# Literature Review

A research is done to enhance existing knowledge on a subject or to apply knowledge to create or improve solutions to problems. This requires a comprehensive grasp of the existing knowledge that is available in literature. Thus a researcher has to carry out and present a literature review.

- A literature review is an account of what has been published on a topic by accredited scholars and researchers. Often it is part of the introduction to an essay, research report, or thesis.
- The purpose is to convey to the reader what knowledge and ideas have been established on a topic, and what their strengths and weaknesses are. It enlarges one's knowledge about the topic . It lets one gain and demonstrate skills in two areas:

1. information seeking: the ability to scan the literature efficiently, *using manual or computerized methods*, to identify a set of useful articles and books

2. critical appraisal: the ability to apply principles of analysis to *identify unbiased and valid studies*.

• It must be defined by a guiding concept (e.g., your research objective, the problem or issue you are discussing, or your argumentative thesis). *It is not just a descriptive list of the material available, or a set of summaries.* 

Specifically, a literature review must-

- a) be organized around and related directly to research question you are developing,
- b) synthesize results into a summary of what is and is not known,
- c) identify areas of controversy in the literature ,
- d) formulate questions that need further research .

Ask yourself questions like these:

1. What is the specific thesis, problem, or research question that my literature review helps to define?

2. What type of literature review am I conducting? Am I looking at issues of theory? methodology? policy? quantitative research (e.g. on the effectiveness of a new procedure)? qualitative research (e.g., studies )?

3. What is the scope of my literature review? What types of publications am I using (e.g., journals, books, government documents, popular media)? What discipline am I working in (e.g., computer science, biology, electronics)?

4. How good was my information seeking? Has my search been wide enough to ensure I've found all the relevant material? Has it been narrow enough to exclude irrelevant material? Is the number of sources I've used appropriate for the length of my paper?

5. Have I critically analysed the literature I use? Do I follow through a set of concepts and questions, comparing items to each other in the ways they deal with them? Instead of just listing and summarizing items, do I assess them, discussing strengths and weaknesses?

6. Have I cited and discussed studies contrary to my perspective?

7. Will the reader find my literature review relevant, appropriate, and useful?

The author of each work you review does *his best*. But your goals may not exactly align with an author's, and your standards may be higher. Ask yourself questions like these about each book or article you include:

1. Has the author formulated a problem/issue?

2. Is it clearly defined? Is its significance (scope, severity, relevance) clearly established?

3. Could the problem have been approached more effectively from another perspective?

4. What is the author's research orientation (e.g., interpretive, critical science, combination)?

5. What is the author's theoretical framework (e.g., psychological, developmental, feminist)?

6. What is the relationship between the theoretical and research perspectives?

7. Has the author evaluated the literature relevant to the problem/issue? Does the author include literature taking positions she or he does not agree with?

8. In a research study, how good are the basic components of the study design (e.g., population, intervention, outcome)? How accurate and valid are the measurements? Is the analysis of the data accurate and relevant to the research question? Are the conclusions validly based upon the data and analysis?

9. In material written for a popular readership, does the author use appeals to emotion, one-sided examples, or rhetorically-charged language and tone? Is there an objective basis to the reasoning, or it the author merely approving what he or she already believes?

10. How does the author structure the argument? Can you "deconstruct" the flow of the argument to see whether or where it breaks down logically (e.g., in establishing cause-effect relationships)?

11. In what ways does this book or article contribute to our understanding of the problem under study, and in what ways is it useful for practice? What are the strengths and limitations?

12. How does this book or article relate to the specific thesis or question I am developing?

Do not begin every paragraph of the literature review with the name of a researcher. Instead, organize it into sections that present themes or identify trends, including relevant theory. You are not trying to list all the material published, but to synthesize and evaluate it according to the guiding concept of your thesis or research question.

On the other hand, in an annotated bibliography, you may need to summarize each item briefly, but should still follow through themes and concepts and do some critical assessment of material. Use an overall introduction and conclusion to state the scope of your coverage and to formulate the question, problem, or concept your chosen material illuminates. Usually you may group items into sections—this helps you indicate comparisons and relationships. You may be able to write a paragraph or so to introduce the focus of each section.

#### Literature Sources

### USING LIBRARIES AND OTHER INFORMATION SOURCES

This is a period of information power. From note taking to literature searching and from data collection to data analysis, automation technology now accelerates research while encouraging both more comprehensiveness and more precision in the T/D enterprise.

