## Exercise 6.1 Thesaurus searching

To explore thesaurus searching, use an appropriate database for your discipline (see Table 6.4 for subject coverage) and find appropriate thesaurus terms for the concepts below. Note that you may want to use more than one term if relevant.

|  |  |  |
| --- | --- | --- |
| **Database**  | **Concept**  | **Thesaurus term(s)**  |
| ASSIA  | Neighbourhood watch  | Neighbourhood watch schemes |
| Lifelong learning  | Continuing education |
| Foster care  | Foster care (consider using narrower terms if appropriate) |
| ERIC  | Online learning  | Computer-Assisted Instruction |
| English as a foreign language  | English (Second Language) |
| Peer harassment  | Bullying |
| LISA  | Outreach librarian  | Outreach services |
| Information retrieval  | Information Retrieval thesaurus term is very broad, consider using narrower term(s) |
| Dewey  | Dewey Decimal Classification |
| MEDLINE  | Prozac  | Fluoxetine |
| Shingles  | Herpes Zoster |
| Cost effectiveness  | Cost–Benefit Analysis |

## Exercise 6.2 Case study of the search process

Table 6.2 details methods of identifying literature for a systematic review looking at ‘Social inequality and infant health in the UK’ (Weightman et al., 2012): 5173 references were retrieved. Consider Table 6.2 and attempt the following questions:

1. How would you rate this search in terms of the number and types of sources searched? Is this adequate?

1This is a very comprehensive search using nearly all the search techniques discussed so far. The author has searched a large number of databases across different disciplines. However, the author has also used several other methods to identify evidence such as contact with experts in the field and reference list checking. These approaches are particularly useful in this instance since they allow identification of evidence not indexed or abstracted well in electronic databases, and thus not picked up by the literature search. Such problems are well documented in the social sciences (Petticrew and Roberts, 2006). Overall, the approach used reduces the likelihood that relevant studies will be missed in this review.

2. What disadvantages are there in the author’s search approach?

As this was a comprehensive search involving multiple search techniques, this approach will have been very time-intensive for the one author of this review. The approach used also identified a significant number of references – over 11,000– but only 11 studies were judged as relevant to the review question. That represents a large number of references to go through for a very small return!

3. What aspects of the search process in the case study might be applied to your own review?

Think about:

• how the disciplines covered by each of the databases searched in the case study may be relevant or irrelevant to your own topic.

• which techniques might be most important to your area. For example, if studies in your topic area generally have poor abstracts or are inconsistently indexed in electronic databases, you might want to focus on spending more time using other techniques such as contacting experts or citation searching, rather than searching every database that may have some relevance for your review.

## Exercise 6.3 Examining search strategies

Look at each search strategy in turn, and consider the following:

* How would you rate the search strategy? Have the concepts of the research question (population, intervention/exposure, outcome(s), etc.) been successfully translated into search terms? Are there any other search terms that you might have included?
* What types of searching (thesaurus searching, free-text searching) have been used and are these appropriate?
* Which search tools have been used (Boolean operators, truncation, etc.)? Have these been used successfully?

 (Note that the searches were conducted in May 2015, so rerunning the search at a later date may produce a different number of results.)

### Research Question A

Is the location of schools near to electromagnetic fields from electricity pylons liable to have adverse health effects on schoolchildren?

*Suggested Search Strategy for MEDLINE via OvidSP*

1. exp Schools/ (84101)

2. school\*.ti,ab. (202965)

3. 1 or 2 (252115)

4. location\*.ti,ab. (280578)

5. near.ti,ab. (248671)

6. next to.ti,ab. (135447)

7. adjacen\*.ti,ab. (140275)

8. proximity.ti,ab. (37018)

9. 4 or 5 or 6 or 7 or 8 (804037)

10. 3 and 9 (8342)

11. exp Electromagnetic Fields/ (14956)

12. electromagnetic\* field\*.ti,ab. (7175)

13. 11 or 12 (18367)

14. 10 and 13 (18)

Response:

Note that the outcome of ‘adverse health effects’ was not included – this was because using the population (school children) and exposure (electromagnetic fields) and the context of school location was focused enough – there were 18 references found in the search.

• This search makes use of both subject searching and free-text searching. Note that there are several synonyms used for the ‘location’ concept.

• This search uses Boolean logic successfully, by combining like concepts (e.g., synonyms) with OR and different concepts (e.g., population and intervention terms) with AND. Truncation ($) has been used where appropriate.

### Research Question B

Do ICT interventions improve primary schoolchildren’s performance in solving maths problems?

*Suggested Search Strategy for ERIC via EBSCO*

S1 DE “Elementary Schools”

S2 primary school\*

S3 DE “Children”

S4 child\* or infant\* or junior\*

S5 S1 OR S2 OR S3 OR S4

S6 (DE “Problem Solving”)

S7 DE “Information Technology”

S8 ICT or IT or information technolog\* or (“information and communication\* technolog\*”)

S9 S7 OR S8

S10 DE “Mathematics Achievement” OR DE “Mathematics Skills”

S11 maths or mathematics

S12 S10 or S11

S13 S5 AND S6 AND S9 AND S12

Response:

This search strategy utilises thesaurus terms and free text terms for each concept (e.g., the population of primary school children, the intervention of ICT in maths, and the outcome of problem solving). Again, appropriate synonyms are used – particularly note the different terminology to describe the population and the use of acronyms and full definition regarding ICT.

### Research Question C

Is the provision of solar-powered cars likely to result in benefits to society in an industrialised nation?

(Note that this search has focused on environmental and financial benefits.)

