GEN-8001: Take control of your PhD journey

Literature search for technology and the natural sciences

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University Library, 26 February 2020
Intended learning outcomes

- Make an effective and structured search for your dissertation or thesis
- Know where to look for different types of information
- Know where to come for help
Expectations...?
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Databases are useful for systematic searches.
Databases have useful features like showing who have cited the article and exporting citations.
Google Scholar is easy to use, but gives more «search noise»

Google Scholar gives search results from scientific journals, open archives and books. Read about the features to optimize your search, learn to set up a library, etc.
Google Scholar has disadvantages compared to other scientific databases.

- Less degree of control and insufficient metadata.
- Inflated search results.
- Not as regularly updated.
- Does not list more than the first 1000 hits.

Hard to understand your own information needs?

What do you need?
Where do you find it?
How do you find it?
Systematic literature search

• Step by step process
• Structured and preplanned
• Careful consideration of search terms
• Selection of databases
• Choice of search methods
• Reflection on the search results
Information search – the preferred workflow

- Write down research question or topic
- Identify the central concept(s)
- Find appropriate terms (and keywords) to each of the concept – one at a time
Research question: Main concepts

Example:

What measures have been taken to help prevent AIDS in the horn of Africa?
Search preparation: Keywords

- AIDS
  - HIV
  - Acquired Immune Deficiency Syndrome
  - Human Immunodeficiency Virus

- Help prevent
  - Prevent(ion)
  - Intervention
  - Awareness
  - Educat(ion)

- Horn Africa
  - Djibouti
  - Eritrea
  - Ethiopia
  - Somalia
Information search – the preferred workflow

• Write down research question or topic

• Identify the central concept(s)

• Find appropriate terms (and keywords) to each of the concept – one at a time

• Combine search terms:
  - first all synonyms covering one concept (OR)
  - then search results from different concepts (AND)
Operations - OR

Is used to:

- Link terms that we think are synonyms that will capture the same concept.

What kind of effect has OR?
- Expanding
- Several OR combinations gives more hits
Operators - AND

Is used to:
Link terms for different concepts when we want literature about both concepts simultaneously

The effect of AND?
Narrow

The more AND-combinations - fewer hits.
Further search syntax

• Quotations marks: used for phrase searching
  – e.g. “graduate students”

• Wildcards
  – Asterisk (*): use to pick up variants of terms
    • e.g. parent*: parent, parental
  – Question mark (?): Used to replace a single character
    • e.g. t?re : tire, tore, tyre
  – Dollar sign ($) : To find both the American and British spelling
    • e.g. flavo$r: flavour and flavor / colo$r: colour and color

• Parentheses
  – e.g. (academic OR educational) AND achievement
Combine searches

AIDS OR HIV OR “acquired immune deficiency syndrome” OR “human immunodeficiency virus”

prevent* OR interv* OR aware* OR educat*

“Horn Africa” OR Djibouti OR Eritrea OR Ethiopia OR Somalia

combined (AND) search = 1311 hits
Exercise 1: Search preparation
(ca. 15 mins)

• Explain your research question (or topic), as clearly and concisely as you can, to your partner.

• Work together to identify the main concepts («boxes») on which you could build a search.

• At half time (or third), switch and repeat.
(More on) efficient workflow

• Build your search in the most relevant database

• Consider the amount of hits against your expectations. Refine your search by narrowing in.... or widening out as needed

• Adapt your search to other databases

• Make yourself a user profile, save your searches, and set up alerts
Do you already have a very good paper? Take a look at:
- the index terms (Keywords). This may give you some new terms to search for
- the function Times Cited. This will give you newer articles that has cited your paper

Find good search terms and relevant literature:
Keywords and Thesaurus / Controlled vocabulary / subject headings

Non-Indexed databases

• **Keyword**
  – Author selected
  – Word in title, abstract or anywhere in an article
  – Always use a variety of keywords to search
    • [Google Scholar](https://scholar.google.com)
    • [Web of Science](https://webofknowledge.com)

– [https://libguides.usc.edu/c.php?g=631331&p=4411583](https://libguides.usc.edu/c.php?g=631331&p=4411583)
Keywords and Thesaurus / Controlled vocabulary / subject headings

Indexed databases

- Thesaurus / Controlled vocabulary / subject headings
  - Word(s) and/or phrase(s) used to describe a specific concept or idea
  - Individual citations are reviewed, usually by a subject specialist, and the appropriate term is applied (even if the author does not use that exact term)
  - Indexed databases generally provide a link to their thesaurus:
    - **PubMed**: Medical Subject Headings (MeSH)
    - **PsycINFO**: Thesaurus of Psychological Index Terms
Example of a PubMed MeSH Hierarchy Tree

Selected term: Climatic processes

https://libguides.usc.edu/c.php?g=631331&p=4411583
Keywords and Thesaurus / Controlled vocabulary / subject headings

• Example:

• **Keywords**: cat scan OR ct scan OR x-ray scan OR tomography OR tomodensitometry OR ct x ray OR cine ct

• **PubMed MeSH** *(thesaurus/subject) Term*: Tomography, X-Ray Computed
Keywords and Thesaurus / Controlled vocabulary / subject headings

Recommendation:

– Use a combination of **keywords** and **controlled vocabulary/ subject headings** (when available) to find all related articles or materials.
Database selection - Talk to the library!

Med/health essentials:
- Cochrane library (Wiley)
- Medline (Ovid)
- PsycINFO (Ovid)
- PubMed

Science and Technology:
- Standard.no
- ACM Library
- IEEE Xplore

Cross disciplinary:
- Google Scholar
- Scopus (Elsevier)
- Web of Science (Clarivate)

Find database for your field: https://uit.no/ub/fag#linje4
New Phd…? **Munin** is an Open Archive with master’s and doctoral thesis, articles, reports, etc.

[Image of the Munin website]

**Munin** is an open research archive for the University of Tromsø, Norway. It contains a variety of academic documents including master’s and doctoral theses, articles, and reports. The website provides a search function and browse categories by author, titles, and dates. There are also sub-communities for different faculties and collections within the archive.
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17 IF ALL ELSE FAILS..SCI-HUB ?

https://libguides.rug.nl/medicalejournals/get-the-pdf
Systematic search

A good search strategy is essential to find the information you need, and is a part of systematic search.

http://result.uit.no/sciencingright
Exercise 2: Practice searching  
(ca. 45 mins)

Work individually (or in pairs, if you prefer):

• Build a search in the top ranked database for your topic, using controlled terms (if available), text words (if necessary), operators as necessary, and the search history.

• If time: Adapt the search to another database

• Ask us anything – there are no stupid questions!
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