Central Role of the Librarian and the Library

Because of technological advances, public and campus libraries have more material available than ever before. A library is still a place, to be sure, but it now has the capability to provide the user with the resources of many other libraries in addition to its own. Moreover, the user has access to that vastly enlarged store of material with almost incredible ease and speed (King, 2000; Rice, 1989; Sherman, 1999).

For example, UMI's Digital Dissertation contains citations and abstracts of 1.5 million dissertations and theses. The database includes theses and dissertations from the first U.S. dissertation (1861) to the most recent. Those published from 1980 include an author-written abstract and are available free to university academic libraries (e.g., the University of Pittsburgh, www.library.pitt.edu). For most dissertations, beginning in 1995, full-text dissertations are available in PDF (portable document format) computer file format. Search screens lead to advanced search strategies. Each record can be searched by author, key word, and title (for example, a title search will examine all dissertations that have a selected word in them, such as feminism). Terms can be combined to create a new search using Boolean operators. Once you find useful information, you can print the abstract, download the complete document in some cases, and in other cases print a 24-page preview of the dissertation. You can also mark the citation list of dissertations for later printing, downloading, or sending an E-mail.

Similarly, there are databases of E-books in academic libraries. Again, using the University of Pittsburgh library system as an example, the system offers Web access to thousands of E-books through netLibrary, a virtual lending library accessible through the Internet. These E-books are published references books, textbooks, and monographs that have been converted into digital form. They can be searched as you would search any other materials in the library on-line catalog.

Successful students learn quickly how to use help from librarians and how to use their own computers independently and to operate from distant workstations to make the most of library resources. Here are the most important guidelines:

1. Ask for information and help. Inquire about on-line or compact disk databases related to the topic(s) of interest to you and find out how you can access them, independently, if possible. As an example, find out if FirstSearch can be made available to you since it has many databases, is adding to them, is relatively inexpensive, and is considered to be user friendly. There are other good ones, too.

2. Become fully acquainted with the library and the roles of the various librarians, many of whom are specialists. If you wish, they will assist you in learning to maximize your skill in using catalogs and periodical indexes; they will advise you on search methodology; they will introduce you to the world of computer-assisted literature searching; and they will guide you to special collections. Also, librarians understand disabled student needs and services. These are but a few of the multifaceted capabilities of professional librarians, but they illustrate that they are powerful allies in the research process.

3. Most modern information technology can be utilized from home or office with a five-component microcomputer workstation: computer, keyboard, monitor, printer, and modem. Such a basic station allows one to capture and store the products of a search session for personal use by downloading to your own disk. Subsequently, the references can be recast into any of the common bibliographic citation forms using commercially available programs (Rice, 1989). Several programs are available (for example, End-Note, Reference Manager, ProCite) to help you do the citations according to the reference guide you select. They also help with endnotes, reference notes, and the proper way of citing material in text. Trial versions of such programs are available at the ISI Researchsoft home page (http://www.isiresearchsoft.com/).

In summary, recognize each librarian as a highly qualified information specialist as well as a very valuable resource person with respect to the complex and involved operations of academic and professional libraries. Seek the aid of librarians on a one-to-one basis to further your skills. Remember that it is more important that your library affords you access to a source than that your library owns the source. And, become skilled at accessing your own campus library via computer because that skill can be readily leveraged into access to the other major library holdings of the nation.

**Exercise:** Visit the University library and find out the following-

- 1. List of print journals in your area available and since when.
- 2. Online journals/pulications that are accessible.
- 3. Photocopying and other services that are available. Is taking photographs of articles permitted.
- 4. Persons who may be contacted for assistance and ways of contacting.

## Computer Search Services

The university reference librarian is an excellent initial contact. Be ready to say what your purpose is, what field you want to explore, and how you expect to use the information. There are powerful general search engines to help research a topic. Among the most common are AltaVista (http://www.altavista.com/), Lycos (http://www.lycos.com/), Google (http://www.google.com), and Dialog (http://www.dialog.com/). Libraries have access to hundreds of databases, and growth and technical improvement are very fast paced in library information storage and retrieval. Therefore, the student ought to stay in close consultation with reference librarians, the on-campus experts in how best to use the current and emerging tools.

Six Steps for the Student in Database Searches

In the section above on the role of the library and the librarian, we urged students to acquire key library skills and personal computer (PC) competencies. Now, those capabilities must be extended and put to practical use (York et al., 1988).

