

Effective Search Techniques

Introduction

It is very easy to find information in an electronic database by typing in keywords. What is not so easy is to find the BEST information. This guide is intended to help you to find the best information quickly.

Search techniques are similar for all electronic resources, whether you are using an internet search engine, like Google; a bibliographic database like Web of Science; or an electronic reference book. However, bibliographic databases often offer additional search features.

Bibliographic databases contain references to documents, mainly journal articles, plus a short summary (an abstract) of the document. They are often referred to in this handout because of their importance in finding published information. Examples of bibliographic databases can be found in the subject guides:

<http://libguides.bham.ac.uk/subjectsupport/index>

Starting your search

Very few databases allow you to do a natural language search, such as “is there a link between violence in the media and crime?” You need to pick out the **keywords** in your topic, and then link them with **operators**, such as AND or OR.

Keywords

The keywords in the above topic are **violence**, **media** and **crime**. You then need to think of **synonyms**, that is words with the same meaning. In this case:

Violence	media	crime
bloodthirsty	television	criminal
cruelty	film	offender
aggression		offence

Remember to include alternative spellings, such as American spellings (**color** as well as **colour**), acronyms such as **TV** for **television**, as well as alternative words, such as **automobile** as well as **car**.

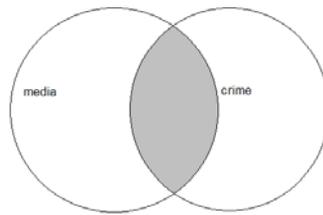
As you search you may come across new keywords particularly in the **keyword field** (sometimes called **index term field**) in bibliographic databases.

Boolean Operators

These are the AND, OR and NOT operators, the logical operators from set theory.

AND is used to join search terms when you want **both** terms to be present in a record, so it is used to combine the different concepts in your search. In set terms this can be illustrated as follows:

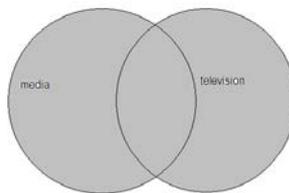
Fig 1 **media AND crime**



The grey area represents the articles you want, with both the word **media** and the word **crime** in them.

OR is used to combine synonyms, i.e. words with the same or similar meanings. It will find articles containing **either or both** words.

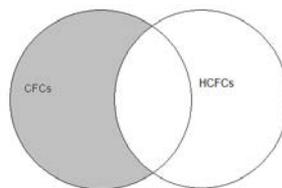
Fig. 2 **media OR television**



Thus this search finds articles with the word **media**, or with the word **television**, or with **both** words (in the intersection in the middle).

NOT is used to eliminate concepts from your search. The term following NOT must be absent from the field in order for the record to be selected.

Fig.3 **CFCs NOT HCFCs**



Therefore, this search will retrieve all documents with the term CFCs, but will eliminate any which also have the term HCFCs.

NB: use NOT with caution as you may eliminate articles which would otherwise have been useful to you. For example, the above search would eliminate an article comparing the effects of CFCs and HCFCs which may have contained some useful information about CFCs.

Other search operators

Different databases will offer different search operators, which may include the following:

SAME or **SENT**. The terms joined by SAME or SENT must occur in the same sentence for the record to be selected

NEAR, WITHIN OR ADJACENCY find words within a specified number of words of each other, helping you to pick up turns of phrase. Some databases allow you to specify whether your words should appear in a specific order, e.g. 'behaviour' before 'therapy'.

It is important to consult the help screens of the database you are using to ascertain which search operators are available, and how they work.

Phrase searching

A phrase search is where the system looks for two words adjacent to each other and in that order, e.g. **toxic waste** will not find “waste which is toxic”. To find a record with this sentence in would require AND, i.e. **toxic AND waste**.

Some databases will automatically do a phrase search if you enter two words together, some will automatically insert AND (e.g. Web of Science), or even OR. It is important to **use the help screens** of the database you are using to find out what it does. If the default is AND, you can often force a phrase search by using quotes, e.g. “toxic waste”, this forces the database to do a string search.

