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Researching Skills and Strategies Grad -Tutorial 2

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Literature Review

As part of your thesis or dissertation you will need to conduct an extensive literature review in your research area

Bibliography

[1] Z. Chen and L. S Turng. A review of current developments in process and quality control for injection molding. *Advances in Polymer Technology*, 24(3):165–182, 2005.

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[4] M. R. Kamal and P.G. Lafleur. Heat transfer in injection molding of crystallizable polymers. *Polymer Engineering and Science*, 24(9):692–697, 1984.

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What is a Literature Review?

- A survey of published materials that are relevant to a particular issue, theory or area of research

- It provides a description, summary, and critical evaluation of each work

- Materials surveyed may include: **scholarly journals, books, dissertations, conference proceedings**, etc.

Library Resources

Print and electronic versions of:

- Books

- Journals

- Standards

- Conference proceedings / papers

- Technical reports

- Reference materials (handbooks, encyclopedias, guides, dictionaries, etc.)

Picking the Appropriate Source for Your Research

- Patents   0

- Conference Presentations   6 – 12 Months

- Conference Proceedings   1 - 2 years

- Journal Articles   1 – 2 years

- Textbooks   3 – 5 years

- Reference books   5 – 10 years

Patents

What is a patent?

- A patent is an exclusive right granted for an invention

- Example:

    - New <u>product</u> or a <u>process</u>

    - <u>New technical solution</u> to a problem

Patents
Why look for patents?

To determine:

- Whether or not you can get a patent
- Whether your invention has already been patented
- How an application and patent is structured
- Market Information
- Emerging technologies
- Competitors
- Help available for the preparation of application

Patent Databases
(Free Online Access)

Canadian Patent Database

❑ http://brevets-patents.ic.gc.ca/opic-cipo/cpd/eng/search/basic.html

U.S. Patent Databases (USPTO)

❑ http://patft.uspto.gov/

WIPO - World Intellectual Property Organization

❑ http://patentscope.wipo.int/search/en/search.jsf

European Patent Office

❑ http://www.epo.org/searching.html

Limitations of a Patent Document

- Patent documents are not peer-reviewed

- Technical details tend to vary and sometimes vague

- Older patents tend to miss technical detail

- Some are written in technical-legal jargon often called "patentese" – Confusing

- Older documents follow less common standards

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Standards

- Standards are documents that describe the important features of a product, service or system

- There are thousands of standards in use around the world that cover everything, from the simplest screw thread to the most complex information technology network

- Standards ensure products and services are consistent, compatible, effective, and safe

What the Engineering and CS Library Holds

- ASTM, CSA, ISO, IEEE, BSI

- And many more

- As a graduate student, you can also make purchase suggestions for standards not available at the library (free of charge)

Finding Standards

WorldCat (UNB Library Catalogue)

- By title

- By Organization

- By subject

- Full text Resources (UNB databases)

  - IEEE Digital Explore

General Standards Websites

- American National Standards Institute

- International Organization for Standardization

- National Institution for standards and technology

- NSSN

- World Standard Services network

Textbooks / Books

Books will be one of the main types of sources you'll use for your research

Books typically:

- Provide in-depth coverage of a topic

- Puts topics in context with related topics

- Are written by experts in the field

- May contain **_historical information_** about the topic

Where Books /e-books can be Found: by searching the library catalogue and e-book collections

Example:

- UNB WorldCat provides access to books, e-books and other items

- E-book collections:

  o Springer eBook Collection

  o CRCnetBASE (Includes ENGnetBASE)

  o AccessEngineering

  o ebrary Collections

  o MyiLibrary

  o ASCE Library eBooks (American Society of Civil Engineers)

Conference Proceedings

- Conferences are a major source of cutting edge research, particularly in science and engineering

- At conferences, researchers present papers on the research they are doing and obtain feedback from the audience

- The papers presented in the conference are then usually published in a volume called a conference proceeding

