

Effective Literature Searching

A literature search is likely to be one of the first tasks you undertake in your research. Writing a literature review can be daunting, frustrating, confusing and time-consuming. You are expected to be familiar and up-to-date with all that has been written in your field and to write critically about that literature, in order to establish your credibility as a researcher and to argue for the relevance of your research. Our survey of research students¹ indicates that many feel moderately confident in their literature searching skills. In our experience, however, few are strategic, planned or methodical, leading to a scattered, random approach to literature searching. While they may find relevant papers, many students are left with a lingering feeling of doubt about how thorough their searches have been.

There are many good resources already available to help you to write up your literature review² and it is beyond the scope of this book to discuss the critical reviewing process itself. Rather, in this chapter we consider:

- the changing nature of information literacy;
- fundamental searching strategies and skills;
- tools for locating literature;
- advice on monitoring literature and keeping up-to-date.



This chapter should be read in conjunction with Chapter 9, which provides guidance on managing and organizing the results of your literature searches.

The changing nature of information literacy

Researchers who completed their higher degrees before the online information explosion (perhaps your supervisor is one), will have possibly used quite different strategies from those explored in this chapter. Their searches would have included card-based library catalogues, walking down rows of book shelves and traveling to libraries to search out important and relevant works. They would have perhaps had elaborate card systems for storing their references, with pages of hand-written notes to work through. They would have spent many hours compiling their references into a bibliography, a painstaking task involving hours of checking and proofreading.

Electronic catalogues and databases, together with the Web (considered in more detail in the following chapter), have greatly increased accessibility to literature locally and internationally. Increasingly, many databases are providing access to scholarly literature in full text. While this certainly provides many benefits to researchers, the exponential increase in available information has also brought with it the need for increasingly efficient strategies to search, sort and manage literature and the need to make judicious decisions about the quality of material on offer.

While there have been significant changes for researchers in the types of processes they engage in when conducting a literature search, there are also some fundamental behaviors and principles which continue to be relevant regardless of the changes brought by technology. We consider these in the following section.

Fundamental searching strategies and skills

What does it take to be an effective literature searcher? Think about how you search for information. Do you go straight to a library catalogue and search for a subject or specific title? Do you start with a bibliography from a useful source and follow-up the references listed by the author? Do you rely on references supplied to you by colleagues? All these strategies are useful and appropriate at different stages of the research process. Expanding your repertoire to include the range of strategies listed in Table 7.1³ will undoubtedly enhance the effectiveness of your information searches.

In this and the following two chapters we consider a range of skills, techniques and tools that support these literature-searching strategies. Before you read on, however, it is important to understand the nature of databases and the terminology associated with them. We address these fundamentals in Chapter 2. If you have not yet read this section, now would be a timely point to do so.

Table 7.1 Characteristics of different types of information seeking strategies.

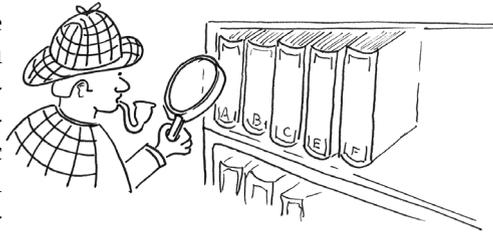
Information-seeking strategy	Nature and purpose of the strategy	Comments
Planning	A process of brainstorming key terms, synonyms and how these might combine, including use of search syntax. It is also important to plan which search tools are appropriate and relevant to consult	See later sections in this chapter
Reconnaissance	An initial exploratory search to identify key ideas or studies, provide an overview of the topic or identify some good terms to use in a more methodical search. For example, scanning the proceedings of a conference in your topic area	Useful to determine whether an issue is topical or a focus for a particular audience or discipline
Browsing	A process of searching by fairly broad subject or topic. One example of this is looking along the library shelves in a particular subject area. Electronic databases also allow browsing by subject or keyword	Useful to identify general references which might inform planning or methodical searching
Methodical searching	Once you have identified the most appropriate key terms (through planning, reconnaissance and/or browsing) a methodical search can be conducted both within and across relevant databases and catalogues	Keep a methodical record of your searches (see later in this chapter)
Citation chaining	A technique where you follow chains of citations which lead to other relevant material. Citation indexes are an important tool in this process, but Web searching can also prove useful	Highly valuable when you have located an ideal or seminal reference in your field
Limiting searches	A process of differentiating and narrowing search results in order to filter references and identify those most relevant and appropriate to your needs. Differentiating might occur on the basis of approach or perspective, by level, quality, currency or type of source	Useful to exclude references that are not peer reviewed or that have been published only after a certain year
Monitoring	Maintaining awareness of developments in a field or from a particular source. For example, you might set up a “table of contents” alert for new issues of a journal	See later sections in this chapter

Planning your search

When you conduct a literature search, do you go straight to a familiar or well-used search tool and enter the first terms or words that come to mind? While this is a common practice and can yield relevant resources, you will get better results from a more planned and organized approach. In particular it is important to: identify key terms; plan how key terms will be combined and

entered; and keep records of your searches.

