (1994) notes, in consultations, one is searching the bibliographies in persons' heads. That means you are tapping into their information network, as wide or limited as that may be. Experienced researchers quickly learn who is working in their field, and they tend to communicate with them and be influenced by them (what is called the "invisible college," those in regular communication in a field). Thus, all may come to use similar references and be familiar with roughly the same literature. You need to be aware of this limitation when using consultation and, if possible, also tap those who lie on the periphery or in related fields as well.

**Indexing and Abstracting Services**

The next most useful strategy that Cooper (1998) identified was a hand or computer search of indexing and abstracting services such as ERIC, Psychological Abstracts, Sociological Abstracts, Social Science Citation Index, and the other citation indexes. Traditional abstracting services were widely used, but citation indexing, though it had a higher combined rating of utility and centrality, was used by only a quarter as many of the reviewers. Old habits die hard, but you, as the new generation, need not be bound by them. Citation indexing is discussed further below.

Abstracting and indexing services are currently largely limited to the journal literature, although PsychINFO has a separate service that indexes chapters
in edited books. An advantage of these services is that their collections are inclusive of everything in the journals they regularly cover. One is not limited by the subscriptions of a library. M. L. Rosenthal’s (1994) chapter on fugitive literature lists a number of sources of conference proceedings (pp. 90–91). Many university libraries subscribe to the online versions of various abstracting and indexing services, making them available with passwords to their faculty and students. PsychINFO is available on the Internet to anyone for a fee. Alternatively, it is easy to search a wide variety of indexes on compact disc at university libraries, including the heavily used PsychINFO (Psychological Abstracts), Sociofile (Sociological Abstracts), and Social Science Citation Index. Note, especially, that you can search these abstracts for not only terms that would typically appear in an index, but also, in PsychINFO and Sociofile, much rarer ones that would usually appear only in an abstract. (In Social Science, the words would have to appear in a title.) For example, this allows you to find studies that employ certain methodology, software, or equipment where that fact might be abstracted but not typically indexed.

**Browsing the Library Shelves**

Although used by only a quarter of the reviewers in Cooper’s study, browsing the library shelves had a higher combined rating than any of the above! The usefulness of browsing depends: (1) whether you are working so close to the research frontier that the research has not yet had time to get into the books, or the literature is still mainly in journals, and (2) whether books on your topic are located together on the shelves or spread all over the collection. When they are scattered, inefficient use of time is added to the already present luck-of-the-draw character of browsing—much search time results in only a few “hits.”

As with consultation, the particular library collection you are browsing represents the selections of a particular librarian and/or faculty. Depending on the arrangements your library has with others, and/or your skill in attaining access on the Internet, you can browse by Library of Congress catalog number in the online catalogs of some of the best research libraries in the country. Books not in your institution’s library then may be available via interlibrary loan.

**Citation Indexing**

Citation indexes result from copying all the references cited in each article of the journals covered and merging them into a single list ordered alphabetically by the person cited. Thus, if you look up an author and title of an article in the citation index, you can find the journal articles that included it in their references. Then, in the same set of volumes, by looking up the citing article’s author in what is called the “source index,” you can see all the references the author cited in that article. From those and the title, you can usually discern if it is an article worth pursuing.

Using citation indexing, you can find who has built on a given article, since in doing so they will cite it. You can therefore trace the development of ideas forward in time. This is something, at best, only imperfectly done by subject indexing. Starting with some of the pioneering or recently important papers in your topic of interest, you can find who has developed those ideas to create new work in the same area.

Though used by about only 9 percent of searchers (Cooper, 1985), the citation index is an especially valuable tool, since it is likely to retrieve items not found by other search methods. Citation referencing is independent of the language used in an article. Therefore, unusual terminology, the terminology of another field, or inadvertent omission by indexers can be corrected by the links the author made to other articles. Such referencing reflects the greater expertise of the author than the indexer. Further, because of the multidisciplinary nature of citation indexes, references are more likely to cross academic lines.

