Take control of your PhD journey: Literature search for technology and the natural sciences

How to search for literature in technology and the natural sciences

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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 future help
Expectations....?
Services from the University Library

Start here:
uit.no/ub

or here:
uit.oria.no
Much of the (journal) literature and the vast majority of e-books are behind paywalls. You get access by being affiliated to UiT.

To get this access, you must be recognized with an IP-address from UiT. Outside campus, you must therefore use a VPN client.

BrowZine - your favorite journals right on your tablet

Tired of countless article alerts in your inbox?

UiT now subscribes to BrowZine - a new app that gives you your favorite journals right to your tablet!

Check out BrowZine Web
Hard to understand your own information needs?

What do you need?
Where do you find it?

Within the disciplines of medicine and health sciences, for example, it`s being released over 25,000 journals annually.
(The lack of a) strategy...

Accurate search words and reasonable use of refining options will give good search results...

...and still, many of you do not really know what you are looking for...!
Information search – the preferred workflow

1. Identify the central concept(s) from your research question

2. Find appropriate terms (and keywords) to each of the concept – one at the time – and take notes…..

3. Build your search in the most relevant database

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

5. Adapt your search to other databases

6. Avoid that your searches are based on chance

7. Look at the function Citation Network (or Cited by) when you have found a very relevant article in Web of Science. May be very useful…..
Operators - 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”

• Truncation and 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

• Parentheses
  – e.g. (academic OR educational) AND achievement
(More on) efficient workflow

• «Crystal clear» research problem(s)...
• Go through relevant articles and identify concepts and keywords which you can use
• Exploit relevant review articles (or meta-analysis)!
• Try different things in simple "test search" before you build your ultimate one....
Search tips

• Make yourself a user profile, save your searches, and set up alerts
• Use your search terms - one at a time
• Use your search history to combine...
  • ...first all the synonyms covering one concept (OR),...
  • ...the search results from the different concepts (AND)
• Use time to investigate your hit lists...!
• «Play» with the different databases....!!
Search question: Main concepts

Example:

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

<table>
<thead>
<tr>
<th>Category</th>
<th>Keywords</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIDS</td>
<td>AIDS, HIV, Acquired Immune Deficiency Syndrome, Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>Prevent</td>
<td>Prevent(ion), Intervention, Awareness, Educat(ion)</td>
</tr>
<tr>
<td>Horn Africa</td>
<td>Horn Africa, Djibouti, Eritrea, Ethiopia, Somalia</td>
</tr>
</tbody>
</table>
Combine searches

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

AND

prevent*
OR
interven*
OR
aware*
OR
educat*

AND

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

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

Non-Indexed databases
• Keyword
  – Author selected
  – Word in title or abstract (or other text field in a database)
  – Always use a variety of keywords to search Non-Indexed databases.
    • Google Scholar
    • Web of Science

https://libguides.usc.edu/c.php?g=631331&p=4411583
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: articles on cat scan

- **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
  - subject heading applied for the topic
Recommendation:

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

**Med/health essentials:**
- [Cochrane library](http://www.cochranelibrary.com) (Wiley)
- [Medline](http://www.medinline.com) (Ovid)
- [PsycINFO](http://www.psycinfo.com) (Ovid)
- [PubMed](http://www.pubmed.com)

**Cross disciplinary:**
- [Google Scholar](http://scholar.google.com)
- [Scopus](http://www.scopus.com) (Elsevier)
- [Web of Science](http://wos.clarivate.com) (Clarivate)

And many more...
New Phd...? **Munin** is an Open Archive with master’s and doctoral thesis, articles, reports, etc.
Standing on the shoulders of giants…

**Scopus**
The world’s largest interdisciplinary abstracting & indexing database. Main coverage from 1996 and onwards, but pre-1996 indexing is growing!

**Web of Science**
Popular database. Coverage from 1900. Fewer titles indexed than Scopus, but smaller doesn’t necessarily mean less useful!

These databases overlap, but also index different sources.

**Use both databases!**
Scopus versus Web of Science:

- **Scopus**:
  - ~21,500 journals (Jan 2016)
  - Updated daily
  - European
  - >1996

- **Web of Science**:
  - ~12,000 journals
  - Updated weekly
  - American
  - -1900
Looking for the PhD work of others?

*ProQuest Dissertations & Theses Global (PQDT Global)*

- The world's most comprehensive collection of full-text dissertations and theses
  - US, UK, Ireland
  - Millions of searchable citations (1861 →)
  - 1 million in full-text (pdf), primarily 1997 →
  - 2 millions available for purchase in print
  - 70,000 (in full-text) added each year, partnership with 700 leading institutions worldwide

- Coverage
  - Business and Economics, Medical Sciences, Science, Technology, Agriculture, Social Sciences, Arts, Humanities

- Not indexed in Oria. Access this database by clicking the ‘Databases’-link at [uit.no/ub](http://uit.no/ub)
Exercise 2: Practice searching
(ca. 60 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!
Subject librarians in technology and the natural sciences

Chemistry, biochemistry and pharmacy

sissel.h.hansen@uit.no

Physics, mathematics, computer science and engineering

glennda.villaflor@uit.no

Biology, geology and fisheries

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Fill out our evaluation form!


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Date: 10.10.18
Course code/name: Gen-8001