While planning will be iterative and initial strategies will continue to be refined and expanded, you should make this a conscious and considered process. Be aware of the differences between looking for specific rather than general information and between an exhaustive and a representative search. In planning your searches, always keep in mind your overall purpose.



Identifying key terms

In any large research project there will be a significant number of concepts or terms that will relate to your topic. The first step is to jot down the key terms, but don't stop there. Brainstorming to identify synonyms or related terms (including both more general and more specific terms) is also vital as different words or phrases may be used in the literature to describe very similar concepts. You may also want to consider how terms are used in different countries or how different spelling forms are used, including the use of plural and singular forms. We recommend setting up a table exploring all these possibilities, such as the one in Table 7.2.

Table 7.2 Identifying key terms relevant to your literature search.

This example relates to research on “the influence of women’s self-perceptions on career advancement”.

Search strategies	Examples of search terms/key words
Synonyms for “women”	females
Synonyms for self-perception	self-esteem; self-confidence; self-understanding
Synonyms for “career”	profession; vocation; work; employment
Synonyms for “advancement”	progress; promotion; success
Related concepts	women and management; women and business; women in organizations; gender stereotypes; glass ceiling
Terminology variations	corporations/businesses/companies
Spelling differences	organisation/organization
Singular/plural forms	Woman/women; company/companies; profession/professions

As you locate relevant references, you may find that alternative terms are used by different writers or by the database producers. Keep jotting these down and re-running your searches based on these terms (see also the section below on keeping a record of your searches).

Planning how terms will be combined and entered

Identifying key terms to search for is only the first step towards developing efficient searching strategies. The real skill comes in knowing how to refine your search in a way that gives you the best chance of finding the literature most pertinent to your project. We consider the following key strategies in turn: using Boolean logic; using phrase searching and proximity operators; using truncators and wildcards; determining which fields are relevant to search; and limiting searches.

Boolean logic

Boolean logic is useful when your search involves more than one search term and you need to be more specific about how the terms relate to each other. The three Boolean operators, AND, OR and NOT, are explained in Table 7.3⁴ and Figure 7.1.

Table 7.3 The use of Boolean operators to refine a literature search.

Operator	Process	Result
OR	Requires either or both terms to be present in the document, e.g. women OR woman	Increases the number of documents retrieved
AND	Requires both terms to be present, e.g. women AND self-perception	Reduces the number of documents
NOT	Requires the term to be absent, e.g. career NOT vocation	Reduces the number of documents, but runs the risk of eliminating a relevant document

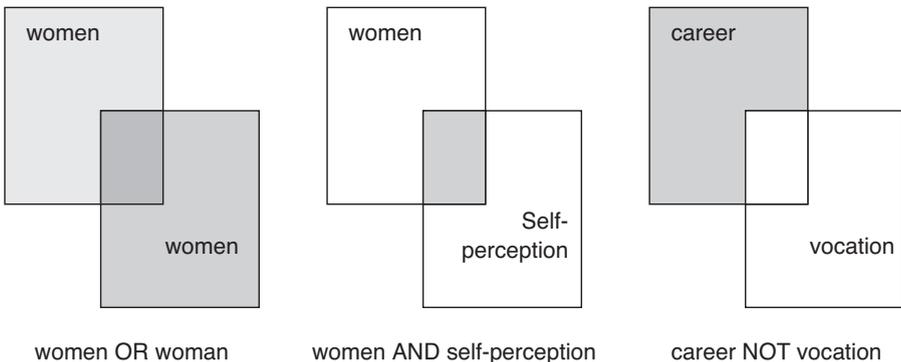


Figure 7.1 The Boolean operational concepts of OR, AND & NOT

Boolean logic is used to enlarge or restrict your search results.

Phrase searching and proximity operators

Phrase searching and proximity operators enable you to establish a connection between your search terms, allowing you to be more specific about how and where the terms might most productively combine. This is particularly important when you are searching full-text articles. Phrase searching involves searching for words that are in a set order and adjacent to one another, placing the phrase in inverted commas, as indicated in Table 7.4.

Table 7.4 Comparison of results with and without phrase searching.

Search statement	Potential result
"glass ceiling" [as a phrase]	Many women pursuing careers in management find themselves encountering a glass ceiling
Glass ceiling [as a normal search without phrase or proximity syntax]	A sign of prestige for managers was to be located in an executive office with a high ceiling and large expanses of glass windows with a view

Some literature search tools also provide proximity searching capabilities. For instance, they might use terms such as NEAR or ADJ (short for "adjacent") or SAME or WITH (to say that the words must appear in the same sentence). Table 7.5 demonstrates how proximity operators can impact on search results.

Table 7.5 Impact on search results of using proximity operators.

Search statement	Potential result
self (ADJ) esteem	The importance of self esteem for women seeking to advance their careers
self (NEAR) esteem	The process by which a woman comes to terms with self and career can influence the esteem in which she is held by others

Using truncators or "wildcards"

Truncators allow you to use a special symbol (frequently *) in the place of a particular letter or letters to broaden or restrict your search results. For example, fish* would retrieve fish, fisher, fishermen, fisherwomen, fishers and fishing. When used as a wildcard, the * replaces a single letter, and is useful for words with different spelling variations e.g. organi*ation would produce results for both organization and organisation.