Published by the Institute for Scientific Information (ISI), Inc., the Science Citation Index thoroughly covers the current literature in more than one hundred fields of science and technology. The Social Science Citation Index covers the social and behavioral sciences literature thoroughly and broadly from 1980 on. In 1977, the Arts and Humanities Citation Index began as well. Among the three of them, they cover most of the journal literature one would be interested in searching. Since current articles refer to past work, the significant past literature rapidly becomes mapped as well.

**Staying Abreast of Current Literature**

There is an easy way to find what one should read to stay abreast of developments in one’s field, especially if it is spread across a variety of journals. Also published by ISI, Current Contents: Social and Behavioral Sciences collects and indexes the most recent tables of contents from the major journals in the behavioral sciences. It is available online to subscribers and in CD-ROM format.

**Obtaining journal Articles not Locally Available**

Sometimes your library may not have a journal article, paper, etc., that is needed for your research. First, try your interlibrary loan office. Alternatively, or if you are in a hurry, use ISI Document Solution. Order from the Internet at http://www.isinet.com/products/docdelivery/ids/ (accessed September 29, 2004). There is a significant fee. Delivery is prompt and can be made by fax. Articles in journals published by the American Psychological Association are available from their Full-Text Document Delivery Service. Their Web site has a list of services that may be able to locate articles not published by the association (see http://www.apa.org/psycinfo/about/fulltext.html [accessed September 29, 2004]).
Relevant Information Sources Appropriate to SUCCESSIVELY SPECIFIC STAGES OF PROBLEM DEFINITION

Table 4.1 suggests different starting points depending on where you are in the conceptualization of your problem. It suggests appropriate reference sources, some or all of which you may consult, as your problem develops.

A useful source for additional reading on literature searching is Reed and Baxter (2003).

SAVE STEPS AND TIME WITH YOUR COMPUTER—AN EXAMPLE

Susan was interested in the impact of cognitive styles on online instruction. For her literature search, she thought of using one of the search engines like AltaVista.com on the Internet from her home computer. “Cognitive styles” yielded too many responses that were irrelevant, and she wasn’t sure how to refine her search. She had heard the name of a professor who might have written in the area, but could only guess at how to spell his name. She typed in her approximation of it using a wildcard, the asterisk (*), to substitute for the letters she wasn’t sure of (some search engines use a question mark) but was unable to find a lead.

Her library, however, made a large number of databases available to its students through its subscription to OCLC FirstSearch (a database is a compilation of information; in this case, the databases were indexing and abstracting services [e.g., Sociological Abstracts], statistical facts, texts of journal articles, etc.). So she tapped into it from home, using her student number and name to gain access, and found that it included PsychINFO, an abstracting journal that has followed the psychological literature since 1894. Searching its database, she turned up a number of relevant articles. One, a dissertation, she could order from her library’s interlibrary loan office on its Web site.

She had noticed that there was an entry that read “More like this” on the First Search record of the dissertation. Clicking on it opened a form where she could refine her search by checking several of the search terms offered. This led her to a number of new journal articles. Now that she knew the best search terms, she tried the meta search engine DogPile.com that queries several search engines at once. Where a query required more than one term to describe what she was interested in (e.g., qualitative analysis), she placed plus signs between them (e.g., qualitative+analysis). She turned up a number of relevant sites to check. When she found relevant references on the sites, she entered the references (or, in the case of library entries, downloaded) the entries into bibliographic software. The software would format them into proper APA or MLA format and save her a lot of time.

Susan noticed that one faculty member’s work at another institution was particularly relevant. She put his name in Google.com, found his Web site, and