*Suggested Search Strategy for Science and Social Sciences Citation Indexes via Web of Science*

*#1 Topic = (solar power\*) AND (car\* OR vehicle\* OR automobile\*)*

*#2 Topic = (environment\* OR pollut\* OR emission\*)*

*#3 Topic = (financ\* OR econom\* OR cost effective\* OR cost benefit\*)*

*#4 Topic = #2 OR #3*

*#5 Topic = #1 AND #4*

Response:

Note this search only uses free-text searching. This is because Web of Science does not have any functions for thesaurus searching. The search makes good use of truncation (\*) and synonyms, particularly for the concept of “cars” and the outcomes (benefits to society). Note that the outcomes have been specifically defined – examples of financial and environmental benefits. This is a good idea as studies are more likely to focus on (and therefore name) specific outcomes, rather than benefits to society as a whole concept.

### Research Question D

Is early discharge of stroke patients from hospital into the community more effective than standard hospital care?

*Suggested Search Strategy for EMBASE via Ovid*

1. exp stroke patient/ or exp stroke/ (109752)

2. stroke$.ti,ab. (238972)

3. cerebrovascular accident$.ti,ab. (7569)

4. 1 or 2 or 3 (274896)

5. exp hospital discharge/ (70481)

6. early discharge$.ti,ab. (2844)

7. 5 or 6 (72179)

8. 4 and 7 (4588)

9. Meta Analysis/ (92310)

10. ((meta adj analy$) or metaanalys$).tw. (97880)

11. (systematic adj (review$1 or overview$1)).tw. (79847)

12. or/9–11 (179356)

13. cancerlit.ab. (661)

14. cochrane.ab. (43593)

15. embase.ab. (42596)

16. (psychlit or psyclit).ab. (955)

17. (psychinfo or psycinfo).ab. (10333)

18. (cinal or cinahl).ab. (12994)

19. science citation index.ab. (2375)

20. bids.ab. (476)

21. or/13–20 (68987)

22. reference lists.ab. (10967)

23. bibliograph$.ab. (15905)

24. hand-search$.ab. (5107)

25. manual search$.ab. (3063)

26. relevant journals.ab. (907)

27. or/22–26 (32392)

28. data extraction.ab. (13180)

29. selection criteria.ab. (21579)

30. 28 or 29 (33477)

31. review.pt. (2049037)

32. 30 and 31 (16910)

33. letter.pt. (884438)

34. editorial.pt. (475548)

35. animal/ (1652198)

36. human/ (15705953)

37. 35 not (35 and 36) (1245364)

38. or/33–34,37 (2590629)

39. 12 or 21 or 27 or 32 (217204)

40. 39 not 38 (210173)

41. 8 and 40 (88)

Note how this search demonstrates the use of a search filter (Steps 9–40) (Scottish Intercollegiate Guidelines Network, 2014), in this case to limit the search to retrieve systematic reviews only.

Response:

This search uses both thesaurus searching and free-text searching for the population (stroke patients) and the intervention (early hospital discharge). Note that two relevant thesaurus terms have been found for the intervention – ‘stroke patient’, ‘stroke’. In addition, note that the thesaurus term for the intervention is ‘hospital discharge’ – although this is a broader concept than ‘early discharge’ it is likely that any studies about early discharge would be indexed with this heading. This search makes use of a search filter (steps 9–40) to limit the search to systematic reviews only. Note the effect this had on the number of results retrieved – without the filter 4588 references were found (step 8). By using the filter a much more manageable 88 references were found (step 41).

Now you have examined existing search strategies, it is time to turn your attention to your own review. Complete Exercises 6.4, 6.5 and 6.6 to plan your literature search.

## Exercise 6.4 Searching for your own review

Having read through the information on literature searching, it is time to start thinking about the searching for your own review. Work through the following exercises for your own research topic.

Start to plan your literature search

Practise by working through the following questions.

Think …

* about the purpose of your review – how systematic does your search need to be to fulfil the purpose of your review?
* about your focused question – what types of databases may index articles on your topic area? Which terms might describe each concept in your focused question?
* do you know of any key citations or authors in your topic area? (Hint: ideally these papers should have been published between five and ten years ago in order to have accrued sufficient impact.)

Decide on the following …

* database sources to search, including sources of unpublished or grey literature (for assistance with identifying sources, see Tables 6.4 and 6.5);
* additional searching techniques: reference list checking, contact with experts, citation searching;
* brainstorm search terms for each concept within your focused question – think of all the synonyms;
* identify thesaurus terms for your search terms;
* include free-text terms where appropriate;
* combine your search terms using an appropriate operator.

**Insert your response:**

*Database sources to search*

*Additional searching techniques*

*Possible search terms*

*Possible thesaurus terms*

*Possible free-text terms*

*Appropriate choice of operators*

## Exercise 6.5 Pearl-growing and author searching

In the grid provided list three or four key citations you might consider useful ‘pearls’ in your topic area. List authors or institutions who might have conducted research studies in your topic area.

**Insert your response:**

Candidate pearls: Candidate authors or institutions for author searching:

1 1

2 2

3 3

4 4

## Exercise 6.6 Sources to search

Using the search planning worksheet in the Toolbox section of this chapter (reproduced below), list the different sources that would be useful to search for your chosen review topic area. Check your list with a local librarian/information specialist if possible.

**Search planning worksheet**

We have devised a template for you to record what sources you will search to find the literature to answer your research question. Adjust the number of sources you will search accordingly to meet the requirements of your topic and the time and resources available.

|  |  |  |  |
| --- | --- | --- | --- |
| **Databases**  | **Grey Literature**  | **Journals (hand-searching)**  | **Experts to contact**  |
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