The Matrix Method of Literature Review

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Abstract
In this contribution we document the concept matrix method of literature review that could be used as conceptual scaffolding at the beginning of a problem-based research project when the researcher’s knowledge about the subject is finite and her/his ignorance about it is more or less infinite. The concept matrix provides a means to systematise the process of literature review, thereby ensuring that a literature review does not become a subjective process stitching a patchwork quilt of references, or the unilateral cherry picking of references that supports one’s point of view, while ignoring references that present contrary points of view.

Key Concepts
Concept, concept matrix, epistemology, knowledge, literature review, matrix analysis, problem-based research

Introductory Remarks
Matrix analysis of one sort or another has for the past century been used in a variety of disciplines to summarise complex aspects of knowledge
placed him in the unconscious incompetence stage of conceptual competency. The supervisor argued that the student should not use grounded theory and that he should reduce the theory to at least 45 pages.

**Case Three**
The business student started a proposal and was advised to use headings. He used some headings and when advised to list specific headings, argued that he would slot it into the introduction. The student’s supervisor eventually could not make out head or tail of the unsystematic literature review that was presented.

**Building a Concept Matrix to Organize and Constrain a Literature Review**
How a matrix is to be constructed is a process that relates more to the personal creativity, proficiency and originality of the researcher than to rules and principles. Miles and Huberman 1994: 240-241 state that there are no correct matrices, only functional matrices. Researchers should keep in mind that they will have to modify earlier versions of literature survey matrices as their understanding of their research topic grows.

Figure 2 below provides a sample concept matrix:

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This article gives you one view of the matrix as a research tool and how it may benefit you. This article talks about how to use the matrix to write a literature review - the lit review shares many characteristics of the legal memo.
The matrix is one way to tackle a large amount of information when you start not knowing exactly what it all means or which direction to go.
The example below is one way to use a matrix - I prefer to actually put notes (content) in the cells of my matrix so that I don't have to juggle articles. But use the matrix anyway that you think will work for you - just give it a try.

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As can be seen above, the layout of the concept matrix is straightforward. In the leftmost column the references to be reviewed are listed in abbreviated Harvard style. The head of each column displays concepts that have been derived from the problem statement of the research project. If a concept is discussed in a particular reference a tick is placed in the appropriate cell. This approach enables the researcher to conduct a critical comparative literature review of all references listed under each concept. This approach emancipates the reviewer from the tyranny of being trapped within a particular reference, and from merely providing general paraphrases of references. It also enables supervisors to establish at a glance that only relevant literature is being reviewed and captured in the bibliography because references that do not appear on the concept matrix may not form part of the literature review and may therefore not be included in the bibliography.
Discussion and Conclusion

The literature review involves a qualitative content analysis of available information already published in some form. It can be a study of the research object alone, with the aim of collecting information about its structure, process and relationships, increasing the familiarity of the researcher with the research object and establishing the credibility of the project. In addition, it can consider previous research, attempting to link it with the study currently planned. It may also be geared towards a historical or comparative analysis of the issue in question so the current study can be placed in a historical context. Finally, it may review a theory of methods and techniques most suitable for the study, simply by looking at the ways other researchers have approached the topic, and by evaluating their suitability and effectiveness (Sarantakos 1998: 129).

Punch (1994: 93) writes that without adequate training and supervision, the neophyte researcher can unwittingly become an unguarded projectile bringing turbulence to the field, fostering personal trauma (for researcher and researched), and even causing damage to the disciple.

There are many cases where students have attempted to conduct a literature review (see some previous section) but many failed and their studies therefore failed as well. O’Neill in Wellington et al. (2005: 89) states that conducting a literature review is a bit like climbing your way up a pyramid, where the total area at any particular point in the climb represents the search area for the review at that particular moment in time. You start in the largest area at the bottom and slowly move upwards, all the time refining and narrowing your searches, as you move from incompetence to competence.