### Table 4.1

<table>
<thead>
<tr>
<th>Entry Points</th>
<th>Purpose</th>
<th>Sources to Consult</th>
</tr>
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<tbody>
<tr>
<td>A general problem area</td>
<td>To find the important sources of information in an area—encyclopedias, handbooks, reviews of research</td>
<td>General guides to reference books such as Guide to Reference Books (Baxley, 1998). Reference guides specific to a field like Reed and Baxter (1992). To find online sources, consult your institution’s website for the databases available to students and faculty. Try a meta search engine like <a href="http://www.vivisimo.com">www.vivisimo.com</a> (accessed 9/30/04) that clusters results and ranks the clusters to provide a view of the terrain.</td>
</tr>
<tr>
<td>A specific problem area</td>
<td>To learn what research has been done, what terminology is being used, where the frontier is, what keywords to pursue in journal literature, dissertations of others in the area</td>
<td>A library’s subject index or on-line catalog for relevant bibliographies, books and other materials (Find one centrally relevant book; try clicking on its call number to bring up the list of books shelved with this one; browse! Or do a call number search.) Compilations such as handbooks (Handbook of Research on Teaching, Handbook of Social Psychology) and research reviews (Annual Review of Anthropology, Annual Review of Psychology, Annual Review of Sociology, Review of Educational Research, Encyclopedia of Educational Research, Encyclopedia of Psychology) Most dissertations can be searched at <a href="http://www.umi.com/dissertations">www.umi.com/dissertations</a> (accessed 9/30/04); on-line dissertations are at oai.dlib.vt.edu/ -etdunion/cgi-bin/index.pl (accessed 9/30/04) Thesauri (Thesaurus of Psychological Index Terms) and the Cross-Reference Index show what terms to search.</td>
</tr>
<tr>
<td>A specific problem area</td>
<td>To find recent research, learn how terminology is changing, identify new fields related to the problem, explore current methodological approaches, determine the current frontier</td>
<td>Appropriate indexes and abstracting services, such as Psychological Abstracts and Sociological Abstracts; ERIC and its Current Index to Journals in Education (CJ)ER and Research in Education (RI); Education Index; Dissertation Abstracts International; Psychological Abstracts and Sociological Abstracts; Science Citation Index, Social Science Citation Index, and Arts and Humanities Citation Index (particularly good for searching current journals, but requires knowledge of vernacular of the time for older references)</td>
</tr>
</tbody>
</table>

**DESCRIPTION OF THE PROBLEM**

Relevant References and Reference Sources at Entry Points in the Literature Search That Are Increasingly Close to a Specified Problem.
n noting his publications. There she located a particularly useful book. Finding it
checked out in the online catalog of her library, she placed a recall on it using
the library Web site; she would be notified by e-mail when it became available.
She also checked to see what sites were linked to the faculty member’s by plac­
ing his Web site’s uniform resource locator (URL) after the word link followed
by a colon in the Google search form. This led to a list of Web sites interested
in the same things he was, some of which appeared to be relevant and could be
followed up. The URL for one site turned up a “not found” message; she
trimmed successive pieces from the complex URL (e.g., from http://www.
nova.edu/ssss/QR/Q5-1/pifer.html, she trimmed to http://www.nova.
edu/ssss/QR/ and then to http://www.nova.edu/) until she found one that
worked. From that she was able to trace where the one she sought had been
moved.

Susan noted that this author had also been an officer of an interest group
of the American Educational Research Association. From Yahoo.com she found
the association’s Web site and, in turn, the interest group’s Web site. It indicated
that the group sponsored a listserv that she could receive via e-mail. The listserv
records the free-floating conversation on topics listserv members raise for
discussion. It had an archive of the previous discussions, and she searched it
and found some interesting material on her topic. She also noted persons ac­
tively contributing to the site on her topic and checked for their Web sites and
publications. A little bashful about asking a question on the listserv, she did
e-mail one of these contributors who had no Web site, asking where his publi­
cations might be available. His e-mail address was available on the university’s
Web site under faculty and staff directories.

While Susan was at the library picking up the book, she checked the Social
Science Citation Index to see who had cited the book she was picking up and
who was citing this author’s work. She looked at the titles of these works and found
some that appeared to be building on that faculty member’s work. She also
looked at the other books on the shelf where the book she was picking up had
been shelved to see if there were other relevant materials. (Note that she also
could have done a shelf scan from home by entering the call number in the
library’s catalog search software.)

