Harnessing technology for evidence use

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Workshop 1: searching methods

1. Why use evidence?
2. Does searching for evidence properly matter?
3. Searching theory
4. Sensitivity and specificity (precision)
5. Boolean searching
6. Practice!
Why use evidence?

Two examples:
• ‘scared straight’
• blood alcohol limit laws

As well as using evidence, we need to think about its source and reliability
Young people visit prison

They experience prison life

Prison life is unattractive and prisoners are negative role models

Young people are scared away from crime

Lower crime

Young people visit prison

They experience prison life

Prison life is not so bad and prisoners are positive role models

Young people are attracted towards crime

Higher crime

The research says...
Shapiro: “the programs’ existence proves they work. “If none of these programs were working, and were hurting kids, and were producing only negative results, why would judges, and police officers, and teachers, and school counselors, why would they keep sending kids to these programs month after month, and year after year, if they were not seeing positive results?”
US Congress in the late 1990s

- “Overall, the evidence does not conclusively establish that [blood alcohol limit] laws, by themselves, result in reductions in the number and severity of alcohol-related crashes,”
  General Accounting Office’s narrative review of individual studies
- Report seen as favouring the alcohol industry,
- A subsequent systematic review suggested such laws could be expected to drop alcohol-related traffic fatalities by about 7 percent.
- “When you looked at all of the data, aggregated into the same table, it became very clear that whatever problems the studies had, they were all coming to roughly the same conclusion.”
- Findings sent to federal legislators
- Congress then withheld federal highway construction funds from states that did not pass such laws.
- Thought to save at least 400-600 lives each year
The bottom line

Unsurprisingly –

– if you conduct partial searches, you only get a partial view of the literature
Searching is a skilled and time consuming activity

Tap into the skills of information, subject and systematic review specialists, to:

• Identify sources to search
• Deal with technicalities (e.g. of databases)

Plan time for developing and testing searches
Challenges of comprehensive searching (1)

Findings evade us:

- Profusion of published and unpublished material
- Much hidden: only 50% abstracts presented at conferences are later published in full
- Different databases use different terms to classify studies
- Different databases cover different, largely discrete areas of literature
- As individuals we are constrained by our own disciplinary and policy area knowledge (which journals, which books, which databases?)
Challenges of comprehensive searching (2)

Some evasion is systematic*

- E.g. statistically significant, ‘positive’ results more likely to be:
  - Published
  - Published rapidly
  - Published in English
  - Published more than once
  - Cited by others

Comprehensive searching – a picture of a sensitive search

- The studies that you are interested in (B)
- Missed 'positive hits' (C)
- Studies that you're not interested in (E)
- The studies found with your search (A)
Sensitivity and specificity

Sensitivity
• Ability to locate all studies of interest
• = the number of relevant studies located as a proportion of all that exist (D/B)
• Low sensitivity means that many relevant studies missed by search

Specificity
• Accuracy of the search strategy in identifying studies of interest
• = the proportion of the total number of studies identified by search which are deemed ‘relevant’ (D/A)
• Low specificity means that the search identified many irrelevant studies.

There is always a trade off between sensitivity and specificity
The importance of searching a range of sources

How are decisions made about the entry of people aged 65+ to care services?

<table>
<thead>
<tr>
<th></th>
<th>SSCI</th>
<th>Medline</th>
<th>CINAHL</th>
<th>Caredata</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unique articles retrieved</td>
<td>237</td>
<td>182</td>
<td>27</td>
<td>16</td>
</tr>
<tr>
<td>Unique relevant articles</td>
<td>116</td>
<td>73</td>
<td>24</td>
<td>15</td>
</tr>
</tbody>
</table>

The importance of using a variety of search terms

<table>
<thead>
<tr>
<th>Detail of search strategy</th>
<th>Total number of citations</th>
<th>Number of relevant studies</th>
<th>Sensitivity %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 31 terms</td>
<td>1048</td>
<td>72</td>
<td>100</td>
</tr>
<tr>
<td>2 11 terms</td>
<td>669</td>
<td>64</td>
<td>89</td>
</tr>
<tr>
<td>3 7 terms</td>
<td>385</td>
<td>47</td>
<td>65</td>
</tr>
</tbody>
</table>

The basics of bibliographic databases

Indexers use standardized lists of ‘controlled terms’ to describe key features of papers.
• E.g. ‘Descriptors’ in ERIC
• A ‘thesaurus’ or index and ‘scope notes’ explains to indexers (and you) the meaning of each controlled term

Identify controlled terms for each of the concepts in your review

Build searches using these controlled terms
• Check search terms against controlled terms for known relevant studies

Supplement searches for controlled terms with searches for terms in titles and abstracts (‘free-text’)

‘What is the impact of information communication technology (ICT) on 5-16 year olds’ literacy in English?’

