Information systems for conducting systematic reviews: a case study

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Background
Systematic reviews of social research can entail the storage, classification and analysis of large quantities of electronic data and the management of these data across many reviewers working in different sites. This presents many challenges to the management of the review because, unless effective systems are developed to manage these data, reviews may become ‘unsystematic’ by losing studies or failing to track which studies originated from which search and the reasons for their inclusion/exclusion. The growth in the internet has made it easier for people to collaborate on projects without necessarily working in the same place. However, few software tools support distributed working throughout the life cycle of the review.

One solution to this problem is presented here. It depicts some of the major information management challenges in reviews and shows how a bespoke software application, EPPI-Reviewer, assists in each stage of the review.

Sometimes, many tens of thousands of references are screened for inclusion in a review. If these references are stored in one place, together with decisions on their inclusion into the review, the chances of losing important references are reduced.

References are allocated for screening and then screened by reviewers

The full papers of relevant studies are obtained and screened for inclusion

Data extraction strategies are developed and agreed

Data extraction takes place of studies which meet the review’s inclusion criteria

The results of the studies are synthesised

The database of studies becomes part of the dissemination process

Citations are downloaded from databases (e.g. ERIC)

They are imported into EPPI-Reviewer and checked for duplicates

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Citations can be screened on titles and abstracts by one or more people. If references are being ‘double-screened’, kappa statistics are available to measure inter-reviewer reliability.

Again, following the principle that nothing should be lost to the review, software can aid the process of retrieving full papers by, for example, keeping track of which papers still need to be retrieved, which are on order and which are available in specified libraries.

Categorical data can be summarised using simple frequencies and crosstabs…

…as well as being combined with free-text data in tables.

Sophisticated Boolean searches can be conducted.

Spider-web or ‘radar’ graphs are available for frequencies and crosstabs…

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This poster illustrates the benefits of a system containing consistently coded data across a series of reviews. The studies from more than 90 systematic reviews are stored on the database, the majority classified with one of three classification systems. This supports the identification of studies for future reviews and is a resource which offers users far more information about the research it contains than a database containing only basic bibliographic information.

Current thinking in e-social science suggests that an important area for future work involves the standardised ‘tagging’ of online information. Systematic reviewers could both contribute to, and benefit from, this activity — something which requires the development of appropriate systems more than it requires any additional work in the actual task of reviewing. With the increased adoption of core meta-tagging frameworks (such as Dublin Core and the Data Documentation Initiative), organisations involved in supporting systematic reviews need to consider carefully how to support and promote the adoption of international standards for the classification and identification of research.

REFERENCES
4. The Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre) is part of the Social Science Research Unit (SSRU), Institute of Education, University of London.