One of the difficult problems of an extensive literature search is keeping
track of interrelated points in your notes. Susan had taken a lot of notes on these
various materials, and it was time to organize them. Using a word processor’s
table function, or a spreadsheet program, she entered the notes in rows of the
table, putting the notes on a topic in one column and an easily recognized code
for the source in a second. Then assigning key words to the notes, she broke up
the notes into themes or salient points to confine those in a row to a main topic.
She described that topic with a keyword in a separate column in the row and, if
it was needed, a second keyword using another column for these secondary de­
scriptors. Using the sort function, she brought together first the rows for the

<table>
<thead>
<tr>
<th>Entry Points</th>
<th>Purpose</th>
<th>Sources to Consult</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finding research studies basic to the problem*</td>
<td>To find out which scholars followed up on this research and what they did with it</td>
<td>Citation Index of the Social Science Citation Index, Science Citation Index, and Arts and Humanities Citation Index</td>
</tr>
<tr>
<td>Latest terminology for a problem or the names of persons doing ongoing work in the area</td>
<td>To locate the most recent work in an area, including ongoing work</td>
<td>For latest published work, Current Contents: Social and Behavioral Science</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Find relevant electronic bulletin boards and forums on the Internet. Often these are sponsored by divisions or interest groups of professional organizations and can be found from the associations’ home pages. For a roster of listservs see <a href="http://www.listserv.com">www.listserv.com</a> (accessed 9/30/04) and <a href="http://www.topica.com/dir/?cid=841">www.topica.com/dir/?cid=841</a> (accessed 9/30/04). Participate in the dialogue and post requests for help.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For ongoing research, search the Internet, especially for sites listing funded projects of government agencies [e.g., <a href="http://www.firstgov.gov">www.firstgov.gov</a> (accessed 9/30/04) or specific sites if known like nsf.gov/home/abf (accessed nsf.gov/home/abf 9/30/04)]. For private funding, the Journal of Philanthropy (<a href="http://www.philanthropy.com">www.philanthropy.com</a> (accessed 9/30/04)). Convention programs of professional associations are often posted and increasingly searchable.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Write to researchers working in the area (addresses are in convention programs or in membership directories of professional societies).</td>
</tr>
</tbody>
</table>
same secondary descriptor, then sorted on the primary descriptors. This moved into successive rows notes with the same descriptors. She then considered how she might outline the material she had. This brought to her attention the areas where the notes were thin and those where they were ample. This would provide a road map guiding her further literature searching.

She could have organized the notes more elegantly using qualitative analysis software ATLASi, NVivo, NUD*, and winMAX (free downloadable demonstration software at their Web sites—locatable with a search engine—but results cannot be saved) that allow you to code notes, interrelate codes, and organize them. Di Gregorio shows how to use NVivo for the literature search (http://www.sdassoc.com/training.html look for "Using NVivo for Your Literature Search" [accessed September 30, 2004]). Some software provides a graphical depiction of the interrelation of codes. Two listings of such software are the Web sites of Content Analysis Resources (http://www.car. aa.edu [accessed September 30, 2004])—click on software—and the Computer Assisted Qualitative Data Analysis Networking Project (http://www.qualitative.com/QualPage [accessed September 30, 2004]); the latter includes hotlinks to software sites. Also listed at the first site are the increasingly sophisticated software available to computer analyze text to show its important themes; it may help you determine whether to take the time to read it.

**Quantitative Literature Summaries**

If you are researching an area where there are a number of prior quantitative studies, consider doing a quantitative literature summary. Some of the summary methods, such as tabulating pro and con studies, are relatively simple. Other methods that compute an effect size may require getting statistical help if you don't have the statistical skills.

Traditionally, literature reviews analyze the positive and negative findings of studies relevant to a proposition. But to draw an overall conclusion, the authors find it difficult to know which studies to weight most heavily—the largest, the best experimental design, the most representative sample, the most valid and reliable instruments? Rarely does each in a set of studies satisfy all these criteria, so there are difficult trade-offs to consider. Further, where the results of studies are mostly in the expected direction but were not statistically significant, should these be counted as positive evidence or, as the statistical results suggest, as merely chance aberrations? Because of these problems, most traditional reviews conclude with ambiguous generalizations that call for more research. This contributes to the impression that the social and behavioral sciences have a weak knowledge base.