Determining which fields to search

When you use a literature database, you can specify in which field you wish to search for a particular term. For example, you might choose to specifically search by author, title, subject (general conceptual area covered), keywords (identified by the writer or indexer as key concepts covered in the paper), or full text (the whole document). Your search results can be significantly affected by the field you nominate to search. Let's take an example from the discipline of civil engineering. You might be researching the optimal design for single-lane roundabouts. If you searched for the term "roundabout" in the title field you would get very different results than if you searched for the same term in the subject or full-text field. For instance, you might get all the articles that had "roundabout" as a word in the text, but had nothing to do with engineering. For instance, "...in a roundabout way" ...

Limiting searches

Many databases also allow you to limit your searches, for example, by: date (to retrieve references written after or before a particular year); material type (to retrieve only conference papers, refereed versus non-refereed journal articles, or newspaper articles); language; or country of publication.

**Tips for learning more about search syntax**

Symbols and syntax to specify Boolean logic, proximity operators, search specific fields, apply truncators or wildcards or limit your search are not standardized. It therefore pays to become familiar with the syntax used in your commonly accessed search tools. Each will have a "help," "tips" or "advanced search" section where these are outlined. We recommend printing these out and referring to them while planning and conducting your searches.

Keeping a record of your searches

Methodically maintaining a record of your searches enables you to:

- evaluate which databases or search terms are most effective in your area of research;
- keep a record of what you have and haven't done in your searching, which can be important if you are interrupted or only have small blocks of time in which to conduct your searches;
- repeat successful searches at a later time to update your literature;
- stay focused and complete your searches if you are led off track.

A record of your searches might include such details as key words, date searched, time spent, search tools consulted, and the number of "hits" or relevant references, as exemplified in Table 7.6.

Table 7.6 Hypothetical sample record of literature search history.

Key Words	Current contents		Emerald		Expanded Academic ASAP		Google Scholar	
	DATE	HITS	DATE	HITS	DATE	HITS	DATE	HITS
{women OR woman} AND organi*ation*	7 May 06	576	1 June 06	230				
{women OR woman} AND career	7 May 06	234	1 June 06	129				
{Self-perception OR self-confidence} AND {women OR woman}	7 May 06	56	1 June 06	26!!				
"glass ceiling" [phrase]	12 Jan 07	38	12 Jan 07	80				
women AND "glass ceiling"	12 Oct 06	10!!	12 Jan 07	60				
women AND "glass ceiling" AND {Self-perception OR self-confidence}			12 Jan 07	13 !!				

Note that a symbol has been used (!!) to indicate results which are of particular value and relevance.



See the **Organizing and Managing Your Research Website**

for templates for recording search results.

<http://www.sagepub.co.uk/phelps>

Tools for locating literature

Knowing what type of source to search, and how to get the most from each, is an important research skill. In this section we consider in turn: electronic literature databases, including citation indexes; library catalogues; locating books in and out of print; e-book sources; periodical directories; search tools for specific types of resources; and harnessing the skills of librarians. We discuss searching the Web in Chapter 8.

Electronic literature databases

Literature databases generally provide access to journal articles, conference papers, reports or other occasional papers, although some include electronic versions of books. Of the huge number of literature databases available, some have a general focus while others are much more specialized. Your university library will subscribe to a wide range of databases and we suggest you familiarize yourself with the ones commonly used in your discipline area, examples of which are provided in Table 7.7.

Table 7.7 Examples of commonly used literature databases by discipline.

Discipline	Databases
Natural sciences	ScienceResearch, Wiley Interscience
Engineering	Engineering and Applied Science Online
Health sciences	Medline; PubMed; SPORTDiscus
Education	Expanded Academic; ERIC
Business & Management	Emerald Intelligence; LexisNexis International
Social sciences & Humanities	Expanded Academic
Law	LexisNexis International; Lawbook Online
Arts	Art Abstracts; Music Index
General coverage	Current Contents, Proquest

Each database will have an “about” or “information” section that explains its coverage. Don’t overlook the many general coverage databases and think a little laterally about whether your topic might be covered in journals outside your specific discipline area.

Databases also vary in terms of the nationality of their coverage (e.g. some only include material from the USA) and whether they are full text or only provide bibliographic details and abstracts. Some will index only scholarly papers while others will include newspaper and magazine articles. Some will contain diverse resources such as conference papers, reports and theses while others will not. We suggest you develop your own list of relevant and available databases and annotate the specific characteristics that are relevant to your own research, as the example in Table 7.8 illustrates.

Each database will have its own look and feel, and the interface and screen designs will differ between companies and even between databases. While this may initially be a little confusing, all will have common key features. Being aware of the fundamental searching skills and strategies outlined in the previous section will enable you to move between them fairly seamlessly.

Understanding and saving your search results

In Chapter 2 we discussed the general nature of databases and defined records and fields. To understand the format of your search results these concepts

Table 7.8 Creating a summary of relevant literature databases.

This example relates to research into women's careers in management.