1. To search a database efficiently, one must have a topic, or at least a topic area, in mind. To get ready, it is best to examine some current articles bearing on the topic area under consideration. List key words and phrases, as well as their synonyms, to describe each of the concepts in the topic. It might be helpful to consult an index or abstract thesaurus, such as the Thesaurus of ERIC Descriptors or the Thesaurus of Psychological Index Terms. A printed copy of the index or thesaurus will give you a good idea of the type of citations that will be retrieved using a particular term and the amount of literature available on the topic. If possible, list several citations from the indexes or abstracts to articles that are considered pertinent to the topic.

Then, try to think of a title for a paper on the subject of your choice. See if you can get all of the main ideas about your topic into the title. An example might be "Government Policy Development and Implementation Respecting Brazilian Universities in the Past Decade." Since databases are queried by the presence of key words, singly or in combination, the words in the title thus concocted will probably include those you will use when specifying the kinds of documents you wish to retrieve. At this point, or earlier, we recommend seeking advice from a librarian trained in search strategies. Since databases can be programmed for retrieval by approaches other than key subject terms, the library specialist may be able to direct you to a more efficient or effective way to call up the information you wish to locate.

2. University research libraries, and thus the university community, have access to many databases. Some are available without cost to students and faculty because the research library paid the annual fee. Even if this is not so, often the vendor offers a free trial for your perusal. The home pages indicated below were retrieved on May 18, 2002.

Exercise: What are Google Scholar, Citeseer, Scopus, SCI ? What else are there? Choose any topic and report some your findings from

For example, the Center for Research Libraries (home page http://www.crl.uchicago.edu/) is a not-forprofit consortium of colleges and universities that make available scholarly research resources to faculty and students of the major research libraries of America. The collection includes over 5 million volumes of research material that is often unavailable in individual libraries. ISI Web of Science (http://www.wos.isiglobalnet.com) offers citation reports, documents, proceedings, and news in the world of science. ISI Web of Knowledge (http://www.isinet.com/) offers citation products, such as Social Science Citation Index, specialized content, evaluation and analytical tools, information management tools, and document delivery. These are available to students for a fee, which may have been paid by the university library.

H. W. Wilson (http://www.hwwilson.com/) offers an information retrieval system for the World Wide Web, including search tools to access records in science and technology, art, corporate data, and full-text article-form journals in the general sciences, social sciences, and humanities.

The home page of other organizations may also offer a great deal of information to the dissertation writer.

The examples above are but a small sample of what is available, and availability changes daily. New sites come on line periodically. The best policy is to ask your research librarian for help and to be specific about the thesis, honors paper, or dissertation topic you wish to research. In addition, it can be productive to search a topic yourself. There is no substitute for spending hours on your computer following leads, opening new searches, and trying new search engines to find information on your research topic.

Database searching often turns up more listings (hits) than you can handle. There is a danger that you will find yourself so interested in the many leads that you get distracted from the main show. It is better to discipline yourself to use that surplus to narrow the search in the most appropriate ways. If you examine carefully the nature of the hits you are getting, you can fine-tune your search strategy to narrow the range and focus on just the information you need for your research. The more you know about your research topic and the more focused you are, the better equipped you will be to narrow your search appropriately.

3. Decide how much of each retrieved document you want to receive and keep, either as a printout or a computer file. For the first trial of the search, you may wish to look only at the bibliographic citations to judge whether to change your search terms or to combine them in different ways. Once satisfied that the search is retrieving the kinds of documents you need, you may then want to obtain abstracts of the references you have chosen as probably most relevant to your topic. A next step often is to select, from the abstracts, the documents that seem to be most relevant, ones you would consider primary sources. For those, you will need to have the full text.

## Print/Personal copies?

4. Copies of the full text of books, documents, and articles may be obtained in a variety of ways if they are not shelved and circulated by your own library. Time and ready reference are usually quite important to student researchers, so you may want to own personal copies of the primary source materials you will be studying, quoting, and discussing with your committee members. If a book or monograph is in print, the university bookstore can usually obtain a copy. Before you buy, however, check with the research librarian. Increasingly, libraries are sharing information in hard copy or on the Internet. Often, print materials such as books and journals are available through interlibrary loan or other borrowing processes that will bring you the material on a timely basis. Just one example is the Center for Research Libraries, an international not-for-profit organization of colleges, universities, and libraries that makes available scholarly research to users such as graduate students and faculty. Some database services, such as ERIC, also provide not only bibliographic resource information, but also journal articles, books, conference papers, research reports, and so on in the field of education. Similar databases exist in other academic or professional disciplines. The research librarian is an invaluable help in finding the sources of information you need.

