

AIRS

Advanced Information Research Skills

AIRS Module 4

Comprehensive search



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Module 4: Comprehensive search

[Workshop presentation \(YouTube, 50m49s\)](#)

Learning objectives

This module overviews the mechanics of comprehensive searching, and in doing so, outlines search techniques (syntax) to develop effective search statements, provides tips and resources for selecting appropriate databases and includes an activity to practice advanced searching in databases. By the end of this module you should be able to:

- search the literature systematically and comprehensively by formulating effective search statements using appropriate databases and advanced search techniques.

Applying the content to your resource log

As you progress through this module, consider, and refer to the requirements of the resource log and apply your learning to each question.

Resource Log

Comprehensive search (15 marks)

- Nominate two databases highly relevant to your research.
- Show two *effective* search statements that you have *used* when searching each of the databases with each statement demonstrating two distinct search techniques. [See [Module 4.1](#)].
- Across the entire activity you must demonstrate six distinct search techniques [See [Module 4.2](#)].
- For each search statement give the number of results obtained.
- Using the criteria outlined in [Module 4.1](#), identify the strengths and limitations of the database in terms of its relevance to your research question, content and functionality.

4.1 Search strategies

A search strategy is a systematic plan for conducting a search. This plan comprises four steps:

1. Understand your topic and define your search terms
2. Create your search strategy
3. Select an appropriate tool

4. Evaluate your resources.

Search syntax for developing search statements

Subject, keyword and author searching allow you to create effective searches. To search more efficiently, combine terms in a logical way using Boolean and/or proximity operators, truncation and parentheses.

Boolean operators

Boolean operators form the basis of database logic. They connect your search words together to either narrow or broaden your search. Let's consider AND, OR, NOT.

The 'AND' operator

Use AND to connect different concepts. Using AND directs the database to show records that include all the search terms that were used in the search. All search terms will be listed in the results. The more search terms connected by AND, the more specific your search will be and fewer records will be retrieved. Be aware in some databases AND is implied.

The 'OR' operator

Using OR broadens the search to include all records that contain any terms used in the search. This type of search links like terms or synonyms together. Each time you add another term with the OR operator you are potentially increasing the number of records that will be retrieved. You can use OR to search for synonyms, alternate spellings, or abbreviations.

The 'NOT' operator

Use the NOT operator to exclude certain words from your search. Using NOT narrows the search by excluding specific terms. Be aware that this is a powerful search operator and may also exclude important records.



Watch the video to check your understanding of: [Boolean operators](#)

Phrase searching

Some databases assume that a string of words will be searched as a phrase whereas others will search on each individual word. Phrase searching tells the database to look for two or more words in the exact order they are entered. Use the quotation marks "" to enclose a phrase.

Example: Searching for "climate change" finds this exact phrase, excluding irrelevant results about 'change'.



Watch the video: [Phrase searching](#)

Proximity operators

Proximity or adjacency operators allow you to locate one word within a determined distance from another. Words that are close to each other are more likely to be related than those that are further apart. Using proximity operators will limit your search returning a smaller, group of results. Proximity operators differ between databases. Check the database help screens to find out which operators are appropriate to the database you are using.



Watch the video: [Proximity searching](#)

Truncation and wildcards

Use truncation symbols to look for the root or stem of a word. The most commonly used truncation symbol is the asterisk *.

Example: The search *creat** will retrieve create, creates, creator, creative, creativity etc.

Be careful to use a word stem that relates to your meaning.

Example: The search *polic** will return policy and policies, as well as police and policing.

A wildcard symbol is used to substitute for a character either within a word or at the end of a word. This symbol is particularly useful for American or British variations or when you're unsure about the spelling of the word.

Example: The term *organi?ation* will find both 's' or 'z' spellings.

Truncation and wildcard symbols vary between databases and internet tools, so check the help section of each database.



Watch the video: [Wildcards and truncation](#)

Nesting terms

Nesting search terms within parentheses () controls the logic of the search so you can group synonyms in sets. The part of the search within the parentheses is performed first.