Database	Fulltext	Nationality	Notes regarding relevance
Current Contents	No	International	General coverage but can search sub-collections: Social & Behavioral Sciences (SBS); Business Collection (BC); Arts & Humanities (AH)
Emerald Insight	Yes	International (Emerald publications only)	Management literature in niche areas including change management. Includes <i>Women in Management Review</i>
Expanded Academic ASAP	No but enhanced access to fulltext	Predominantly U.S.	Humanities and social sciences. Both peer reviewed and non-peer reviewed. Includes journals, magazines and the <i>New York Times</i>
LexisNexis International	Yes	Predominantly U.S. and U.K.	Case law and related documents
AIM (Australian Institute of Management) Management & Training Database	No	Australian plus some New Zealand and South-East Asian	Journal articles from management, training, human resources, communication and marketing
Australian & NZ Equal Opportunity Law Library	Yes	Australian and New Zealand	Law focus. Provides access to: Federal and state Equal Opportunity Legislation, Australian & NZ Equal Opportunity Commentary and Equal Opportunity Cases

become important. Each database will vary in its display of records and will provide different options for saving and/or exporting the results of your search to another program. Many provide other features such as allowing you to link to related citations (see also the section on citation indexes below) or to subscribe to updates or tables of contents. The image in Figure 7.2 is drawn from one example database. This figure also indicates how, by locating one relevant paper, you can follow links from the allocated subject headings to locate other articles which have been allocated the same subject heading. This is useful when you are performing a reconnaissance search or browsing.

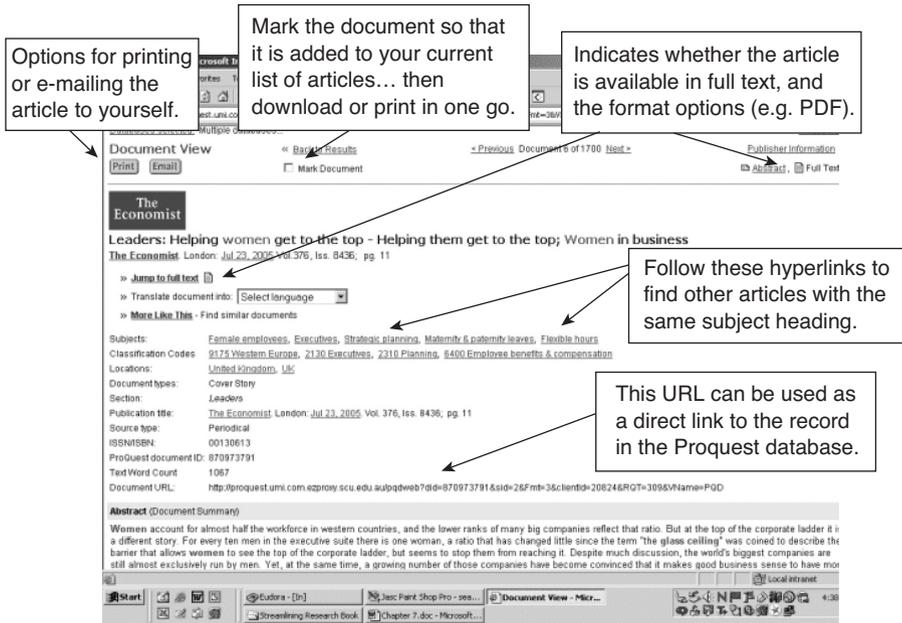


Figure 7.2 Display format of results from a search in a literature database

Note the ability to mark records for batch processing and to link from this record to articles with the same subject. Example is from ProQuest.



Tips on literature database searching: a summary

- **Keep records of the searches that you do**, even if they are quick reconnaissance searches. It is amazing how quickly you will forget what databases were useful, or what searches you tried. It is inefficient to run searches more than once! Table 7.5 is a useful tool for this purpose.
- **Develop a consistent strategy** for handling the results of your searches. Consider using bibliographic software (see Chapter 9) to record whether you have printed or electronically saved the full text, or whether you already have the reference or intend to access it through document delivery (interlibrary loan).
- **Use the export function** provided by many databases to transfer records directly into your own reference library (see Chapter 9).
- **Copy and paste** relevant records into a text document to retain search results.

Citation indexes

Citation indexes are particularly useful when there are a number of known papers that are key to your research and you want to locate other relevant or related publications. The most common approach to tracking down citations is “backward chaining,” following up references provided in the reference list of a known source. “Forward chaining” involves identifying articles which have subsequently made reference to a known article.

Sometimes, citation indexes are used to ascertain a work’s credibility. If a paper has been widely cited it is considered to have had a strong impact on that discipline. In universities, this sometimes translates into a means of evaluating the quality of research output, and a numerical score known as an “impact factor” is derived from citation indexes. Ironically, highly controversial and perhaps not-so-credible papers can also produce high impact factors as they may be widely referred to in a less-than-positive light.



Want to know more about...

Citation Indexes?

