CSIP5403: Research Methods and Applications

Lecture 3: Literature Review

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Outline

What Is a Literature Review?

- Research, ideally, should further knowledge, by building upon the body of current knowledge and providing new research findings
- A literature review is the first stage in this process, as it gives you a chance to build up (and demonstrate) your knowledge of current research regarding your topic
- It is also an important stage since it significantly affects the following stages of your project
- It involves two steps:
  - Literature search – finding what you need
  - Review of the selected literature – making sense, i.e., understanding existing knowledge relevant to your research

What a Literature Review Is Not?

A literature review is not

- A list of items you have come across, or a bibliography or summary of one text after another
  - This is obviously part of the early stages of searching, organising and evaluating the literature

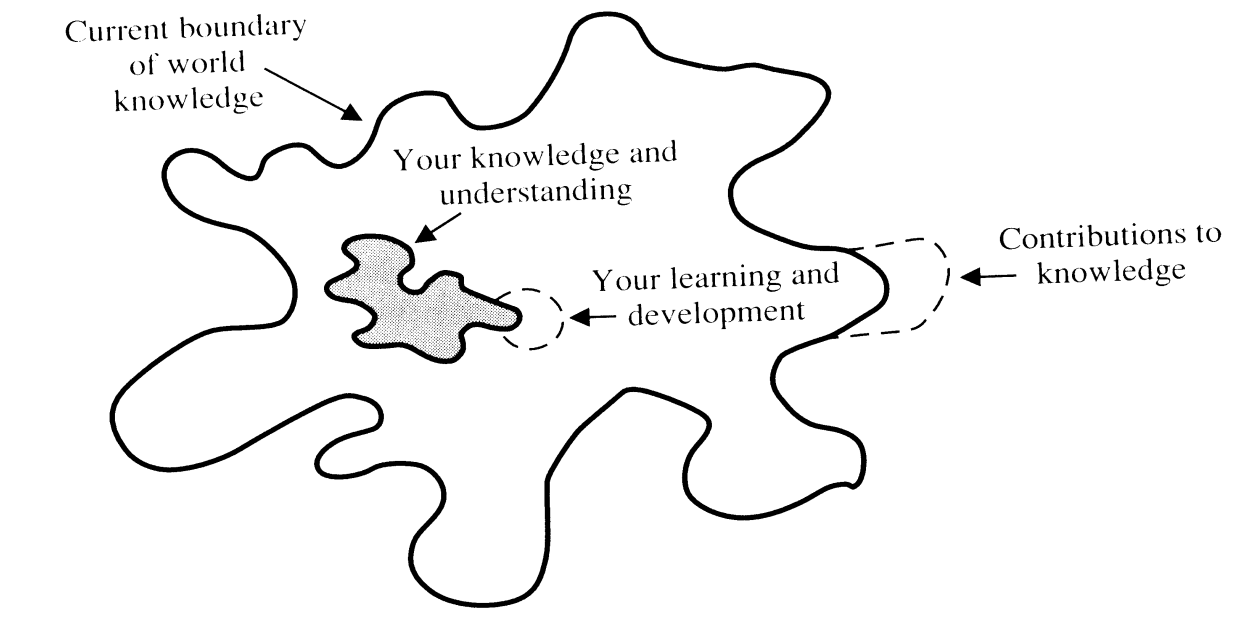
Why Literature Review?

A literature review serves many different purposes:

- to position your own research
- to argue the case for the validity of your research by providing supporting evidence from the literature
- to avoid re-inventing the wheel
- to identify gaps in current knowledge
- to broaden your knowledge base in your research area
- to improve your research methodology
- to conceptualise your findings
- ...

Contextualising Your Research

- Your literature review should set your project within the context of current knowledge on the topic
- It is important for any research project to justify its content by identifying how it fits into a broader context



Justifying Your Research

- Your literature review should show that your project is worth doing: the research area is recognised and meaningful
- It should articulate how your research will add to the current body of knowledge:
  - Broadly summarise the current state of knowledge that relates to your topic
  - Demonstrate the original contribution your research will make
  - If there is a gap in the body of knowledge that your research will fill, this point is an important one to articulate!
- It should support your *research statement* of your project
  - You can break down your research statement into key components, and build a case for each claim one at a time
  - You should back up any claims with evidence from the literature (e.g., the results of scientific studies), and can bring together different research studies in support of each claim

Improving Your Research Methodology

- A literature review is **research about research**
- It should aquaint you with methodologies and tell you
  - What methodologies have been used by other researchers to investigate their research relevant to your topics
  - If others have used methods and procedures similar to the ones you will use, which methods and procedures have worked well and what prolems others have faced with them
- In writing your literature review, you should refer to the literature to support all methodologies that you have used