Example: The search (“*respiratory tract infection*” or *bronchiolitis*) and *management* finds articles about the management of both respiratory tract infections and bronchiolitis.

Limiters

You may also use limiters to narrow your search. This is often best done in the results screen to increase the relevancy of results after a comprehensive search. Limiters include:

- subject
- format
- date
- institutional affiliation
- full text or peer reviewed articles.

Search engines such as Google have their own limiters including:

- domain - restrict to a country, type of organisation or information provider (.au; edu or .gov for Australian, educational or government information)
- format or file type - such as PDF, PPT, Excel, audio or video files to focus your search
- region
- last updated.

Deciding how to search

Keyword searching

Most databases search keywords or *words anywhere* unless you choose another type of search. The database looks for a match for your keyword in any field in the record. This means that your search will retrieve more information or have higher recall but be less precise than other searches.



Watch the video: [Keyword searching](#)

Field searching

Some databases allow searching in specific fields such as the title, author, or subject. This type of searching is quite specific and will retrieve fewer results than a keyword search. By using field searching you can increase the precision of the search thereby retrieving fewer results.

Example: Searching for *bank* in the author field retrieves results by authors called 'Bank', while searching for *bank* in the keyword field might retrieve results about financial institutions or rivers.

Example: Searching for *constructivism* in the article title field is a quick way of finding articles about that theory, rather than articles that merely mention it in passing.

Subject searching

Subject searching can increase the relevance of your results. Each database record lists subject terms. Also known as subject headings, descriptors or index terms, these are a set of standard terms or controlled vocabulary that are defined and used by indexers of the database to describe a subject so it can be easily found. There are many terms that mean the same thing, using subject headings aims to bring these like terms together under a single term or phrase.



Watch the video: [Subject searching](#)

See Table 1 for an example of the development of a database search query string used in a nutrition science research question to investigate if dairy proteins help to suppress a feeling of hunger.

Note the various types of searches – **keyword** and the use of search techniques, including phrase searching, proximity searching, truncation, nesting, AND/OR/NOT, **subject heading** searches (indicated by MH for medical subject headings), **limiters** to publication type and the **combining of sets** (e.g. S8 or S9), which can be accessed from the search history in the databases.

Table 1: Search strategy

Search	Query	Limiters/Expanders	Last Run Via
S23	S18 AND S21	Limiters - Date of Publication: 19700101-20141031; English Language; Human	MEDLINE
S22	S18 AND S21	Search modes - Boolean/Phrase	MEDLINE
S21	S19 OR S20	Search modes - Boolean/Phrase	MEDLINE
S20	(PT "Randomized Controlled Trial") OR (TI "randomi?ed controlled trial#") OR (AB "randomi?ed controlled trial#")	Search modes - Boolean/Phrase	MEDLINE
S19	(PT "Clinical Trial")	Search modes - Boolean/Phrase	MEDLINE
S18	S16 AND S17	Search modes - Boolean/Phrase	MEDLINE
S17	(MH "Adult") OR (MH "Middle Aged")	Search modes - Boolean/Phrase	MEDLINE
S16	S7 AND S15	Search modes - Boolean/Phrase	MEDLINE
S15	S10 NOT S14	Search modes - Boolean/Phrase	MEDLINE

S14	S11 OR S12 OR S13	Search modes - Boolean/Phrase	MEDLINE
S13	(MH "Milk, Human") OR milk N2 human	Search modes - Boolean/Phrase	MEDLINE
S12	(MH "Infant Formula") OR infant N2 formula*	Search modes - Boolean/Phrase	MEDLINE
S11	(MH "Margarine") OR margarine	Search modes - Boolean/Phrase	MEDLINE
S10	S8 OR S9	Search modes - Boolean/Phrase	MEDLINE
S9	dairy AND (bioactive OR bio-active OR calcium)	Search modes - Boolean/Phrase	MEDLINE
S8	(MH "Dairy Products+") OR dairy N2 product#	Search modes - Boolean/Phrase	MEDLINE
S7	S1 OR S2 OR S3 OR S4 OR S5 OR S6	Search modes - Boolean/Phrase	MEDLINE
S6	(MH "Energy Intake+") OR "energy intake"	Search modes - Boolean/Phrase	MEDLINE
S5	calor* N2 intake	Search modes - Boolean/Phrase	MEDLINE
S4	(MH "Hunger+") OR hunger	Search modes - Boolean/Phrase	MEDLINE
S3	fullness	Search modes - Boolean/Phrase	MEDLINE
S2	(MH "Eating+") OR (food N2 intake)	Search modes - Boolean/Phrase	MEDLINE
S1	(MH "Satiation+") OR sati?t*	Search modes - Boolean/Phrase	MEDLINE