One widely used citation index is the ISI *Web of Knowledge*, which includes: Science Citation Index Expanded (often referred to as “Web of Science”); Social Sciences Citation Index; and Arts & Humanities Citation Index. Another citation index is Elsevier’s *Scopus*. The Web (and in particular, the search tool *Google Scholar*) can also be used as a tool for citation linking and we suggest some strategies for this in Chapter 8.

Citation indexes generally allow you to search for references in the same way as other databases do (e.g. by subject or keyword). However their real strength is when you already have a specific reference for which you want to locate related citations. In this case you are most likely to search by author or title, as shown in Figure 7.3.



Tips on using Citation Indexes

- Try the online tutorials found in many citation databases.
- Try a citation search with 1–2 of the key papers (or authors) in your topic area. Are the results useful?
- Try searching a citation index if you have published any journal articles, books or book chapters yourself, to see whether any writers have subsequently referenced your work.

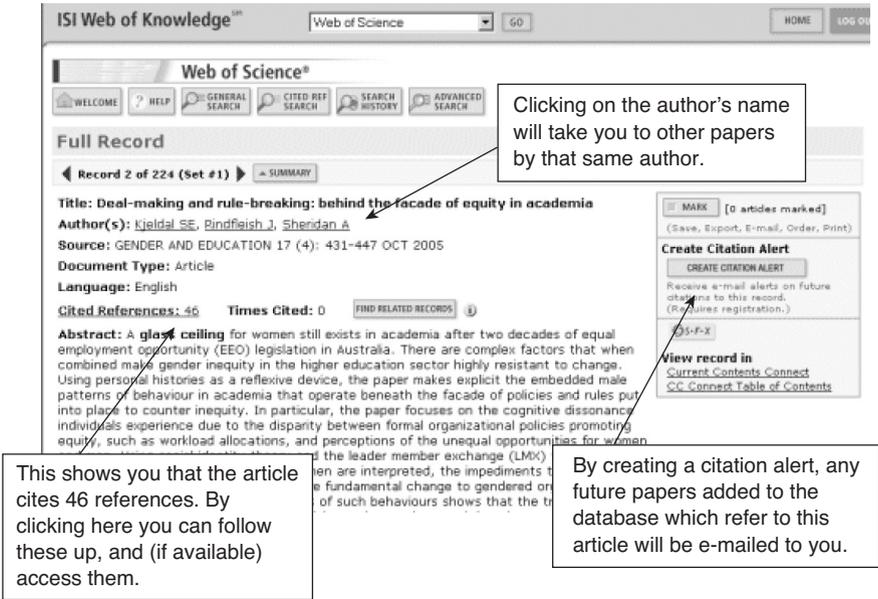
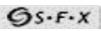


Figure 7.3 Results of a search using a citation index

This indicates how you can link to related references or be notified in future as such articles become available. Example is from ISI Web of Science.

Enhanced access to full text

Your ability to access the full-text article found in a database will depend upon whether your library has subscribed to the particular journal. If the library subscribes to the journal in electronic format, you may be able to access full text through a service known as SFX. If the full text of the article is available through your library, the SFX software will tell you where it can be located. Your library will tell you whether they provide such a service, or alternatively, you may just see the SFX button  when you are searching. Note that SFX also provides a Citation Linker (citation index) facility.

Library catalogues

Library catalogues are an essential companion to database searching, in that when you locate a non full-text article in a database, you may then need to search for libraries that hold the physical copy. For example, suppose in conducting your search you locate the article by Kjeldal cited in Figure 7.3. You note that the article is not provided in full text. You would then turn to a library catalogue to determine where you can access the journal *Gender in Education*. You would also need to remember to check that the library holds volume 17 and issue number 4. If the journal is not held by your institution's

library, then you may need to arrange for document delivery (interlibrary loan) as described below.

Searching library catalogues

Searching a library catalogue is similar to searching a database (remember that the catalogue is just another type of database). The example below in Figure 7.4 illustrates what a library catalogue might look like.

The screenshot shows a search interface for the Cambridge University Library & Dependent Libraries. It features a 'Basic Search' tab and a 'Guided Search (e.g. Author/Title)' tab. The search form includes three 'Search for:' fields with dropdown menus for 'all of these', 'as a phrase', and 'all of these'. The 'Search in:' dropdowns are set to 'Author Name', 'Title', and 'Subject'. Boolean logic operators (AND, OR, NOT) are available between the search fields. A '25 records per page' dropdown, 'Search', and 'Reset' buttons are at the bottom. An 'Apply Limits' button is circled. A callout box points to the 'Search in:' dropdowns, stating: 'Specify the field you wish to search to ensure your results are more accurate.' Another callout box points to the 'Apply Limits' button, stating: 'By clicking on "Apply limits" you will be presented with an extra screen to refine your search.' A third callout box points to the 'AND' operator, stating: 'Boolean logic operators allow you to combine terms to refine your search.'