Wellington et al. (2005: 87) state that reviewing the literature involves searching, collecting, prioritising, reading with a purpose and seeking out key issues and themes, and then presenting and discussing these critically. The aims of a literature review are:

- To establish which of the problems identified for solution by means of empirical research have been solved by other researchers so that they can be removed from the research equation
- To give readers a clear idea of the nature context of one’s research
To convince the reader of one’s knowledge of the field
To build a case for the empirical part of one’s study

If one looks at the way novice researchers attempt to survey literature, it seems that the supervisor has failed to acquaint the student with the different phases for conducting a proper literature review. The first phase is where many students get stuck and remain – they cast about collecting data with no defined problem statement from which they extract keywords to serve as filter for the identification of relevant literature. They read each reference in detail rather than using abstracts and summaries to establish relevance, and they start summarising the literature with no plan in mind, and end up with a document without a proper layout, showing no coherence and progression, and in many cases ending up perpetrating intentional or unintentional plagiarism because they have not kept track of the sources of the ideas that they jotted down so that, even if they wanted to, they cannot properly acknowledge their sources. This is the first and probably the worst case scenario. In our view it reflects a mindstate of unconscious incompetence.

The next phase is when students begin to appreciate how little they do know of the topic, but they set out without a plan and write unsystematically without knowing where they must stop creating pages upon pages of copious notes. They rely on the supervisor to tell them what they must leave out. We call this phase conscious incompetence. The next phase is conscious competence. In this phase the student becomes aware of the fact that s/he is coming to grips with the major references that relate to the problems under investigation. Due to the student’s newfound confidence is sometimes difficult for the supervisor to properly advise the student what to, leading to disagreements about what should be included in the literature review and what should be left out and often leading to unfounded mistrust on the side of the student.

The final phase is where the student has become a true researcher. This stage we refer to as unconscious competence. The student creates a proper problem statement and extracts key concepts from it that s/he then uses to search for refereed literature to be used in the literature review. By using key concepts derived from the problem statement, the problem statement itself becomes the filter that ensures that only literature relevant to the problems under investigation forms part of the review. This method also enables the researcher to determine to what extent problems that s/he has identified have been solved by other researchers, enabling the researcher to remove solved problems and
reformulate the original problem statement, the research objectives and the research questions, the latter which forms the basis of particular more detailed questions posed to respondents in research instruments like questionnaires and interview schedules.

The researcher generates content for the concept matrix by surveying only the abstracts and summaries of references. Once the appropriate literature to review has been identified the researcher commences with the literature survey proper, which entails a critical analysis of each reference to identify potential solutions to the problems under investigation. The critical analysis of individual references should be followed by a critical comparative analysis of all references that are listed under a particular concept, to establish differences of opinion, converging opinions and consensus among experts under review.

In this approach to literature review the researcher systematically reads each article, considers the validity of what is being read, and thereafter classifies the reference thematically. The importance of using this method is that the student must realise that s/he cannot use everything in an article but should instead concentrate on those aspects that relate to the problems under investigation.

The key concepts on the matrix therefore become the key concepts embedded in the headings in the literature review. The concept matrix enables the researcher to subject all literature to critical comparative analysis. The references that have been ticked on a particular column of the concept matrix are subjected to critical comparative analysis in the thesis. The concept matrix also enables the researcher to establish at a glance whether s/he has identified enough references under each concept.

The researcher can order each column of the matrix in different ways to foreground different aspects of the knowledge contained in it. The matrix can be reorganised according to:

- Publication date, demonstrating longitudinal aspects of the topic (time-ordered matrix)
- Table rows containing verbal information about the view of role occupants on a specific issue of the project (role-ordered matrix)
- Integrated data on a summative index or scale, thus organising several components of a single, coherent variable (checklist matrix)
- A central theme (conceptually clustered matrix)
• Outcomes and dependent variables (effects matrix)
• Present forces that are at work in particular contexts showing processes and outcomes (site dynamics matrix)
• A series of events displayed in any possible order (event listing)
• A field of interrelationships between dependent and independent variables, describing causal connections between them (causal network) (Sarantakos 1998: 360)

Wellington et al. (2005: 83) state that in writing about the literature, you are adding to it, by creating links, drawing attention to particular issues and contributing your construction of the ‘story’ to be found in existing research.

It is a long and ‘rigorous’ road for a researcher to progress from unconscious incompetence to unconscious competence. The supervisor will have to be patient and has to ensure that the student keeps a proper record (the matrix) of the process. The matrix should be added as an appendix into the dissertation. The student cannot move directly from unconscious incompetence to unconscious competence but has to follow each stage the sequence of understanding shown in Figure 1.

References


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