MSE498: Design and Research Project

Literature Search Workshop

Engineering & Computer Science Library
Fall 2013
Outline

- Recap of MSE390
- Basics of a lit review
- Building a search strategy (review)
- How to get the good stuff – context and comprehensiveness
- Staying up to date
- Overview of relevant databases
- Search time
MSE390: Library Class

- Introduction to Compendex and Scopuse databases
- How to construct a search strategy
- Primary and secondary sources
Literature review

Even an abbreviated review needs to:

- convey to your reader what knowledge and ideas have been established on a topic
- what their strengths and weaknesses are
- identify areas of controversy in the literature
- formulate questions that need further research

Summarized from *The Literature Review: A Few Tips On Conducting It* Written by Dena Taylor, Health Sciences Writing Centre
http://www.writing.utoronto.ca/advice/specific-types-of-writing/literature-review
Information searching 101

General

- Encyclopedias
- Textbooks
- Books
- Review Articles
- Primary Articles

Also: Standards, Technical Papers, etc.
Building a search strategy

1. Define the focus of your question
2. Identify the key concepts
Search strategy

find alternate terms for your key concepts:

- broader, narrower, related terms
- acronyms
- plural/singular, spelling variations - use the database tools
broadening your search

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<thead>
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<th>Concept #1</th>
<th>groundwater</th>
<th>ground water</th>
<th>subsurface water</th>
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<tbody>
<tr>
<td>Concept #2</td>
<td>remediat*</td>
<td>bioremediat*</td>
<td>ameliorat*</td>
</tr>
<tr>
<td>Concept #3</td>
<td>mercury</td>
<td>heavy metal*</td>
<td></td>
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Then combine with appropriate Boolean operators (AND, OR, NOT, etc.)
broadening your search

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Then combine with appropriate Boolean operators (AND, OR, NOT, etc.)
You would like to search for articles on this topic:

*use of atomic layer deposition for thin film applications in microelectronics*

What search terms could you use?
How would you arrange them into a boolean search strategy?
What synonyms and wildcards might you use to broaden or narrow your search?

________ or _______ or _______

and

________ or _______ or _______

________ or _______ or _______
Keywords

- searches titles, abstracts, subject headings
- problems
  - Typos in the database
  - False drops
  - You pick the wrong keywords
    - you pick *program evaluation*, they use *benchmarking, TQM, outcome assessment*...
Thesaurus Searching

- AKA controlled term searching
- uses a *built-in list* of subject terms
  - terms are assigned no matter what keywords the author uses
  - enables consistency
  - Powerful way to search

*Not every database uses thesaurus searching*

*Example: Compendex*
Gaining context, comprehensiveness: some strategies
1. Use journal databases, but limit to review articles

- experts identify significant literature, authors
- reveal gaps in existing body of research
- identify controversies quickly

example: Compendex, Web of Science
Finding review articles: other strategies

look for journals with titles like ...

- *Advances in*...
- *Reviews in*...
- *Annual reviews*...
- *Progress in*...
2. Use citation databases

- identify significant authors, significant papers by the number of times they have been cited

  **Ancestors**
  - aka footnote tracing
  - Use reference lists from review articles

  **Descendents**
  - Take most relevant articles
  - Follow them forward in time
<table>
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Web of Science – times cited
exercises

guides.library.utoronto.ca/mse498
Best databases for isolating review articles:

- Compendex
- Web of Science
- Scopus
potential problems with citation data

- Older famous papers widely accepted therefore may not be cited as much

- Important papers not written in English not cited in English literature

- High cites may not measure *QUALITY* of a study, but may measure *INFLUENCE*
3. Use thesis/dissertation databases

- who has been doing what?
- get a fairly complete picture quickly
Dissertations & Theses Fulltext

- international coverage
- search by school, advisor, author, or by keyword

Advanced Search

Look Up Citation | Command Line | Find Similar | Obituaries

protein isolate* OR [rapeseed]

AND (Exact: "University of Toronto (Canada)"

AND (in Advisor = ADV

AND (in School name/code = SCH

AND (in All fields + text

Search | Clear form
4. Staying current: alerting services

- Mail alerts are sent after every database update.
- Sent if the update contains any new records that match your saved query.
- Don’t have to rerun search manually.

*Example: Compendex*
So... now what?

- Select 2 or 3 likely databases, e.g., Materials Science Research Database, Web of Science, Scopus
- Construct a search
- Use appropriate syntax, limits
  - Search the database how it wants to be searched
- Set up alerts
- Use citation management software
Starting point: research guide
Major databases

- Compendex (aka Engineering Index)
- Materials Science Research With METADEX
- Scopus
- Web of Science
- Dissertations & Theses Full Text
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