Database Name: Cambridge University Library & Dependent Libraries

Basic Search | Guided Search (e.g. Author/Title)

Search for: [] all of these Search in: Author Name

AND OR NOT

Search for: [] as a phrase Search in: Title

AND OR NOT

Search for: [] all of these Search in: Subject

25 records per page Search Reset Apply Limits

• Select methods of limiting your searches below
 • Limits apply **only** to Keyword, Title, Journal Title, and Boolean searches.
 • Search limits will remain in effect until you specifically clear them or until you close your browse

Set Limits Search Limits

Language: English
 English, Middle (1100-1500)
 English, Old (ca. 450-1100)

Location: Bible Society's Library
 Central Science Library
 Medical Library

Date: [] [] [] Range []

Medium: Map
 Electronic Resource
 Globe

Item Type: Journal
 Archive/Manuscript
 Music Score

Place of Publication: Alaska
 American Samoa
 Andorra

Publication Status: Currently Published
 Ceased Publication
 Unknown

Figure 7.4 Guided (advanced) search indicating the ability to refine your search results

Boolean logic and applying limits on searches will enhance the relevance of your search results. Example is from the University of Cambridge library catalogue.

Locating and consulting a range of library catalogues

There may be times when it would be useful to consult library catalogues other than that of your own institution. While locating an item in a library on the other side of the globe may seem of limited use, such a search allows you to:

- be confident that you are aware of a wide range of literature in your field (even if you don't necessarily access the full-text item);
- become aware of new publications that you can either purchase or order into your local library (see also the section below on online bookshops);
- obtain full bibliographic information for incomplete references (for instance, where you have missed recording publication or ISBN details of a source no longer held, or when you wish to purchase an item);
- pursue interlibrary loans;
- do a search before visiting a library in person, making your visit more time efficient and productive.



Feature Website: LibDesk

<http://www.libdex.com>

Many libraries have their catalogues publicly available on the Web and a very useful tool for locating them internationally is LibDesk. Consider, for instance, a project where you become aware of a legal precedent established in Alberta, Canada which is relevant to your own research. By using LibDesk you can browse library catalogues by country, which can then lead you to a link to the catalogue of the Law Society of Alberta.

Books in- and out-of-print

BooksInPrint.com (<http://booksinprint.com>) is an authoritative bibliographic resource which provides a listing of in-print, out-of-print and forthcoming books. It also lists audio and video titles. This is particularly helpful for finding or checking full bibliographic details of resources and locating a reasonably definitive list of publications, ensuring that you can be confident about knowing what books have been published in your field. If your institution has a subscription, you can also read the first chapter of many print-based publications.

Other valuable sources of information are online bookstores or book dealers. Some specialize in out-of-print material, including books, maps, prints, manuscripts and photographs, particularly useful if you are doing historical research.



Want to know more about....

Books in and out-of-print?

Books In-Print

Amazon.com

BookBrain.co.uk

Co-op Bookshop

<http://www.amazon.com>

<http://www.bookbrain.co.uk>

<http://www.coop-bookshop.com.au>

*(Continued)***Books Out-of-Print**

Alibris	http://www.alibris.com
Bibliopoly	http://www.bibliopoly.com
BookFinder	http://www.bookfinder.com
See also BUBL's list of bookshops	http://bubl.ac.uk/link/types/bookshops.htm

Electronic books (e-books)

A number of sources now exist for electronic access to the full text of books. Some are provided by libraries, others by publishers, while community groups and other networks also digitize copyright-free or out-of-print publications and distribute these to others online. Table 7.9 gives a sample

Table 7.9 A sample of sources of e-books and other digital resources.

University of Virginia e-books	http://etext.lib.virginia.edu/ebooks	Classic British and American fiction, major authors, children's literature, American history, Shakespeare, African-American documents, the Bible. Provided in either Web (HTML) format or for use with Microsoft Reader or Palm Reader
Project Gutenberg	http://www.gutenberg.org	Thousands of free electronic books which are produced by volunteers
Academic Materials from e-bookopolis	http://e-bookopolis.com	Commercial distributor of e-books to subscribers
Netlibrary	http://www.netlibrary.com	Commercial distributor of e-books to subscribers
eBooks.com	http://edrs.com	Commercial distributor which allows purchase of whole or part of e-books
Amazon.com	http://amazon.com	Well-known online book seller. Some publications can be purchased in electronic format
Online Books	http://www.cs.cmu.edu/books.html	Produced by John Mark Ockerbloom from the University of Pennsylvania. Free access
NetLibrary	http://www.netlibrary.com	Commercial distributor of e-books to subscribers

(not exhaustive) of sites that distribute e-books and other digital resources. See also Chapter 10 for other sites specializing in electronic access to primary documents and data. Check whether your library subscribes to services that provide access to scholarly texts in digital format.

Some e-books are designed to use specific software such as ebrary (<http://www.ebrary.com/corp>), Microsoft Reader (<http://www.microsoft.com/reader>) or eReader (<http://www.ereader.com>) while others use formats such as PDF (see Chapter 2). Most are able to be read on any standard computer with the appropriate software installed, but some formats also can be read using a Palm or Pocket PC or other handheld device. Most e-book reading software allows you to take notes while reading, make annotations related to specific parts of your text, search for occurrences of particular words, mark or highlight segments of text and then index these notes.