Step your searches

Searching is the process of finding out what is available via a search tool, changing and developing your search statements accordingly, and limiting the view to construct the best set of results possible. A database has different screens specialising in advanced search, refining results and working with results. Think about how you will search. What will be your search process? This step by step approach may be useful in determining your method.

1. Determine search objective - identify initial key concepts, synonyms and alternative term.
2. Conduct a preliminary keyword search - evaluate results for the most suitable records and glean suitable alternative terms.
3. Comprehensive keyword search - broaden your search with alternative terms for comprehensive results.
4. Subject and keyword search - scan for subject terms, use the drop-down indexes.
5. Apply limiters to results to increase relevancy (e.g. subject, date, format).
6. Export citations and download files.

Activity 1 – Watch these videos

Watch these videos for an example of how to map the research question and an overview of search strategies.

- [Planning your search and the OR operator \(YouTube video, 5m14s\)](#)
- [Phrase searching, wildcards, truncation \(YouTube video, 5m15s\)](#)
- [AND operator, nested searching, proximity searching \(YouTube video, 6m40s\)](#)
- [What is a subject heading? \(YouTube video, 5m12s\)](#)

Activity 2 – Map the search process

Using your research question map the search process for your research topic in your [Resource Log](#). It will be a record of the terms, synonyms and strategies you have used to collect information, as well as the tools you have consulted. Consider the strengths and limitations of each database.

4.2 Databases

Identifying and using subject specific databases is very effective for finding information on a topic. For comprehensive searching it is recommended to use more than one database to access a broader range of resources as a single database does not index all the literature on a specific topic.

A database is a regularly updated collection of online resources and may contain journal articles, ebooks, conference papers, maps, videos and other electronic resources. Databases can be related to specific subject areas or cross multiple subjects.

Most databases offer full-text access, but there are index and abstract databases which provide the bibliographic details and the abstract of the resources only. These consolidate a broad range of resources within a subject area and additional useful functionality specific to the field such as a thesaurus or subject headings.

Examples of abstract and index databases:

- [Social Work Abstracts](#)
- [Scopus](#)
- [EconLit](#)

- [Inspec](#).

How to access QUT databases

As a QUT student or staff member, you can access all databases on campus and off campus by logging in through the library page.

QUT Library provides access to over 800 databases which are accessible on the library page:

- [Database A - Z list](#) (all databases listed in alphabetical order)

Locate a database by name or by the descriptions given for each database. The descriptions provide information about the type of resources in a database and the subject areas covered.

Example of a database description

An index of peer-reviewed literature including journals, books and conference papers covering a wide range of subject areas. It is primarily aimed at researchers and provides a number of tools to track, analyse and visualise research

Some databases do not provide full-text access to their resources (such as Scopus) but index millions of high-quality resources. If you find useful resources in one of these databases but there is no full-text option available, check for , try a search of Google Scholar, the lead author's institutional repository or use document delivery.

Recommended databases for study areas

QUT Library's [researching by study area](#) section gives an overview of resources for individual subject areas, including a section about databases with links to recommended special databases and instructions on how to use them. See guides for:

- [Architecture and built environment](#)
- [Business](#)
- [Creative industries](#)
- [Education](#)
- [Engineering](#)
- [Health](#)
- [Information technology](#)
- [Justice](#)
- [Law](#)
- [Mathematics](#)
- [Science](#)

Databases are an index of scholarly resources. Databases for research often include collections of information, full text articles, book chapters and websites. Understanding the structure of databases will help you get the most out of searching no matter what the tool. For the purpose of research, a database can be described as:

- a collection or repository of electronic sources
- a searching tool using records and indexes
- a publishing platform (e.g. EBSCOhost which has multiple collections by subject and/or format).

