Searching Skills

This module reviews the skills applied to effectively search information sources using the variety of information tools available. Students use these searching skills to master the tools used to access the information container. Students fluent in information searching know which tools and skills to use, and when to use them.

Developing searching skills using a variety of information tools to search a variety of sources and formats includes:

- focusing on a topic
- selecting search terms
- constructing a strategy using the appropriate search operators
- improving search results

Focus on a Topic

At this point you have chosen a topic. Additionally, you have reviewed general information sources to learn about basic topic concepts and terminology.

You want to achieve a manageable focus so that the research project does not overwhelm you. If your topic is too broad, you will want to narrow it. For example, the topic "pollution and its effect on fish" is too broad. You may narrow the topic to "pollution and its effect on salmon."

Conversely, if a topic is too narrow, you may not find the information needed in time to complete the assignment. For example, "oil pollution and its effect on North Atlantic salmon" may result in too few sources to use. Again, broadening the topic to "pollution and its effect on salmon" would likely provide an adequate number of results from a variety of information types and formats.

In addition to thinking about the topic and doing the background reading, you want to begin to identify the key concepts of the topics by listing the terms that may be useful for searching for information on the topic, such as synonyms.

Selecting Search Terms

Selecting the terms (the words) to use in a search process can be challenging. The searcher identifies keywords and related terms for the information needed in both general sources, such as the online catalog, and in subject-specific sources, such as the databases.

Additionally, the searcher needs to identify alternate terminology, including synonyms, broader or narrower words and phrases that describe a topic. A helpful technique is to first write down the main keywords, and then list additional synonyms and subject terms that can be used when conducting the search. For example:

Key Concept	Synonyms		
political entity	• body politic • city • constituency • county	• district • electorate • elector • faction	• nation • precinct • state • voters

When prepared with the list of search terms, implement the search strategy in the various information retrieval systems such as the online catalog, databases and the Web. It is recommended that the search process begin with a basic keyword search. Each information retrieval system may use different search terms for the same topic, which is why it is important to prepare a list of synonyms, broader or narrower words and phrases before undertaking the search.

Constructing a Search Strategy

The topic is known, and search terms have been considered and listed. Now the search is conducted.

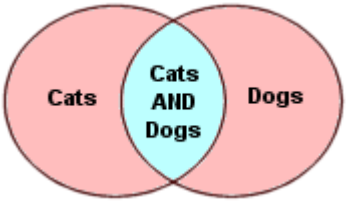
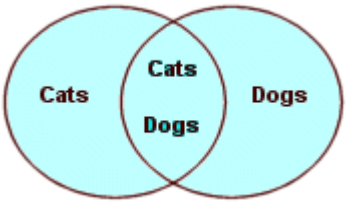
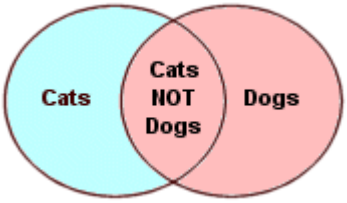
The first decisions concerning the search strategy are to determine which search tool you will use (online catalog, database or the Web), and to choose an access point to begin the search: keyword, subject heading, title or author (for review, please see Searching Tools under the "Searching for Information" module).

Next, appropriate search commands for the information retrieval system selected may be applied. These commands include:

- Boolean logic search operators, including nesting
- phrase searching
- adjacency and proximity searching
- truncation searching
- letter replacement searching
- domain searching

Boolean Search Operators

Boolean search operators (AND, OR, NOT) can be used to limit or expand your database search. These operators work in the library's online catalog, in most of the Sawyer Library's subscription databases, and in most Web directories and search engines.

Boolean Operator	What It Does	Venn Diagram
AND	limits your search by requiring all terms searched to be in each result. Use it when doing keyword searches, not subject heading searches. Cats **AND** Dogs: in this example, the search finds all files with the word "cats" and a second search finds all instances of the word "dogs." It then combines the two searches, limiting the results to those sources with both the words "cats" and "dogs" in the text.	
OR	expands your search by requiring any of the terms searched to be in each result. Cats **OR** Dogs: in this example, the search finds all files with the word "cats" and a second search finds all instances of the word "dogs." It then combines the two searches, expanding those results to those sources with either of the words "cats" or "dogs" in the text.	
NOT	limits your search by excluding the term appearing after the NOT operator. Cats **NOT** Dogs: in this example, the search finds all files with the word "cats." It then conducts a second search of these specific files, identifying any file that includes the word "dogs." It limits the results to those sources which include the word "cats" but not the word "dogs" in the text.	

Nesting Boolean Search Operators

Parentheses may be used to "nest" Boolean operations, resulting in a more advanced search strategy.

Example #1:

(Internet NOT Web) AND usage

This search strategy will begin by conducting the search in the parenthesis, looking for all information in the tool selected (online catalog, database or the Web) with the word "Internet," and then with the word "Web," and compile a list of information sources in which the word "Internet" appears without the word "Web." It will then conduct the search outside of the parenthesis, finding all information with the word "usage." Last, it will combine the results of the first search with those of the second search, returning results to the searcher of all information (documents, articles, etc. depending upon the information tool searched) with the word "Internet" and without the word "Web," and with the word "usage."

Example #2:

(trade OR tariffs) AND (treat* OR agreements)

This search strategy will conduct the Boolean search function in the first set of parenthesis. Then, it will conduct the search in second set of parenthesis. Note that in the second search, "treat*" is truncated, and the search will include "treaty" and "treaties." Finally, the third operation will combine the results of the search from the first parenthesis with the results from the second parenthesis in a Boolean "AND" operation, further limiting the results.

Additional Search Operators and Functions

Additional search operators and functions are available which will improve your search strategy and results:

Search Operator or Function	What It Does	Example
phrase searching	lets you specify an exact phrase (one or more words or numbers) to search, most often setting the word or phrase in quotation marks	"Atlantic Ocean"
adjacency searching	lets you identify search terms to be close to other search terms	economics NEAR policy
truncation searching	allows you to expand your search by shortening a keyword to search for variant endings of root words. The * is the truncation symbol (also called a "wild card") in the online catalog and other databases.	regulat* will retrieve "regulation," "regulators," etc.
letter replacement searching	lets you replace a letter, usually with an asterisk (*) or a question mark (?) depending upon the information tool searched	wom*n retrieves woman and women
domain searching	search for a term specifically in an Internet domain, such as ".edu" for higher education domains	"Shakespeare site:.edu:" finds Shakespeare at higher education institutions' Web sites

Note: Adjacency and truncation operators are not universal and may vary from database to database. Check database help screens to be sure.

Suggestions to Improve Search Results

You can improve your search thereby improving your results (and save time) by following these suggestions:

- begin with a basic search rather than an advanced search
- begin with keyword searching rather than subject searching
- ignore articles like A, An and The at the beginning of titles (also known as "stopwords")
- always scan the search results and review the abstract (if available) before going to the full text and printing it out
- after conducting a basic search and reviewing some of the results by scanning, conduct Boolean searches or use other search operators and functions to further expand or limit your results
- take advantage of the online help offered by the search tool used