Meta-analysis is a way not only of taking into account a series of near misses but also of summarizing a series of conflicting studies. Cooper and Hedges (1994) describe a variety of ways of doing quantitative summaries:

- Counting the positive, neutral, and negative results and comparing these with what would be expected by chance (Bushman, 1994). If one counts only statistical significance as positives, because so many studies have too small samples to be sufficiently sensitive to real differences, positives will likely be underrepresented and result in biased findings.
- Combining the results of individual studies into a single test of significance (Becker, 1994).
- Developing something resembling a standard score estimate of the average strength of treatment across all studies. This is called the "treatment effect size" or just "effect size" (R. Rosenthal, 1994; Fleiss, 1994; Shadish and Haddock, 1994).

When doing a meta-analytic study, it is often a good idea to show the results several ways such as comparing the effect sizes: (1) when each sample contributes only one estimate to the combined average vs. where there were multiple measures of the effect in a given study, allowing all of these to enter the combined average, (2) with and without corrections for restriction in range, and/or (3) when the best studies are separated from those poorly designed and executed.

Should you include a meta-analysis in your review? The first question to ask yourself is whether there are enough comparable quantitative studies to supply the raw data. A pilot study of the literature will provide an estimate. If the pool of studies is very large, the meta-analysis could possibly become the dissertation in and of itself.

When the task is beyond suitable proposal development effort, not suitable as the dissertation, but doable and desired, add it to the proposal as a first stage of the study and describe the magnitude of the pool of studies. Because this leaves open the impact of the meta-analysis results on the study, base the proposal on the most likely outcome of the literature search. Also, discuss likely alternative results and how they would affect the direction of the study. This serves notice to your readers that you have given this matter consideration.

Combining a meta-analysis with traditional judgments of the quality of the studies is particularly useful for small pools. Meta-analyses have their advantages, but traditional reviews can take into account the individual circumstances and problems of particular studies in a way that quantitative reviews don't. Such a proposal section provides good evidence not only that you are on top of the literature, but also that you really do understand how to write technically and judgmentally sound literature reviews—clearly, things you wish to demonstrate in this section of the proposal.

**Literature reviews can be conducted to summarize and assess knowledge in order to answer a research question. A thoughtful, comprehensive review can be, itself, an important research contribution, and may serve as the entire dis-**
servation or be published independently. Meta-analysis studies (chapter 8) are examples of such dissertations. Generally, however, the purpose of the literature review in a dissertation is not only to answer a question of what is known about a given problem, but also to support the argument using the research questions to be further investigated. In doing such a literature review, then, you will be looking for what is already known about your research problem, what methods have been used successfully (or not) to study the problem, and other resources that might support your work, such as names of key researchers, relevant instruments, existing data bases, etc. See Worksheet 4.2: Topics of Interest in Reviewing Literature for a Dissertation at the end of this chapter for a list of items to keep in mind as you review the literature for your dissertation.

QUESTIONS, HYPOTHESES, OR MODELS?

So far in the problem statement, you have described the problem in general terms, shown its importance, and set it in a larger context. In the related research section, you described what previous work has been done and alluded to how you are going to build on it, going beyond previous accomplishments, opening new territory, redoing a study a new and better way, possibly replicating a study to show the generality of its findings, and so forth. This section, which then follows, further shows the study emerging from the background of previous thinking and theory. Like every link in the chain of reasoning, this section forms a basis for judging the remainder of the proposal. It sets the stage for showing how one intends to solve or contribute to the solution of the problem set out in the first sections. Just how specific this section can be depends on what you have said in the previous sections, and what turned up in the review of literature:

- The less you have found out about the area, the more likely this section will be devoted to questions or descriptions of where to look.
- If you have some ideas about at least certain aspects, you may have hunches to test to see if they are true. This section will set forth those hunches as hypotheses.
- If you have a good idea about how things work, you may be able to construct a model of how various variables are related to each other. This section then describes the model you would like to test.

