Systematic Reviews and Information Retrieval: Planning and Implementing a Database Search
Education Coordinating and Methods Groups

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Outline

• The Information Retrieval Process
  ▪ Search strategies: Decisions and challenges

• Searching the Main Databases
  ▪ Selection and Types of databases
  ▪ Preparing a search strategy
  ▪ Implementing a search
  ▪ Saving & Managing the results

• Additional Databases & Retrieval Methods
• Wrap Up
• Resources & Additional Readings
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 databases, Web, branching, manual 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 disciplines or subject fields should be searched (including all related fields)?
  - **Availability of indexing tools & expertise**: Which tools do we have access to at our institution? Are there others who can perform searches for us? *(more about this later)*
  - **Format of indexing tools**: What format are they in (e.g. online, print, web-based)?
  - **Dates**: 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  - **Unpublished work**: How can we access dissertations, reports, and other grey literature?
Selection of Databases

• Consult your academic library’s website to learn what databases are accessible from your institution.
  ▪ Example: Concordia Libraries

Examples of Databases

  ▪ **Education**: ERIC, British Education Index, Australian Education Index, CBCA Education, Education: A SAGE Full-text Collection; Education Full text, Linguistics and Language Behavior Abstracts.

  ▪ **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

**Approaches to Parent Involvement for Improving the Academic Performance of Elementary School Age Children**  Chad Nye, Herb Turner, Jamie Schwartz

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.

See:  http://www.campbellcollaboration.org/reviews_education/index.php
Using a Thesaurus

1. From the research question, determine the main concepts to be searched (usually there are three):
   - **Intervention:** Parental involvement
   - **Outcome:** Academic performance
   - **Population:** Kindergarten or Elementary students

2. Consult 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 “keywords”? □
  - 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, time period, language)? □
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 elementary schools 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 DT= research -reports
2. Combine this search with the previous one

   835/1669 recs
   - Review Date Range
   - Review Language

One final comment…

- Locating ERIC documents: http://www.eric.ed.gov/
AUTHOR: Polovina, Nada; Stanisic, Jelena
TITLE: A Study on Family-School Cooperation Based on an Analysis of School Documentation
PUBLICATION YEAR: 2007
ERIC DOCUMENT LINK: http://www.eric.ed.gov/ericsearch/ericsearch?accno=ED499159
LANGUAGE: English
IDENTIFIERS: Subject: Family School Cooperation, Attendance Patterns, Child Development
ABSTRACT: Family-school cooperation is a very complex process that can be studied at different levels in a number of different ways. This study has covered only some aspects of cooperation between parents and teachers, based on school documentation of a Belgrade elementary school. The study covered analyses of 65 Attendance Registers pertaining to 60 classes with 1289 students from Grade 1 through Grade 8 during an academic year. The unit of analysis included parents' attendance at PTA meetings and individual meetings between parents and teachers. In addition to the frequency of parents' visits to school, the relationship between such registered parents' visits and overall academic performance, grades in conduct, excused and unexcused absence from classes were also considered. The research findings indicated intolerance between development factors (attitude change in parent-child relationship and growing-up) and parents' informal theory of critical grades i.e. transitional processes in schooling. The findings confirmed that parents' individual visits to school were mainly meant to offer an excuse for the student's absence from school, while attendance at PTA meetings was linked to poor grades in conduct and missed classes (both excused and unexcused). The findings also showed that parents pursued visiting strategies which were pragmatic, less time-consuming and less emotionally draining ones. The closing part refers to discussions on practical use of the study and possible further research. (Contains 4 graphs.) [This article is the result of the project "Education for Knowledge-Based Society" No. 14601 (2006-2010), financially supported by the Ministry for Science and Environmental Protection of the Republic of Serbia.] (Author)

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: AG=(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)

