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OÉ Gaillimh

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Conducting a Systematic Review

In contrast to the traditional or narrative literature review, systematic literature reviews use a more rigorous and well-defined approach to reviewing the literature in a specific subject area.

Most research starts with a literature review of some sort. However, unless a literature review is thorough and fair, it is of little scientific value. This is the main rationale for undertaking systematic reviews.

A Systematic review aims to:

- Address a specific, focused and relevant research question
- Search for, locate and collate the results of the search in a systematic way
- Appraise the quality of existing research in the light of the research question
- Synthesize the results of the review in an explicit way
- Identify gaps in existing knowledge
- Propose future research
- Present the review in the final report to enable critical appraisal and reproduction by fellow researchers.

(Torgerson 2003: 7-8)

The advantages of systematic literature reviews are:

• Well-defined methodology makes it less likely that the results of the literature will be biased *

(*does not protect against publication bias in the primary studies)

• Can provide information about the effects of some phenomenon across a wide range of settings and empirical methods. If studies give consistent results, systematic reviews provide evidence that the phenomenon is robust and transferable. If the studies give inconsistent results, sources of variation can be studied.

• With quantitative studies, it is possible to combine data using meta-analysis, increasing the likelihood of detecting real effects that individual smaller studies are unable to detect.

Effective and strategic planning of your literature review can save valuable time when searching the vast array of both published and unpublished research in your area. This can be defined by a number of key steps:

1. Define your research question

A research question is a precisely stated question that guides the review. Clarify the meaning of the topic and/or particular words.

2. Decide on scope and boundary

If your area of research is a large one you may need to choose a specific aspect. Bear in mind any resources constraints like time; support available; resources; and the length of the review/paper to be written.

3. Define your research question in terms of "keywords"

Define your research question in terms of meaningful and relevant words to search for in the various information sources

- Think of alternative words, meanings and contexts as defined by your research question
- Think of alternative spellings, particularly American ones, e.g. *colour* or *color* etc

4. Set limitations to your search

Search limitation factors may include:

- Publication date
- Range of publications
- Geographical boundaries
- Country of publication
- Time scope

5. Decide on the best sources of information for your review

This may depend on the type of review you are doing. For example are you concerned with issues of theory, policy, quantitative or qualitative research etc?

You may need to consult any of the following sources of information including published and unpublished research:

- Bibliographies
- Review Journals
- Magazines and Newspapers
- Scholarly Journals
- Books
- Government Publications
- Maps
- Non-government publications
- Conference proceedings
- Legislation
- Multi-media
- Standards
- Data
- Research Reports
- Databases
- Statistics
- Indexing and abstracting services
- Transactions
- Theses and Dissertations
- Patents

6. Conduct your searches

Online databases will be a useful starting point from which to begin your literature search. Consult the various Subject Support pages to find out more about the resources available in your specific subject area.

When searching a database there are a number of ways to make your search more efficient:

Combine terms

Using the set of keywords and phrases that define your research topic **combine terms to:**

- **Narrow your results** using **AND**. If you combine terms with AND, both words must be present in the record.
- **Widen your results** using **OR**. If you combine terms with OR, either or both words must be present in the record.
- **Exclude terms** from your results set using **NOT**. If you combine terms with NOT, the first word must be present but not the second one.

Wildcard searching

Many databases use wildcard characters to search efficiently for alternative terms. The wildcard character can be thought of as a special character that means 'replace me with zero or more occurrences of any other character'. The dollar, question mark or asterisk $? * are frequently used in this way.

The following are examples of search terms containing wildcards, together with examples of the terms they might match:

- **bio* - retrieves biology, bioengineering, biotechnology, etc.**
- **wom*n - retrieves women, woman etc.**

Different databases use different wildcard characters. To find out which character is used as the wildcard in a particular database, check its online help system.

7. Review progress after searching a number of sources

Review your search results to assess their:

- **Origin** i.e.: author, authority, reputation, publisher
- **Content** including evidence of objectivity and currency
- **Relevance** to the topic i.e.: seminal work, highly cited
- **Access** including availability, accessibility, copyright and format

If necessary, revise your search strategy and repeat the search and select the most relevant records from your search results.

8. Obtain copies of relevant references

Accessing the full text

Many of the databases available to you via the Library will provide you with a link to the full-text journal article via the SFX Link. This blog post includes a video link showing how SFX links to full-text: http://salusnuig.blogspot.ie/2013/10/link-to-fulltext-of-journal-article.html

The full text document will usually be available in either PDF format (useful for printing) of HTML(easier to read on screen).

Useful resources

A more detailed guide with additional reading from University of Oxford.

Torgerson, C. (2003) *Systematic reviews and meta-analysis*, London: Continuum

More books on conducting systematic reviews available from the Library

Books on meta-analysis available from the Library

More detailed guides to systematic reviews on Health Sciences portal

Library Support for Systematic Reviews and Funding Proposals

Are you and your team considering undertaking a systematic review or submitting a research proposal? If so, the Library can support you in a number of ways:

- The processes involved in carrying out an effective literature search for a systematic review.
- The selection of appropriate electronic and printed resources (published and non-published) to search, including sources of grey literature.
- Support on searching relevant databases.
- Support on acquiring and using EndNote bibliographic management software to take the pain out of organising your references as well as automating the generation of your citations and bibliography.
- Processes for library related services such as inter library loan requests and more
- Advice on setting up search alerts