Because this section comes early in the proposal, you may still be in an expansive frame of mind and desirous of solving a problem of "major" significance. As a result, you may cast the problem more broadly than is possible to address once the procedure section is completed. Therefore, after the proposal is completed, reread it to ensure that this section flows smoothly from the preceeding problem statement, and that the next section, that on procedure, adequately encompasses all that is covered in this section.

The most frequent error made in writing this section is that it becomes a set of vague generalities rather than clear-cut criteria against which the rest of the project can be judged.

Another error is that instead of setting forth specific research objectives, they are imbedded, usually by implication rather than explicit statement, in a running description of the project. Your readers must then tease them out, trying to infer what you are implying and to place emphasis on different ones as can be "guessed" from contextual clues. Obviously, the readers' accuracy in doing this is critical. Rather than run the risk of misinterpretation, you will fare better by making the objectives clear and explicit in this section.

Descriptions of Where to Look and Questions

Questions, or descriptions of where to look and at what to look, are most appropriate where the study is an emergent one, where the research is exploratory, or where the study is seeking certain facts or descriptions. The specificity of the questions or descriptions shows how carefully the problem has been thought through and/or studied through previous research. For example, consider a study of the effects of female teachers on male students.

You would not gain the impression that the researcher has a grasp of his problem if he merely lists the question "What is the effect of the female teacher on male students?" But if the researcher poses the question "Which of these is the dominant effect of female teachers on male students?" and then follows with a list of the possible dominant effects and explanations, it is clear that he has thought through the possible alternatives and is prepared to investigate at least these particular ones.

Alternatively, the researcher, believing that previous research has not adequately compiled the important effects, may be searching for new ones. Instead of specifying questions, the proposal can present an argument as to why there are significant ones yet to be found and how they might be identified.

So, if your literature search was futile, and you have little basis for constructing hypotheses, state questions or describe areas to be explored and indicate:

- Why these are the important questions to ask or areas to be explored.
- What their potential implications are for moving your field ahead.
- Why other reasonable questions that might be asked or areas of exploration are not of interest and will not be addressed.
- What the implications of addressing and possibly answering these particular questions or exploring these areas may be.
Waters' proposal embeds the description of the goal of the study and the focus of attention in the first paragraph in the second from the last sentence: "To assist in..." instead of making it a separate statement, paragraph, or section. This works well in this particular proposal because it provides an early foreshadowing for the reader that is then amplified by statements in paragraph 5, especially in paragraphs 8 and the end of 9 where research questions are specified.

Suppose that, in order to come to your own conclusions about what is significant, as some qualitative researchers do, you are refraining from reading previous research. Then this section will mainly state questions or indicate areas on which to focus. Describe the kinds of questions or what areas will initially guide your observations or your inquiries, and why you are starting with these instead of other possibilities. If you are a "purist" about starting de novo in the situation, this will be a very short section. But as indicated in chapter 7, this gives your chair and your committee very little to go on, and you'll want to develop this section further as described there.

**Hypotheses**

You may find it helpful to phrase your objectives as hypotheses that are to be tested. If at all possible, hypotheses should be related to a theoretical base. If the theoretical base was not introduced in the previous sections, state it here, then refine and extend it to show how the study's objectives are derived from it, carefully building the bridge from theory to study so that the relation is clear. For instance, a study of the effects of a vocational education program would be strengthened if the choices that the student must make in the program were related to the developing theory that describes why and how students go through stages of vocational choice.

Hypotheses as objectives must be stated in such a way that they are testable. That is, they can be translated into the research operations that will give evidence of their truth or falsity.

The topic may be chosen because it is judged to be important, but the objectives should not themselves be stated as value judgments (e.g., "All sixth-grade boys should learn to play a musical instrument."). Research can indicate the consequences of an action (e.g., "If all sixth-grade boys play musical instruments, they will attend more concerts outside school."). But humans must judge how much value to attach to these consequences or to the extent of popular support. Hypotheses as objectives must be related to what is to be tested.