How to Find Conference Proceedings

- Searching the UNB WorldCat for electronic and print proceedings

Examples of Full text Resources:

- IEEE Digital Explore

- ASME Digital Collection

- ASCE Library

- ACM Digital Library

- And in many more full text resources

Journal Articles

Reports original research and in-depth analysis:

- Written by scholars and researchers

- Audience is scholars, researchers and students

- Use scholarly language and jargon of the discipline

- Are usually peer-reviewed

- Include full documentation of sources

Example: *Journal of Manufacturing Technology Management*

Journal Articles are Found in Databases

- **Discipline-Specific Databases:**
  - ➢ *IEEE Digital Explore & ACM Digital Library*

- **Subject-Specific Databases:**
  - ➢ *OnePetro (formerly SPE eLibrary)*

- *Multi-Disciplinary Databases:*
  - ➢ *Web of Science & Scopus*

- *Content Specific Databases*
  - ➢ *ProQuest - Dissertations & Theses*

Reference Books

- Provide short, to-the-point factual information

- Good starting point – provide definitions & general information

Examples:

- ➢ Encyclopaedias

- ➢ Dictionaries

- ➢ Directories

- ➢ Atlases and maps

Finding Reference Materials

UNB WorldCat

- Search (ENG-REF by location Code)
- kw: "term / phrase" AND b8: ENG-REF

Other electronic Resources:

- AccessEngineering
- A Biographical dictionary of people in engineering from earliest records until 2000
- Condensed encyclopedia of polymer engineering terms
- Dictionary of financial Engineering
- Handbook of Package Engineering
- Maintenance Engineering Handbook
- Manufacturing engineering Handbook
- The Pocket illustrated dictionary of engineering terms
- Encyclopedia of Computer Science

Picking the Right Database

When you're working on your Thesis or Dissertation, you will need to consult many databases

Things to Consider when Selecting Databases

- Does it cover the desired subject area?

- If the subject is covered, does it contain the key journals in this area?

- What is the time span for the coverage?

- What types of publications does it cover?

- What type of overlap in content is there with other resources?

- How often is it updated?

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Search Strategy

1) Identifying key words

2) Performing a search

3) Acquiring relevant sources

4) Evaluating information sources

1) Identifying Key Words

- Once you have general subject information, identify the main subject and keywords terms that best describe your topic

- Brainstorm a list of keywords going from:

  ### _broad to specific_

Examples

Broad Terms	Specific Terms
Circuits	Electronic Circuits
Programming	C++ Programming
Machining	CNC Machining
Welding	Arc Welding

Low Relevancy

High Relevancy

Note: Broader terms tends to give larger volumes of search results

2) Performing a Search

- Use your keywords and run searches in electronic resources

- Searching tips:

  - Use appropriate filters

  - Move from broad to specific

  - Keep a record

3) Acquiring Relevant Sources

Electronic OR Hardcopy (4 options)

- Library

- Inter-Library Loans (Document Delivery)

- Online Databases

- Online E-book collections

4) Evaluating Information Sources Quick Tips

Authorship:

- Which person or organization made the site?

- What are their qualifications and or authority?

- On which type of domain was the site hosted?

Currency:

- When was the site first created?

- When was the site last updated?

- Timeliness of information

4) Evaluating Information Sources Quick Tips (Cont.)

Publishing Body:

- Is the publisher reputable?

- Is the publication peer-reviewed or self published?

Accuracy:

- Are facts & data supported by sources ?

- What is the research methodology used?

4) Evaluating Information Sources Quick Tips (Cont.)

Objectivity / Bias

- Is the information presented with or without bias or conflict?

- What are other viewpoints and arguments?

Appropriateness

- Is information appropriate for your level of research

- Is this the best resource avalaible for your research needs?

Demonstrations:

Database searching:

     o *Scopus*

     o *IEEE*

     o *Thesis and Dissertations Database*