Periodical directories

Although literature databases are an important way of identifying key journals in your field, there are nevertheless many journals that are not indexed in commonly accessible databases. For example, as the majority of databases are biased toward literature from western countries, other internationally important journals may not be represented. To feel confident that you are well informed about publications in your discipline, you may be wise to look beyond standard databases.

Ulrich's Periodicals Directory (<http://www.ulrichsweb.com>) provides comprehensive information on journals (or serials) published throughout the world on all subjects, including those published irregularly, those that are circulated free of charge and those that are accessible only through paid subscription. Most producers of journals register their publication with Ulrich's as it is considered the most comprehensive and authoritative source (see Figure 7.5).

Tools for locating specific resources

You will find a range of other search tools available online which can assist you to locate specific types of resources other than books and journals, a sample of which is summarized in Table 7.10.

Interlibrary loan and document delivery services

With the exponential growth in available publications, you cannot expect your local library to hold all resources necessary for your research. However, almost all university libraries offer interlibrary loan and document delivery services which enable them to access literature held in other libraries.

As with most search tools, an advanced search option is also available to refine your results.

Symbols are used to indicate whether journals have a (paid) review available, are refereed, are available in electronic format or are available with open access, as indicated in the legend.

ULRICH'S PERIODICALS DIRECTORY™
The global source for periodicals information since 1932

HOME | USER
Advanced Search Browse

Quick Search Keyword []

Search Results: Displaying 251-275 of 1,517 results
Keyword: forestry

REVISE SEARCH | NEW SEARCH

View Selected, View All - This Page, or Add to List

TITLE	PUBLISHER	COUNTRY	ISSN	START YEAR	STATUS	PRICE
☐ Central America Forestry Journal	CATIE	Costa Rica	Not Supplied	1992	Active	USD 25.0
☐ E Central Atlantic Environmental Directory	Harbinger Communications	United States	1087-8491	1996	Active	USD 18.5
☐ TM Centralblatt fuer das Gesamte Forstwesen	Bundesamt und Forschungszentrum fuer Wald	Austria	0008-9583	1875	Active	Contact Publish
☐ Centre d'Ecologie Forestiere et Rurale, Communications	Centre d'Ecologie Forestiere et Rurale	Belgium	Not Supplied	1943	Ceased	See Full Record
☐ Centre de Recherche et de Promotion Forestieres, Documents	Centre de Recherche et de Promotion Forestieres	Belgium	0775-3446	1968	Ceased	See Full Record

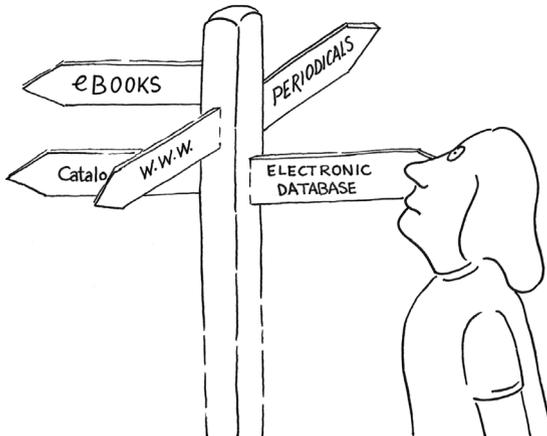
LEGEND

- ★ Reviews
- ☐ Refereed
- E Electronic
- + Open Access

TITLE Click again to sort ascending.

Figure 7.5 Sample results screen from Ulrich's Periodicals Directory

The example search used the subject "forestry". The results indicate the international coverage of the database.



Many publishers, database providers and other private companies also provide document delivery services, which can be accessed by either institutions or individuals. Users usually either subscribe to the service (with monthly or annual fees) or pay per article requested using a credit card.

Table 7.10 A sample of the range of search tools available online.**Newspapers**

Onlinenewspapers.com	http://www.onlinenewspapers.com
Newslink	http://newslink.org
Nettizen.com	http://www.nettizen.com/newspaper
Australian Newspapers Online	http://www.nla.gov.au/npapers

Dissertations and Theses

ProQuest Dissertation Abstracts on the Web	http://wwwlib.umi.com/dissertations
Australian Digital Thesis Program	http://adt.caul.edu.au
UMI's Dissertation Publishing	http://www.umi.com/products_umi/dissertations

Conference Proceedings

ProceedingsFirst (FirstSearch)	Check with your librarian to see whether your institution has access
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Maps and images

Alexandria Digital Library	http://www.alexandria.ucsb.edu
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See also Chapter 10 in relation to digital repositories

Where these delivery services operate via fax or electronic transmission, you may receive an electronic or hard copy of that important article within a day or two. Examples include Ingenta Connect (<http://www.ingenta.com>) and Infotrieve (<http://www4.infotrieve.com>).

Your most valuable resource – the reference librarian

Perhaps the most important literature searching tool of all is the reference librarian. Getting to know your librarian could be the one of the best investments of time you make. Librarians keep up-to-date with technological developments and are trained in advanced searching strategies, so they will be able to advise you on the best place to begin your literature searches and how to make the most of the range of search tools available.

Monitoring literature

Although you may conduct quite a comprehensive literature review early in your project, you will need to keep monitoring the literature throughout your research, right up to the point of finalizing your dissertation or report.