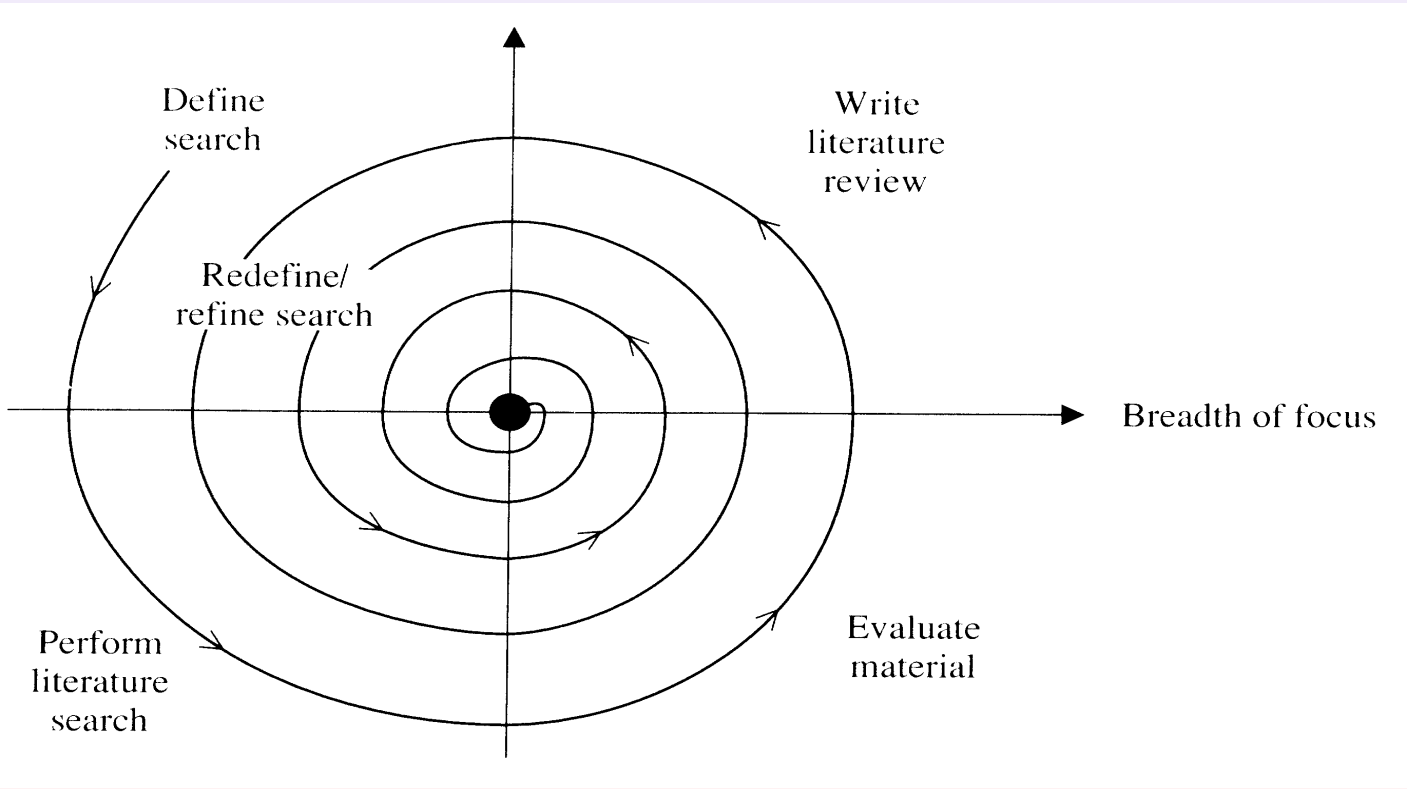
Providing a Starting Point

Your literature review also

- enables other people interested in your work to see the grounds from which your project developed
- provides other researchers with a starting point for their studies
- provides others who wish to develop your work further with a comprehensive literature base

Literature Review Process

- Literature review is an iterative spiral process
- The 'spiralling in' effect represents increased focus



Two Types of Literature Review

- Literature review may be seen as a series of stages
- Each stage builds on the previous ones
- For most research, there are two main types
  - Initial review
  - Comprehensive review

Two Types of Literature Review

- Initial review: like a reconnaissance of the landscape
  - What literature is 'out there' and readily available
  - What databases exists and where and how to access them
  - A short review can be constructed that 'indicates' key ideas, concepts, authors, work, arguments of a broader literature
  - Hence, initial review is also called *indicative review*
  - Indicative review is often used for research proposals
- Comprehensive review: after initial review, skills and knowledge are rapidly developed, and more comprehensive review can be done:
  - Use databases identified and order articles and books if not available in library
  - More time is given to 'mining' the literature

What Is Literature?

