



Systematic Reviews and Information Retrieval: A Practical Workshop

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C2 Information Retrieval Methods Group

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Outline

- The C2 Information Retrieval Policy Brief
- The Information Retrieval Process
 - Search strategies: Decisions and Challenges
- Searching the Databases
 - Types of databases
 - Preparing a search strategy
 - Implementing a search
 - Saving the results
- Wrap up



IRMG Policy Brief: Goals

- Identifies the key issues that are confronted by C2 systematic reviewers attempting to gather information
- Provides assistance to reviewers and review groups in the areas of information retrieval
- Establishes minimum standards for key information retrieval tasks
- See:
http://www.campbellcollaboration.org/ECG/policy_ir.asp



Information Retrieval: A Continuous Process

■ Preliminary Searches

- Supports beginning steps: Definition of key concepts & research question
- Use of standard reference tools and broad searches for review articles and key primary studies

■ Main Searches

- Identification of primary studies through searches of online databases, printed indices, Internet, branching, hand-searches
- Most difficult given a number of challenges

■ Final Searches

- Occurs towards the end of the Review Process
- Refine search terms and update original searches



Main Searches: Decisions

- Selection of Information Retrieval Tools
 - **Scope of search:** Which fields should be searched (including all related fields)?
 - **Availability of indexing tools:** Which tools do we have access to at our institution? Are there others who can perform searches for us?
 - **Format of indexing tools:** What format are they in (e.g. online, print, web-based)?
 - **Date:** How far back does the indexing go for each tool?
 - **Language:** What is the language of the material that is indexed? How can we locate non-English material?
 - **Unpublished work:** How can we access dissertations, reports, & other grey literature?



Examples of Databases

- **Education:** ERIC, British Education Index, Australian Education Index, Chinese ERIC, CBCA Education, Education index, Education: A SAGE Full-text Collection
- **Psychology:** PsycINFO, PubMed (Medline), Ageline, Psychology: A SAGE Full-Text Collection, Criminology: A SAGE Full-Text Collection
- **Sociology:** Sociological Abstracts, Contemporary Women's Issues. Sociology: A SAGE Full-text Collection
- **Multidisciplinary:** Academic Search Premier, ProQuest Dissertations and Theses, FRANCIS, Social Sciences Index, SCOPUS, Web of Science



Main Searches: Decisions

- **Preparation of Search Strategies**
 - What are the key concepts to be searched?
 - How are these represented in each discipline?
 - What are their related terms?
 - How are these key concepts represented in the controlled vocabulary within each database to be searched?



Sample Research Question

The purpose of this review is to determine the effectiveness of parental involvement in improving the academic performance of school age children in grades K-6.



Using a Thesaurus

1. From the research question, determine the main concepts to be searched (usually there are three):
 - Parental involvement
 - Academic performance
 - Kindergarten or Elementary students
2. Determine the main database to be searched.
3. Look up each concept in the thesaurus for this database.
 - A thesaurus is an alphabetical listing of the controlled vocabulary (or descriptors) used within a subject database
 - A hierarchical arrangement is used so that Broader, Narrower and Related headings may be discovered
 - The user will be sent from invalid headings to valid headings.



Example: ERIC

- Selecting the ERIC Descriptors
 - **Descriptors:** Parental Involvement See: **Parent participation**
 - **Related descriptors:** Family involvement, Parent-school relationship, Parent role, Parents as teachers
 - **Related keywords:** parent* involvement, parent* effectiveness, parent* support, family support
 - **Descriptors:** Academic Performance See: **Academic achievement**
 - **Related descriptors:** Science achievement, Reading achievement, Writing achievement, Achievement gains
 - **Descriptors:** Elementary School Children See: **Elementary school students**
 - **Related descriptors:** Elementary education, Primary education, Kindergarten



Main Searches: Decisions

- Construction of the Search Statements
 - What terms should be searched as descriptors or as “free text”?
 - What Boolean operators should be used?
 - Where should truncation characters be used? (e.g. parent* will retrieve parent, parents, parental)
 - What limiting features are available to narrow results? (e.g. use of Publication Type codes)?
 - What time period should be searched?



Boolean Operators

AND: **Both** terms must be present in order for a record to be retrieved. Used to combine different concepts.

e.g. parent participation AND achievement

OR: **Either** term may be present in order for a record to be retrieved. Used to search for related terms or synonyms.

e.g. parent OR family

NOT: Used between two terms to ensure that the second term will **not appear** in any of the results.

e.g. literacy NOT adult

(Parental involvement OR parent participation) AND academic achievement AND (elementary OR primary education)



Example: ERIC, cont'd

- Combining Keywords/Descriptors using Boolean operators:
 1. DE=(Parent participation OR Family involvement OR Parent role OR Parent-school relationship OR Parents as teachers)
 2. "Parent* involvement" OR "Parent* effectiveness" OR "Parent* support" OR "family support"
 3. #1 OR #2 = 28958 recs
 4. DE=(Academic achievement OR Science achievement OR Reading achievement OR Achievement gains) - 46574 recs
 5. DE=(Elementary school students OR elementary education OR primary education OR kindergarten) - 291997 recs
 6. #3 AND #4 AND #5 = 1669 records



Limiting Your Results

Using the Limiting Commands:

- Limiting fields contain information that is **common** to a large number of records within a database. These include language, document type, publication year and so.
- Some limiting fields will vary across databases (e.g. Classification Code, Age Group)
- Decisions about:
 - Whether you are going to restrict to English documents only
 - Whether you are going to restrict your search to a certain time period
 - Whether you are able to restrict your results to empirical studies only



Example: ERIC, cont'd

Using Limits in ERIC:

1. Search by DTC=143 or DTC=142
2. Combine this search with the previous one
 - 835 recs
 - Review Date Range
 - Review Language

One final comment...

- Locating ERIC documents - <http://www.eric.ed.gov/>
- See: <http://library/research/databases/>



Next Steps

Repeat these steps for each database to be searched.



Example: PsycINFO

- **Selecting the PsycINFO Descriptors**
 - **Descriptors:** Parent involvement See: **Parental Involvement**
 - **Related descriptors:** Parent-school relationship; Parental role
 - **Descriptors:** Academic achievement
 - **Related descriptors:** Mathematics achievement, Science achievement, Reading achievement
 - **Descriptors:** Elementary school children See: **Elementary school students**
 - **Related descriptors:** Primary school students



Example: PsycINFO, cont'd

- Combining Keywords/Descriptors using Boolean operators and Limits:
 1. DE=(parent school relationship or parental involvement or parental role)
 2. Limits: CL=3550
 3. Limits: AE=(school age)
 4. #4 AND #5 AND #6 - 114 records
 5. More Limits: Methodology (ME)=(empirical study OR meta analysis OR quantitative study OR randomized)



UK Databases



Managing Your Results

- Exporting the results
 - Saving as a Text file
- Importing into a bibliographic management software:
 - RefWorks,
 - Reference Manager,
 - EndNotes
- Labeling each search and documenting decisions taken
- Generating a bibliography for reviewers



Information Retrieval: Wrap Up

“Shoestring-budget information retrieval is likely to introduce bias, and should be avoided.” (IR Policy Brief, 2004)

- Importance of information retrieval process
 - Not a “one-shot” deal
 - Requires expertise in the planning and implementation of searches
 - Consulting with the IRMG or an Information Specialist is highly recommended
- Use of bibliographic management software
 - Store, manage and organize results
- Ability to replicate review
 - Documentation of entire process, including search strategies used for each database, decisions taken, etc.



Further Information....

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