- Concepts and search terms

A. Terms for ‘5–16’
- ‘children’, ‘adolescents’...

B. Terms for ‘ICT’
- ‘computer’, ‘internet’.

C. Terms for ‘literacy in English’
- ‘reading’, ‘writing’...

‘What is the impact of information communication technology (ICT) on 5-16 year olds’ literacy in English?’ - Controlled terms

Start search with ‘controlled terms’
Use thesaurus to identify terms relevant to each concept
Combine terms using ‘logical operators’ (OR, AND)

Controlled terms for ‘Literacy’ from ERIC

- Adult literacy
- Functional literacy
  - Functional reading
- Reading
  - Beginning reading
  - Early reading
  - Critical reading
- Writing composition
  - Abstracting
  - Basic writing
  - Content area writing
Thank you

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Workshop II: the EIPPEE Portal

• The vision for the EIPPEE Portal
• How it works
• Functionality
• Using the portal
• Populating the portal
  • Including – adding new sources today
• Advanced use of the portal
The vision for the EIPPEE Portal

Existing Tools

1. General Purpose Search Engines:
   - Good Sensitivity
   - Generally low specificity (high noise)

2. Specialised Databases:
   - Good Sensitivity
   - Potential bias towards US/North America
   - Fragmentation
   - Results duplication

3. Specialised Search Engines:
   - Potentially Low Sensitivity or/
   - Very High Development and Maintenance Costs
The vision for the EIPPEE Portal

Aims:

1. High Specificity
   • Search only Relevant Sources

2. Reduce or Manage Regional Bias
   • Specialise on European Sources
   • Encourage the Growth of the Sources Base

3. Reduce Costs
   • Use Existing Search Engines to Provide Results
   • Crowd-sourcing Model to populate the portal

4. Enhanced results
   • Text Mining – Topic Identification
   • Identify Relevant Sources
EIPPEE Portal: How it works

1. Portal includes a list of known sources (websites)
2. Users can select/deselect and add their own sources.
3. Search is sent to Bing™ to retrieve results.
4. Results are Analysed to Extract Common Topics
5. Results are Shown, Along with Extracted Topics
EIPPEE Portal: Functionality

- Use as any other Search engine
- Add your private sources / Submit sources to portal
- Select / Deselect Sources
- Change Sub-Portal
- View Sources Map
- Browse Results
- Filter by Topic
- Sort by Source

Evidence Informed Policy and Practice in Education in Europe Search Portal

- Leaving education early
  - School leadership and early school leaving/school exclusion...
    - aims to achieve a 90% retention rate to the end of second level senior cycle education by the year 2000.
    - School factors impacting directly on early school leaving and...
    - Source: Institut national de recherche pedagogique (INRP) (www.inrp.fr)
  - How Uniform Incentives can Provide a Negative Motivation - An...
    - Application to Early School Leaving in Two Large Cities: Kristel De Witte... as a young person (between 12 and 23 years old) who leaves secondary education.
    - Source: TIER - The Top Institute for Evidence Based Education Research (www.tier.nl)
  - BBB / Begriffe der Berufsbildung deutsch-englisch
    - early school leaving education dropout Ausbildungsangebot
    - Source: Federal Institute for Vocation Education and Training (BIBB) (www.bibb.de/en)
  - National system overview on education systems in Europe - 2011 Edition
    - Stage 1 - early school education, 7-10 years of age Stage 2 - teaching based on separate... examination, the results of which are indicated on the leaving certificate.
    - Source: Eurydice Network (eacea.ec.europa.eu/education/joinerel/docs/euryscenerational_summary_sheets/317)
Populating the EIPPEE Portal

1. Log On, click “Add Source”
2. Fill all fields & “Add”

   ![Add Source Form]

3. To submit a source to the portal, click “View sources” and submit.

   ![View Sources Form]

- (Sub-)Portals are configurable, submissions may be disabled, subject to review (default), or direct.
EIPPEE Portal: selecting the right source URL

Bing™ comes with some limitations:

1. Root URLs (i.e. www.site.com) are OK,
2. Deeper paths can be used up to 3 levels can be used.
   - www.site.com/section/subsection will work
   - www.site.com/section/sub1/sub2 will NOT work
3. Specific pages, will yield no results:
4. Sites that do not allow direct browsing, where content is accessed only through an internal search, will yield few or no results.
The EIPPEE Portal: Add your own sources.

Sources should:

1. Be a root URL or end with a forward slash: www.site.com or www.site.com/section/
2. Avoid pointing to a single page or contain query strings:
   - www.site.com/?Art_ID=12 or www.site.com/home.html
3. Point to a browseable website
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The EIPPEE Portal: Sources Map

The Map allows to view the sources information on a per Country/Region basis.

1) Click on the links on the map. More links will appear as the portal is populated.
2) Select a country/region from the drop-down list. All sources are available through this list.
3) Personal sources are not listed

The Centre for Research on Lifelong Learning (CRELL) was established in 2005 in order to provide expertise in the field of indicator-based evaluation and monitoring of education and training systems and their contribution to the achievement of Community objectives specified in the Lisbon Agenda. CRELL combines expertise in the fields of economics, econometrics, education, social sciences and statistics in an interdisciplinary approach to research.
Thank you

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