Truncation

Many databases have what is called a truncation symbol. This allows your search to pick up the different endings of words. In the Web of Science, OVID databases (e.g. Medline, PsycINFO) and the engineering Village database, (e.g. Ei Compendex), the symbol used for truncation is an * (asterisk). So a search for **manag*** will find **manager, manage, managing, and management**.

Some databases also offer left-hand truncation, e.g. ***therapy** will find **physiotherapy, psychotherapy** etc, and ***phosphate** will find **monophosphate, triphosphate** etc.

NB Not all databases use the asterisk (*) as the truncation symbol. Find out the truncation symbol for the database (including search engines) you are using by checking the help screens.

Wildcards

A wildcard is a symbol which can be used to stand for any character. If ? is the wildcard, then a search for **wom?n** will find both **woman** and **women**. Not all databases support this feature, and the wildcard symbol is not always the ?. Use the help facility of the database you are using to find out if this feature is supported, and what symbol is used.

Brackets

Brackets are used to tell the system which order to process the operators in. The search

gravel AND road OR highway

Could be processed as **gravel AND road** to give a set of articles with both keywords, and it could then be OR'd with **highway**, which would combine this set with all the articles with the word **highway** in them, (not just those with **gravel** and the word **road**).

However the search:

gravel AND (road OR highway)

would OR the words **road** and **highway** producing a set of articles containing either one or the other word, and will then AND the result with the keyword **gravel** to produce a set of results with either **road** or **highway** and the word **gravel**. The brackets behave in the same way as they do in mathematical formulae, telling the system to process the operation within them first.

Using controlled vocabulary

Searching by controlled vocabulary is one way of efficiently pinpointing the articles you need. This is because each article added to the database is allocated descriptors from a controlled vocabulary. The controlled vocabulary standardises the way articles are indexed.

Many bibliographic databases will allow you to search using controlled vocabulary, either by browsing an index, searching a thesaurus, or your search terms will automatically be mapped against the controlled vocabulary.

Most thesauri are hierarchical in structure. When browsing the thesaurus, you will find that for each term there will be one or more of the following, Broader terms, Narrower terms, Related terms. For example, in the Compendex database, the term *plastics* has the following:

Broader term: materials

Narrower terms: conductive plastics, foamed plastics, plastic coatings, plastic filaments, plastic films, etc

Related terms: adhesives, latexes, petrochemicals, plastic products, polymers, resins etc

When you have viewed the controlled vocabulary you can select which terms you wish to search by, and combine them using the search operators mentioned in this handout.

Narrowing a search

If you get too many results you need to narrow your search:

Use more specific keywords, e.g. a particular type of crime

Restrict the fields searched, e.g. title field only.

Restrict by language, e.g. English only.

Restrict by publication date

Restrict by document type (bibliographic databases) e.g. journal articles only, patents, or reviews. It is a very good idea to look for review articles, as they are a good introduction to a subject, bringing together everything that is known at a particular point in time; they also have long reference lists. If the bibliographic database you are using does not allow you to limit to reviews, you can use **review** as a keyword in your search.

Broadening a search

If you get too few results you need to broaden your search:

Use broader keywords e.g. structure instead of building

Include additional keywords using OR, e.g. violence OR aggression

Separate out phrases, e.g. toxic AND waste instead of toxic waste. This looks for the two words anywhere in the record, not adjacent to each other, so finds more hits, though they may be less relevant.

Help

All databases have help screens. Many will have detailed documentation which you can print out. This may be found under help, under training, or under 'about' or perhaps as a 'database guide'. Library Services provide many of our own guides at:

<http://libguides.bham.ac.uk/subjectsupport/a-z>

If you are still unsure please contact the Information Desk on the ground floor of the Main Library, or contact the Academic Skills Advisors via the relevant subject page:

<http://libguides.bham.ac.uk/subjectsupport/index>

All Library Services documents are available in other formats, please contact Library Services on 0121 414 5828 or <https://intranet.birmingham.ac.uk/as/libraryservices/library/contact/justask.aspx> for information

SK10 – SP 09/2012 – PAG (Amd) – 11/2017