5. Try starting with search strategies that focus on subjects in your academic program area and the research area of interest to you and to potential advisors. The research librarian can be of great help here, of course, but some suggestions for a start, depending on the discipline, might be the Academic Search Elite, MLA International Bibliography, Public Affairs International, Science Citation Index, Social Science Citation Index, and so forth. These may be accessible through the library system. From this information, you can get an idea of who are the important authors and researchers, their areas of expertise, and the quality of the work. Another indication of the quality of the work of authors is how often they are cited by peers, and many of the databases, such as those indicated above, will give you that information. All this information is available in your research library and, in many cases, on your home computer through access to the library's home page.

There are specialized search engines for many different categories, such as health and medical information, multimedia information, and legal searches. The work of King (2000) is a helpful source (http://www.onlineinc.com/onlinemag/OL2000/king5.html). There are even a number of sites that can be used to find specialized search engines, a sort of search engine for search engines. One list (http://www.searchenginewatch.com/links/) links the viewer to major search engines including children's search engines; metacrawlers; multimedia, news, and specialty engines; these are divided into subject areas. Another is SearchEngineGuide.Com (http://www.searchengineguide.com/), which lists thousands of search engines, each listed in a subject directory. Each entry provides a brief summary. Finally, there is a Web site devoted to finding information on the invisible Web (http://www.invisableweb.com/). The invisible Web contains searchable information resources with contents that cannot be indexed by traditional search engines. Many search engines fall into the invisible category

because their index of links is stored in databases rather than on Web pages. The sites mentioned in this paragraph were retrieved on May 19, 2002.

6. Keep in mind that no computer search will be complete. Many commonly used databases only reach the mid-1960s. Also, there may be a lag from publication to insertion in a database. No matter how well descriptors are selected, significant publications may slip through the net. Moreover, not all journals and other publications are referenced in ways amenable to computer searches.

Despite these drawbacks, this search approach is a major time saver for what it does do. The routine clerical jobs involved are accomplished rapidly and accurately; it is almost incredibly quicker and more efficient than hand-done card index and journal directory work.

When building the reading list, explore the possibility that published bibliographies on the topic may already exist. Ask the librarian about Bibliographic Index and other publications used to discover such lists. On-line bibliographic searches will yield useful information. Some are free, but many valuable searches require a fee. Before paying a fee, check with your research librarians at the university; they may already subscribe to the service, which is then available for the use of the whole institution. Examples of excellent services that require a fee are Dialog (http://www.dialog.com/) and LexisNexis (http://www.lexisnexis.com/). If you can afford it, these services may well be worth the money for they provide access to full-text, up-to-date specialized bibliographic databases that may be unavailable on line anywhere else. In evaluating the cost of the service, consider the time and energy, as well as the hidden costs, that the service may save you. A careful cost analysis may lead to the decision that the service is worth it. Research libraries also subscribe to CD-ROMs (compact disks–read-only memory), which may be very helpful in bibliographic searches. Again, the librarian is the person to ask for expert advice.

A fortunate researcher may come upon an author whose work is particularly useful. In that case, one can use bibliographic citations to explore the works on which this author drew as well as works that derive from those of the author. To move backward in time, explore the citations in the author's bibliography. To work forward, ask the librarian about the possibility that your author's work may appear in a citation index. Doing this not only increases the chances of encountering especially relevant studies, but also familiarizes the student with the names of scholars and institutions working in that area of interest.

Book reviews are also useful to researchers. They tell you whether the book is thought to be important enough to review. Often, the reviewer, especially in professional journals, is a respected peer and thus is a person eminently competent to review the book. Even in more general periodicals, the editors try to get authorities to review books. In addition to its importance, the review can tell you whether the book is well regarded, and it can also tell you whether the book is likely to be relevant to your research. Book reviews are an excellent way to bring yourself up to date on the research in your area of interest and to lead you to important names and concepts.

To summarize, your computer can be a very useful tool in carrying out a literature search, but it will do only what you tell it to do. It will not think for you.