While this may feel like a daunting prospect, there are techniques you can utilize to streamline the process.

As you continue your research, you will progressively identify core sources of relevant information that are regularly updated, such as:

- **key journals** that you need to monitor as new issues become available;
- **government or organizational websites** that regularly put out new reports or announcements related to your research;
- **professional groups or conference websites**, where papers are regularly published or promoted.

You are likely to discover such key sources early in your research process, but how will you remember to keep returning to them as your work progresses? While it may seem an unforgettably high priority at the time, in another 6 months this urgency may have completely slipped your mind. A number of strategies can keep you up-to-date without having to rely solely on your overworked memory. Such strategies include:

- subscribing to table of contents services;
- setting up journal monitoring lists;
- accessing research-in-progress databases;
- using RSS technology to be notified when websites are updated (see Chapter 8).

Table of contents services

Many publishers of journals offer alerting services that allow you to sign up to receive an e-mail each time a new issue of the journal is published, usually containing the table of contents. In most cases you can link directly to a webpage containing the abstract and, in some instances, the full text (although you may need to pay for this latter service).

Journal monitoring lists

As table of contents services are not provided by every journal, we suggest putting in place supplementary systems for methodically monitoring key journals in your field. A journal monitoring list can record:

- all your frequently consulted journal titles;
- the topic area covered by the journal;
- key details such as where you can access tables of contents, abstracts etc.;
- where you can locate the full text of articles;
- the date you last accessed the journal;
- any other notes, such as the back issues that you have browsed through, or your intention to come back to the journal, say every 6 months.

Of course the same document might equally include links to other types of information resources that you need to return to regularly, such as conference websites. In this case you can annotate what time of the year the conference occurs, and thus know when to return to the site each year. You can use a spreadsheet or a table created in a text document for this type of monitoring (see Figure 7.6). You can also include website addresses as hyperlinks, providing ready access to further current details. Once you have created such a list, of course, you need to revisit it as part of a regular routine (see Chapter 3 in relation to notes and reminders).

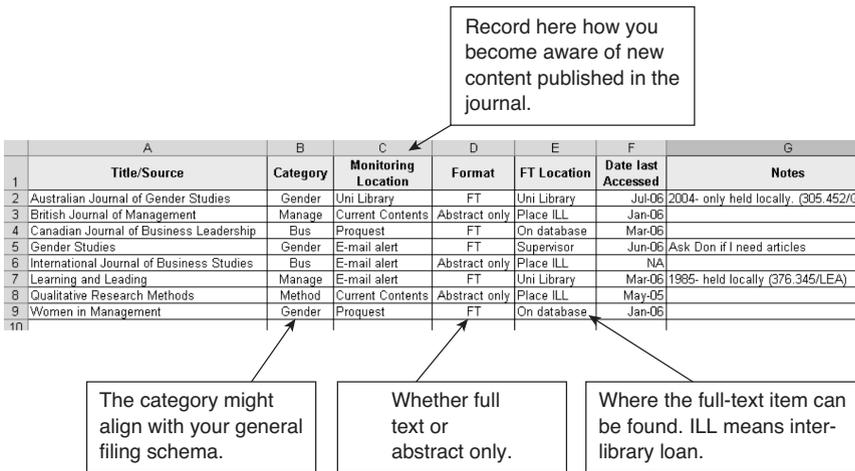


Figure 7.6 A journal monitoring list, set up using a spreadsheet



See the **Organizing and Managing Your Research Website** for templates for recording search results.

<http://www.sagepub.co.uk/phelps>

Research-in-progress databases

It is very helpful to have access to papers before they are actually published, particularly in fast-moving fields of research such as medicine, political science or environmental science. While your informal networks can be a good source of such papers, a number of databases exist that allow you to access such information. Generally these are country or sector specific. Examples are provided in Table 7.11.

Table 7.11 Examples of research-in-progress databases.

The (U.S.) Federal Research In Progress Database	http://grc.ntis.gov/fedrip.htm	Information about ongoing federally funded projects in the fields of the physical sciences, engineering and life sciences
Research in Progress Catalogue (Canada)	http://www.nonprofitscan.ca/progress.asp	Information about ongoing and recently published work on the Canadian non-profit sector
Australian Research Council Research Outcomes: Grants	http://www.arc.gov.au/grant_programs	Information about grants allocated by the Australian Research Council



Over to you...

1. What literature-searching strategies do you use most frequently? Which of the strategies we discuss in this chapter might you usefully add to your repertoire?
2. What are the key terms and/or phrases you would use to search for literature relevant to your research? How could you limit your searches to take account of the specifics of your research project?
3. What databases, accessible through your institution, are relevant to your research topic?
4. How could searching a citation index be useful for your research?
5. Subscribe to table of contents alerts for key journals in your discipline area.
6. Develop a journal monitoring list.

Notes

- 1 Phelps *et al.* 2006.
- 2 For example, Hart 2000; O'Leary 2004; Oliver 2004.
- 3 Adapted from Ellis 1989.
- 4 Derived from Henninger 1999.