The Literature Review

1. Purpose of a Literature Review

The purpose of a Literature Review is to provide a survey of the significant literature on a topic. The word 'significant' shows that the review process is not just an endeavour to collect as many articles on a subject as possible without any thought for their relative value. Instead, the review is a systematic approach to identify, evaluate, and interpret the available literature on an area of interest. Rather than a simple summary, it is an analysis or critical appraisal of published research.

The 'topic' of interest of the review is of course the area or issue that you have chosen for your research project and the literature you find will help to define or refine the research questions that your project intends to answer. Some of the works that you review will have helped to establish a field, others to advance it, yet others to predict trends, and some will be contradictory revealing that there are controversial areas of theory or practice.

If your review is comprehensive, it will indicate which areas are well researched, where there are gaps, and which areas have received little investigation perhaps suggesting the direction your research could take. However, the breadth of your review will depend on what you want to use it for. If the review is intended to shape your research proposal then your focus is to identify the seminal publications, ie those that define the field or have made the most substantial contributions to its development and, of course, those directly concerned with your particular topic. For a Master´s thesis you will need to review a greater number of articles, and for the PhD study you must demonstrate an awareness and understanding of all of the key publications and how they relate to one another. This comparison suggests that it is good practice to be as thorough at the proposal stage as you would at the thesis level ensuring the same depth of analysis (as opposed to breadth) since at the more advanced level you can then reuse and build upon your earlier efforts.

2. Literature Sources

The range of literature sources is determined by the discipline. In information technology, there is a wide spectrum of published sources associated with an equally wide range of quality and credibility. Here are the most prevalent sources.

Books: Books are often referred to as secondary sources because they mainly survey a complete field and their lengthy preparation time means that they are largely unsuitable for the most up-to-date information on a subject. However, they are a valuable source of references to earlier work and a chronological perspective as well as offering a well-organised overview of a field.

Theses: A thesis is a valuable source of historical and recent work as well as offering a literature review chapter that is constructed along the lines of what you are seeking to achieve. However, theses are often hard to obtain although your own university will have stock of all theses submitted for its own research degrees.

Reviews: Reviews are published by learned societies and large publishing houses. As the title suggests they review the current state of a field and are targeted at the principal researchers who value the collection of up-to-date information in a single place.

Journal articles: Journal articles tend to be the gold standard of research publications. They contain the most recent work on a topic and although journal quality varies quite considerably, articles are generally blind reviewed by at least two reviewers and standards are high. The lead time for publication in the top journals in a discipline can be upwards of a year so the currency is sometimes one of a perception than a reality.

Government and other reports: Government and other agencies such as Universities, Health Boards etc frequently commission reports and these can be very useful sources of information. By their nature they may not be widely circulated and are difficult to come by.

Newspapers, magazines and trade journals: Articles in these periodicals are written in a popular style, not subject to peer review, and often sponsored by an organisation with a vested interest. They are therefore low on credibility but sometimes useful in identifying trends and providing details of companies or individuals who are at the sharp edge of developments.

Internet: The Internet is now a major source of information and is often the first source that researchers seek out. It is a very good meta-source, ie a guide to other sources. Meta search engines such as the free Copernic Agent (only on Windows) accept a topic and concurrently search several of the better well-known search engines returning several hundred hits. The main problem, and frequent pitfall, with this approach, and the Internet in general, is that most sources have not been peer reviewed or subjected to any academic scrutiny so that their quality and reliability are suspect. Always look for the authors' credentials. Are they qualified in the field, what is their affiliation? There is a growing tendency to publish academic studies on line, sometimes as the primary place of publication, but often in a CV on an author´s web site. In some cases, the original journal may charge for access to papers but the author´s web page may provide free access. Although, the caution about quality still applies, don´t dismiss Wikipedia articles. They are frequently written by experts and the encyclopaedia connotation confers a high standard of accuracy and currency.

Citation Index Searching: This is another type of meta search. A citation index is a database or index of citations between publications that cite one another. Thus, a reference or an author´s name can be used to find articles on a topic published over a period of time (often finding current research) or to publications by a particular author. The most highly rated databases are:

- ISI: The original Institute for Scientific Information (ISI, now part of the Thompson empire) first introduced the *Science Citation Index* (SCI), the *Social Sciences Citation Index* (SSCI) and the *Arts and Humanities Citation Index* (AHCI) for papers published in academic journals. These databases are available in print and CD-ROM. They are now generally accessed through the Web under the name *Web of Science*, which is in turn part of the group of databases in the *Web of Knowledge*. Some databases cover conference proceedings.
- Scopus: Scopus (Elsevier) is online only and similarly combines subject searching with citation browsing and tracking in the sciences and social sciences.
- Google Scholar: the Google Scholar index includes most peer-reviewed online journals of Europe´s and America´s largest scholarly publishers, plus scholarly books and other non-peer reviewed journals.

Further information on citation indexes is available on Wikipedia[1] and the relevant web sites.

University Library: University librarians are expert in literature searching and they are there to help. Don´t regard them as final resort but go and discuss your project with them once you have a broad idea of the field. It will save you a lot of time and raise the standard of your review.

3. Performing the Review

Researchers generally agree that a literature review has four stages.

- Formulate the research question or state the purpose of the research and its scope
- Search for and find relevant material
- Organise and evaluate the material that has been found
- Analyse and interpret the finding

[1] http://en.wikipedia.org/wiki/Citation_index

The first stage is addressed in the document, *Writing a Research Proposal*, and the second in section 2 of this article. When you are satisfied with the number and range of your sources (critical appraisal of your own work) then you can begin to organise and evaluate the articles that you have found as follows.