*Directional hypotheses* should be used wherever there is a basis for prediction. There will be such a basis if the study has a theoretical underpinning. State hypotheses as succinct predictions of the expected outcomes and findings rather than in the null form. For instance, say: "Students who receive the experimental treatment will have more differentiated interests than those who do not," rather than "There will be no difference in interest patterns between the experimental and control groups." The latter statement is an important part of the logic of the statistical test, but it does not belong in the objectives section and leaves an amateurish impression with experienced researchers.

One would expect hypotheses in a prespecified study such as Beissner's. There they are, in paragraph 15, in a section of their own. Further, note that they are all directional; the theoretical rationale for the study has provided a basis for predicting the direction of the outcomes.

Similarly one would expect hypotheses in the Phelan proposal, but paragraph 9 is titled "The Research Question." As one reads it, however, his hypothesis is clearly there. But, after stating it verbally, he restates it in null form and does not capture the centrality of motivation he stated earlier. Note how the null form not only adds nothing to the description, but actually detracts from the argument.

**Models**

When one is concerned with a larger picture than the relationship between two variables, and begins to look at the interrelationships among a set of variables, one is into the construction of models. Usually, these are built upon previous research. In an effort to synthesize disparate pieces of a larger picture, you construct a representation of how each variable influences and/or is influenced by other variables. Usually, this results in the construction of a diagram with arrows indicating the direction of influence. The task of the study is to provide evidence that the relationships exist, confirm the directions of influence, and estimate their size. Most such dissertation models are relatively simple; confirming complex relationships requires large-scale studies unlikely to be undertaken by graduate students.

In the literature review section of the proposal, show the basis in previous research for the proposed model. Indicate where you have gone beyond previous work and how this study contributes new knowledge to the field. Describe the model both graphically and narratively and indicate the parts of it that are well confirmed by previous research and those that are more tenuous. If there are alternative conceptualizations of the relationships, indicate them and give the basis for each. If you believe that one is more likely to be supported by the data, indicate that as well.

Since the study of models is only recently appearing in dissertations, there are no examples of such studies in this book. But linear equation modeling is increasingly an important statistical tool, as is apparent from numerous federally
ADVICE COMMON TO MOST PROPOSALS

funded behavioral studies. So modeling studies will no doubt become more common in dissertations.

As you draft and revise your proposal problem statement, it is helpful to periodically review its strong points and shortcomings. Worksheet 4.3: Characteristics of a Good Proposal Problem Statement is provided here to help you check your progress.

WORKSHEET 4.1
Characteristics of a Good Dissertation Topic

A dissertation topic is continually developed and refined as you move toward a specific study design. Briefly describe your topic below as you currently understand it, and then use the following list of criteria to see how well it measures up. You might also use this worksheet to have other researchers or your dissertation chairperson rate your topic and then offer suggestions for next steps. You will probably need to return to this worksheet several times as you reconceptualize and reshape your interests into a strong dissertation topic.

Current Topic Description:

<table>
<thead>
<tr>
<th>Review Criteria</th>
<th>Strong</th>
<th>Acceptable</th>
<th>Weak</th>
<th>Don't Know Yet</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topic Importance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevant to a larger, significant problem, not conceptually trivial.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nontrivial, not trivial.</td>
<td></td>
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<tr>
<td>Reflects a creative or novel perspective.</td>
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<tr>
<td>Has important practical implications.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has important theoretical implications.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is important methodological implications.</td>
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<tr>
<td>Is measurable within academic or professional field.</td>
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<td></td>
<td></td>
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<tr>
<td>Relevant Match</td>
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<tr>
<td>Reflects a strong personal interest.</td>
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<tr>
<td>Will promote my academic and career interests.</td>
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</tbody>
</table>

(Continued on next page)
As you review the literature, you should seek to understand more fully the nature of the problem you are investigating, how best to study it, and what relevant resources are available. The following is a checklist of items to look for as you review the literature.