- Literature refers to all kinds of published information relevant to your research.
- Information can be published in a wide range of formats, e.g.:
  - Monographs
  - Textbooks
  - Theses
  - Journal papers
  - Conference proceedings
  - Official publications
  - Web based articles
  - ...

What Is Literature Search?

- A literature search is a '*systematic* gathering of *published* information relating to a project'
- *Systematic*:
  - Search should be pursued in strucutred and professional way
  - It involves searching, sorting and managing sources
  - Important to focus the search on information relevant to your research
  - You should identify your boundaries and know when to stop
- *Published*:
  - The materials you trace should be *recognised/accredited* written sources
  - That is, they have been suitably refereed/assessed by other experts before publication

What to Look For?

In conducting a literature review, we look at

- Information on your topic – meaning, intent and usefulness of what others have written on a topic
  - how topic was defined,
  - historical developments, key studies and authors/researchers
  - main concepts, theories and themes
- Methodological knowledge – how others have done research
  - methods/procedures used and assumptions made by researchers
  - issues with the methods and assumptions used
  - access to the data collected
  - research design employed
  - degrees of validity and reliability achieved
- Together, you will understand the state-of-the-art of topic

Hierarchy of Questions

- Basic questions:
  - What are the databases to use for information?
  - What are the key sources on my topic?
  - What research, methods and theory are there on my topic?
  - Who are the main researchers in this area?
  - What is the history, chronological development, of the topic?
- Intermediate questions:
  - How has the topic been defined?
  - How has theory been related to practice or empirical research?
  - What methods and assumptions have been used?
  - What key concepts,variables or factors have been identified?
  - What gaps in knowledge, theory, or application are there?
- More advanced questions:
  - What inconsistencies, shortcomings or contradictions are there?
  - What evidence is lacking, inconclusive or too limited?
  - What alternative approaches are there for understanding the topic?

How to Trace Information?

Different ways of tracing the information

- Using the library
- Internet search engines, e.g., http://www.google.com
- Use guides to the literature
  - 'special collections' in the library, e.g., *Guide to Reference Books*, edited by Robert (1996)
  - 'special collections' on the internet
    - BIDS (Bath Information Data Service): http://www.bids.ac.uk
- Inter-library loans
- ...

Initial Preparation for Literature Search

1. Define your topic
   - Use disctionaries & encyclopaedias to develop a list of keywords to be used to search catalogue, abstracts and indexes
   - Write down the main topic and disciplines related
2. Think about the limits of your topic
   - Use materials from disctionaries & encyclopaedias to define scope of your topic and write a working title
   - Limit your research by time, language, place, ect.
3. Identify the main references
   - ISI, Scopus, ScienceDirect, IEEEExplore, ...
4. Think about the housekeeping
   - Use ring binders/index cards to store notes and bibliography data
5. Plan the sources to be searched and start your search
   - List the sources in the order in which you intend to search them

Defining Your Topic and Focusing Your Search

- We should search the literature with a clear focus in mind
- As your literature review should be an argument that supports your research statement, consider the types of research studies that would be necessary in order to demonstrate its validity
- This does not mean ignoring studies that conflict with your research statement; however, you will need to be able to argue convincingly that your research is valid and beneficial
- A literature review should accurately reflect the literature at the same time as it validates your own research; a balance of the two should be achieved
- If there are studies that disprove the validity of your research statement, this may be a sign that the claim is too broad
    - If so, you may need to narrow down your topic, or limit the conditions of your research statement

Identifying Significant Literature

- Initially scan and skim the literature to select research studies relevant to your own research topic
  - You should include literature that contributes to the body of academic knowledge on your specific research topic
  - Assess the relevance of the document before you download it, in order to avoid wasting time on irrelevant literature
- In addition to featuring literature that provides a background to your topic, you may need to include literature related to the following aspects:
  - Methods
  - Theoretical frameworks
  - Concepts or terms

Managing the Literature

- Research is an information-intensive activity. We need a system to manage the literature gathered from the beginning in order to avoid
  - losing sight of important articles or
  - losing references that are later needed
- Some key stretagies
  - Use the conceptual model to divide the literature into groups, and assees the relationship between studies, e.g., correlations or inconsistencies (in methods, results or conclusions)
  - Set up an index system (index card or computer document) to store information of literature
  - Try to record refernces in the correct format from the start
  - When reading, highlight key phrases, sentences, or paragraphs
  - Make brief notes or comments on the articles