PsycINFO Record

Parent Involvement, Cultural Capital, and the Achievement Gap Among Elementary School Children. Author(s): Lee, Jung-Sook, School of Social Work, University of North Carolina, Chapel Hill, NC, US, jungsook@email.unc.edu

Abstract:
This study examined the level and impact of five types of parent involvement on elementary school children’s academic achievement by race/ethnicity, poverty, and parent educational attainment. The sample comprised 415 third through fifth graders who completed the Elementary School Success Profile. Hypotheses from Bourdieu’s theory of cultural capital were assessed with t tests, chi-square statistics, and hierarchical regressions. Consistent with the theory, parents with different demographic characteristics exhibited different types of involvement, and the types of involvement exhibited by parents from dominant groups had the strongest association with achievement. However, contrary to theoretical expectations, members of dominant and nondominant groups benefited similarly from certain types of involvement and differently from others. Implications for research and practice are discussed. (PsycINFO Database Record (c) 2007 APA, all rights reserved) (from the journal abstract)
Additional Databases

• Consult with the C2 Information Retrieval Methods Group Brief on info retrieval
  ▪ List of databases
  ▪ Learn availability of Trials Search Advisor or IRMG liaison to help with searching of databases.

• Become an Associate of the Evidence Network: http://www.evidencenetwork.org/
  ▪ Provides access to variety of international databases in social sciences (free and fee-based)

Additional Retrieval Methods

• We haven’t talked about….
  ▪ The web…to locate grey literature
    • Use Advanced Search screens on large engines (eg, Google, Altavista, AlltheWeb, MSN Live)
    • Consult specific sites

  ▪ Branching
    • Scan the bibliographies of previous reviews on your topic

  ▪ Manual searches
    • Browse the Table of Contents of key journals for current years
Breakdown by Tool

74% studies non-ERIC

56% studies non-ERIC

Managing Your Results

- Export the results
  - Save as a Text file
- Import into a bibliographic management software:
  - RefWorks,
  - Reference Manager,
  - EndNotes
- Edit your inhouse database
  - Add Source code for each database searched (e.g. ERIC1, PsycINFO1…)
  - Add notes to the records (e.g. includes vs excludes)
- Compile a Search History document listing the original search strategies
  - Use of IRMG/ECG Database worksheet
Information Retrieval: Wrap Up

• Importance of information retrieval process
  ▪ Not a “one-shot” deal
  ▪ Requires expertise in the planning and implementation of searches
  ▪ Consulting with the Trials Search Advisor or an Information Specialist is highly recommended

• Use a bibliographic management software
  ▪ Store, manage and organize results

• Must have ability to replicate review
  ▪ Documentation of entire process, including search strategies used for each database, decisions taken, etc.

Resources


Designed to help both reviewers and those reviewing C2 protocols.

- The Checklist itemizes the recommended steps for information retrieval during the protocol and review stages. A good resource for new C2 reviewers as it provides an indication of the criteria that will be used to evaluate the information retrieval component of a protocol and a review.
- The Database worksheet provides a useable, expandable template for the documentation of database searches.


Provides a “how to” guide for Cochrane Trial Search Coordinators. Clearly written and easy to understand for those who have no experience with searching. Focus is on the retrieval of information in the health sciences.
Resources, cont’d


This comprehensive document provides the background on the C2 policy related to information retrieval and will be useful to Trials Search Coordinators (or Advisors) who are new to their post, as well those who are conducting reviews. This document outlines some general issues in searching for studies; describes the main sources of potential studies; and discusses how to plan the search process, design and carry out search strategies, manage references found during the search process and correctly document and report the search process. It is currently being revised and updated.

Watch the Campbell site for a posting.

Readings

Further Information….

- Anne Wade
  - Email: wada@education.concordia.ca

- Centre for the Study of Learning and Performance
  - http://doe.concordia.ca/cslp/

- C2. Education Coordinating Group
  - http://camp.ostfold.net/ECG/Education/index.php

- C2 Methods