Common features of databases

Common features of databases include:

- basic and advanced search screens
- searching by fields such as author, article title, abstract
- search syntax techniques such as Boolean, truncation, wildcard, proximity
- results screen with ability to sort and view in different ways
- limiters to refine results by subject, format, publication date, peer-reviewed, etc.
- the ability to email, print, download, export to reference management software
- the ability to create profiles, save searches and results
- email alerts for searches and Table of Contents
- a thesaurus of subject terms in use
- help functionality to show the search options.

Evaluating databases – strengths and limitations

Being aware of the strengths and limitations of a database will help to maximise their potential as well as decide when it is time to select or move to another. The guiding questions below will help you decide on the value of individual databases for your research.

Criteria	Questions to ask
Comprehensiveness	<ul style="list-style-type: none"> • Does the database offer reliable, comprehensive coverage of journal articles in the area of interest? Is it suitable for a comprehensive search of the literature or does it only cover a small percentage of the literature?
Scope	<ul style="list-style-type: none"> • Coverage – what years are covered? • How up to date is the information and how often is the database updated? • What types of publications/formats are included?
Quality	<ul style="list-style-type: none"> • Is peer reviewed academic information included?
Search interface	<ul style="list-style-type: none"> • How do you work the search functionality options in the search screens and results screens? • Does the database allow for citation searching? • Is controlled vocabulary searching available?

	<ul style="list-style-type: none"> • What are the advantages and disadvantages of the interface screens?
Search syntax or algorithm	<ul style="list-style-type: none"> • Does the database have the desired search syntax? • What do the results show about how the search works?
Ease of use	<ul style="list-style-type: none"> • Is the database easy to access and to use? • Is it easy to save searches, create alerts, export results, and download PDF? • Is it easy to refine your searches, e.g. to date, publication type, subject?

How to pick suitable databases for your research

Databases can be used for many different aspects of your research from fishing, developing your research proposal, writing your literature review, conducting research activities, writing up your results and discussing the significance and impact of your research.

Searching databases at the start of your research journey can:

- inspire creative ideas
- consolidate your understanding of your research area
- help you write a good research question
- accelerate the research proposal writing process
- provide the framework of study for the duration of your degree.

Explore a few different databases to see what sorts of information they contain. Ask your supervisory team and your [Liaison Librarian](#) for guidance on what databases may be appropriate to answering your research question. Once you have decided on the most relevant databases for your topic, from the database page click on **Add to your HiQ Launchpad**, to create a quick link.

Activity – How to pick suitable databases for your research

1. Go to the QUT Library [Find Databases](#) guide for your subject area (or resource type e.g. online video) and scan the list of suggested resources.
2. Read the synopses for databases that are likely to be relevant and select your three top databases. If you'd like further assistance with selection, contact your [Liaison Librarian](#).
3. Search within each of the three databases using terms and synonyms from your research question. Your search is likely to require modifying (broadening or narrowing) to retrieve highly relevant results. Use the help facility for each database to learn more about specific search operators and search functionality in use and amend your search as necessary.
4. Record your search history from each of the three databases. This could either be a screen capture showing the development of your search or the 'search history' (many databases provide this feature – check the help screen). The important thing is to show how you have adapted and modified your search within each tool to yield the most useful results. Note – there is no one correct search strategy.
5. Reflect on the main benefits and limitations of your three databases in relation to your research topic. This could include the scope of the database, search functionality or other specifics you have noticed in using the tools.

4.3 Web searching: Google Scholar

While web searching tools such as Google and Google Scholar are not considered databases, they can be useful for finding scholarly resources and grey literature.

Google Scholar

Google Scholar is a web tool by Google that indexes scholarly materials, theses and some types of grey literature. Google Scholar is best used in conjunction with discipline-specific databases.



Read the tip sheet: [Google Scholar](#)