<table>
<thead>
<tr>
<th>Index</th>
<th>Key References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus</td>
<td>Phenomena of interest</td>
</tr>
<tr>
<td>Theory</td>
<td>Nature, incidence, significance</td>
</tr>
<tr>
<td>Context</td>
<td>Historical, social, political, economic, geographic, psychological</td>
</tr>
<tr>
<td>Methodology</td>
<td>Variables, measurements, perspectives, methodologies</td>
</tr>
<tr>
<td>Methodology</td>
<td>Operational procedures, research design, operational definitions</td>
</tr>
<tr>
<td>Methodology</td>
<td>Research methods, theoretical concepts, empiricism, operational strategies</td>
</tr>
<tr>
<td>Methodology</td>
<td>Data collection strategies, failures, errors, shortcoming</td>
</tr>
<tr>
<td>Methodology</td>
<td>Findings, data analysis, interpretations, explanation, evidence</td>
</tr>
<tr>
<td>Methodology</td>
<td>Hypothesis, purpose of study, contributions, generalizability</td>
</tr>
<tr>
<td>Methodology</td>
<td>Questions, variables, hypotheses, models</td>
</tr>
<tr>
<td>Methodology</td>
<td>Design, design logic, inquiry methods</td>
</tr>
<tr>
<td>Methodology</td>
<td>Techniques/Procedures, field conditions, observations, controls, measures, information sources, data collection, data analysis, modes of interpretation, study management</td>
</tr>
</tbody>
</table>

(Continued on next page)
**Worksheet 4.2 (cont.)**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Key References</th>
</tr>
</thead>
<tbody>
<tr>
<td>State of the Art: successes, problems, limitations</td>
<td></td>
</tr>
<tr>
<td><strong>Dissertation Resources</strong></td>
<td></td>
</tr>
<tr>
<td>Professional Groups: associations, societies, agencies, departments,</td>
<td></td>
</tr>
<tr>
<td>institutes (pre-policy, research, method, practice)</td>
<td></td>
</tr>
<tr>
<td>Special Interest Groups: commercial firms, non-profits, advocacy groups</td>
<td></td>
</tr>
<tr>
<td>Fund Sources: foundations, private sector, government agencies</td>
<td></td>
</tr>
<tr>
<td>Key Individuals: policy makers, researchers, methodologists, national figures, local and regional experts, practitioners</td>
<td></td>
</tr>
<tr>
<td>Study Resources: data bases, instrumentation, measurement collections, hardware, software, courseware, multimedia</td>
<td></td>
</tr>
<tr>
<td>Information Sources: publishers, libraries, journals, newsletters, websites, online publications, listservs, bulletin boards, chat rooms, distribution lists</td>
<td></td>
</tr>
<tr>
<td>Skill Development Resources: courses, workshops, training materials, mentors, tutors, consultants, collaborators</td>
<td></td>
</tr>
</tbody>
</table>

**Worksheet 4.3**

**Characteristics of a Good Proposal: Problem Statement**

*How Strong Is My Proposal Problem Statement?*

Since it usually takes many iterations to produce a strong, convincing problem statement, you will want to refer to this worksheet repeatedly as you refine your proposal. For assistance with weak points that need improvement, refer back to the relevant sections of this chapter and to the annotated proposal examples in chapters 11, 12, and 13. Also consider having others review your working drafts using this worksheet.

**Current Problem Statement:**

<table>
<thead>
<tr>
<th>How Well Have I...?</th>
<th>Strong</th>
<th>Acceptable</th>
<th>Weak Improvements Needed</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Statement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Address the problem in a strong, interesting way?</td>
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<tr>
<td>Clearly stated and described the problem?</td>
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<tr>
<td>Demonstrated the problem's importance?</td>
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<tr>
<td>Shown the problem's generality?</td>
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<tr>
<td>Appropriately limited the problem's scope?</td>
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<td></td>
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</tr>
<tr>
<td>Adequately balanced completeness and brevity?</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Provided a perspective on the entire proposal?</td>
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</tr>
<tr>
<td>Set a proper frame of reference?</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Literature Review</td>
<td></td>
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</tr>
<tr>
<td>Selected the most appropriate studies to support the proposed research?</td>
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</tbody>
</table>

(Continued on next page)
The method section, which describes the procedures that will be used, translates the problem section developed in the previous chapter into project activities. This is usually the most carefully read section of the whole proposal. Up to this point, you may have told in glowing terms and appealing generalities what