- Divide the results into two major categories – what is known and what is not known
- Identify areas of controversy or uncertainty
- Decide the significance of each article to the subject area and to your research question
- Formulate questions that need further research

This process simplifies the analysis stage in which you:

- Ascertain the main findings and conclusions of the published articles highlighting the ways in which authors agree and vary from one another
- Decide which articles are the most relevant to your proposed research
- Build a profile and body of knowledge that acts as the foundation of your study

See section 5 for tools that can assist the organisation of material. The document, *Critical Assessment of Published Sources* discusses the criteria you can use to assess each article.

4. Presenting the Review

As indicated, the extent of the Review depends upon its purpose (proposal, report, thesis) and intended audience. As has also been emphasised, the value of the Review is not just the identification and listing of relevant research but its organisation and analysis to reveal its strengths and weaknesses. Hence, the presentation of the written Review is unlikely to be chronological and even less likely to be alphabetical by author. In fact, it´s a bad sign to see a summary in which paragraph after paragraph beginning with authors´ names. Instead, it is a piece of prose that weaves a story leading to a focus on your selected research topic placing it in the context of the literature[2].

For many Reviews, and especially for a Research Proposal, a useful structure comprises:

- An overview of the topic, or topic area, or theory of interest, together with a clear statement of the purpose of the Review
- Presentation of the literature using categories that focus on the research question(s)
- Within this presentation, a comparative analysis of each article and its main points
- A final section identifying the key articles which guide your proposed research and define the research question(s)

For the last two stages in this sequence, remember to devote more space and discussion to the key articles than to the marginal ones.

5. Citing and Referencing Articles

The text of your written Literature Review will discuss the key points of the articles you have found in your search and identify an article by a citation in the text. The citation can be a number assigned to the article or, as is more common nowadays, the author' or authors' names and a publication date. The publication details of each article are collected in a list at the end of the Review arranged numerically or alphabetically by first author. Here are examples of the two options.

Numerical Option:

Text: Recent work [12] has shown that…

List: 12. Norris A C, Stockdale R S and Sharma S, *A Strategic Approach to M-Health*, Health Informatics Journal, **15 (3)**, 244-25, 2009

[2]Bear in mind that the literature search process itself may well have changed your topic from its original form

Author Option:

Text: Recent work (Norris et al, 2009) has shown that…

List: Norris A C, Stockdale R S and Sharma S, *A Strategic Approach to M-Health*, Health Informatics Journal, **15 (3)**, 244-25, 2009

If citations refer to articles published by an author in the same year then each article is either given a different number or a letter after the date to distinguish them, eg (Norris, 2010a), (Norris, 2010b) etc. There would seem to be no great merit in using, as some writers do, an alphabetical list at the end of the Review with numbers assigned chronologically to each entry and numbers out of sequence in the text.

As this last comment suggests, there are many possible variations on the basic forms of either citation/reference option illustrated above, each of which have their advantages, disadvantages and champions. The important point is to be consistent.

However, many editors of journals or conference proceedings stipulate an explicit style of citation/referencing and increasingly we see compilations adhering to the American Psychological Association (APA) prescription, which uses a author-date format and specific styles for journal articles, books, conference proceedings etc[3]. These styles control punctuation, use of font style, order of dates, page numbers etc. One advantage of this rigid format is that it has led to the development of reference management software tools that can automate the construction of reference lists[4]. One such tool is Refworks, which can:

- Import data directly from online databases
- Organise references by category or project
- Create correctly-formatted lists in all major styles
- Save lists in different document formats (Word, RTF, HTML, etc.)
- Cite references in Word documents and generate a correctly formatted bibliography as you write
- Export collections of references that can be read and processed by other bibliographic software

Refworks is a commercial product and its cost makes it more suitable for library licensing. However, a similar tool, Zotero, which is plug-in for the Firefox browser is free and it can:

- Automatically capture citations
- Remotely back up and synchronise your library
- Store PDFs, images, and web pages
- Import/export with a wide variety of options
- Cite from within Word and Open Office
- Instantly search your PDFs and notes

Another popular tool is EndNote[5], an industry standard, that assists the whole Literature Review process from data collection, through collaboration and sharing between authors to automatic creation and formatting of reference lists.

A couple of points to end on. The literature review is a survey of other people´s work. Hence, here, as elsewhere in your writing, you must identify the origin and acknowledge anything that you quote, paraphrase, or summarise from the work of other researchers. Not to do so will lay you open to an accusation of plagiarism and the accompanying penalties. Any technique such as indenting cited text, or putting it in inverted commas, or italics will avoid the problem.

[3] http://en.wikipedia.org/wiki/APA_style

[4] http://en.wikipedia.org/wiki/Comparison_of_reference_management_software

[5] http://endnote.com

Finally, there is often confusion between a reference list (invariably identified as REFERENCES) and a bibliography. References are those items that have been cited in the text of a literature survey or article. A bibliography is a list of all the materials that have been consulted while writing an article. Bibliographies are more common in books where text citations are infrequent.

Prof Tony Norris

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Related Sources

- Deakin University, Literature Review
- http://www.deakin.edu.au/library/research/literature-review.php
- University of Toronto, The Literature Review: A Few Tips On Conducting It
  http://www.writing.utoronto.ca/advice/specific-types-of-writing/literature-review
- Concordia University, How to write a literature review
  http://library.concordia.ca/help/howto/litreview.php
- University of Waikato, Literature Review
  http://www.waikato.ac.nz/library/guides/subject_guides/literature_review