Literature Searching: Tips

- Note interesting quotations and their reference
- Use review articles and books to help you search
- Know when to stop
- Have a system to manage the materials
- Read recognised leaders and original theorists in your field
- Start with a broad search before focusing in

Reviewing the Literature

- After literature search, you need to review the selected literature in order to understand existing knowledge relevant to your research
  - Read obtained sources
  - Refine your questions and objectives
  - Highlight challenges & originality to your project
  - Identify useful methods and strategies
  - Conceptualise and synthesise the material
- Requires *critical evaluation & understanding* of material

Structuring the Literature Review

- Plan out the structure the literature review will take
- Literature review may be structured diferently in different fields of study
- Your literature review should be given a logical structure that strengthens the argument for your research statement
  - Consider all necessary aspects of your topic, and order them in a logical way
  - Create a structure that gives your discussion of the literature a clear direction
- The structure of your literature review should allow you to argue the case for your research statement, and demonstrate the current state of knowledge regarding your topic

Common Structures of Literature Reviews

- General to specific
  - Begins from a wide perspective (global significance) and progressively focuses on the specific topic of your research
- Topical or thematic
  - Sections are devoted to various relevant concepts or categories
  - Order the sections logically
  - The sections can be integrated throughout your thesis thematically (if need be)
- Chronological
  - Research is discussed chronologically to demonstrate the historical or developmental context, or progressive changes
- Classical approach
  - Consider the most significant aspects of your research area, and primarily focuses on the key literature
- Combined approach: mix of the above approaches

Reading the Literature

- After you structured your literature review, you will read and anlyse the literature with questions in mind, e.g.:
  - What kind of article is it?
  - What can you gain from it?
  - How does the article fit with its context and your project?
- In your analysis, you select from different sources the concepts, theory, definitions, arguments, data and evidence relevant to the development of your theoretical frame of reference
- It involves classifying these parts into schemes which enables you critically evaluate these concepts, arguments, and interpretation

Critical Evaluation

- Critical evaluation interrogates the work of others by scrutinising chain of reasoning used and evidence offered to support their arguments
- It should target aspects that directly relate to (or impact upon) the validity of your own research
- Note that your literature review should establish a solid ground for your own research, and should convincingly build up or argue the case for your thesis or research statement

Writing the Literature Review

- This is the last step in literature review
- If the paragraph structure of your literature review consists of a series of well considered statements, you can then back up these statements with reference to evidence in the literature
- There are several steps in writng the literature review

Steps in Writng the Literature Review

1. Clarifying the main point of your research
2. Breaking your research statement down to components
3. Considering the order of information
4. Ordering your thoughts
5. Giving your writing clear direction

Tips for Writing Literature Review

- Create a detailed plan that outlines the main point or claim that will be elaborated in each section or individual paragraph
- When writing each paragraph, clearly state this claim at the start of the paragraph, and then proceed to back up the claim with relevant evidence from the literature. At the end of each paragraph, tie it all together, and do not move on the next point until the next paragraph

Citing and Referencing Information

- When writing in science, any claim or assertion should be backed up by sufficient evidence
- Any information that has been sourced from someone else (with the exception of "common knowledge" in your field) should be accompanied by a citation, e.g.:
  - Scientific results
  - A theory
  - An idea
  - A statistic
  - A graph, diagram or figure

Citing and Referencing Styles

- The convention of acknowledging a source of information involves
  - A citation to the source where it is used in the text
  - A reference list or bibliography at the end of document
- Use a consistent style to citation and referencing, e.g., *Harvard System*
- General referencing style guides are available at the following location: http://www.lib.monash.edu.au/tutorials/
- Bibliography software packages are available, e.g., Bibtex and EndNote

Summarising the Stages of Literature Review

The process is not sequential: need backwards and forwards circles

1. Develop the focus of the literature review
   - Clarify your research question/research statement
1. Identify relevant literature (database searching)
   - Who has worked on the topic? How did they approach the topic?
1. Manage the literature
   - Record details and annotate key points
   - Keep the literature organised and easily retrievable!
   - Ensure its relevance to your research statement
1. Structure your literature review
   - Group comparable literature
1. Draft the literature review
2. Get feedback
3. Rewrite and revise

Check List

1. Shows a clear understanding of your topic
2. Includes all the key landmark studies
3. States honestly the arguments presented in the literature
4. Reaches conclusions which are justifiable
5. Shows the gap in knowledge your research intends to address

Further Reading


Ranjit Kumar
Research Methodology: A Step-by-Step Guide for Beginners, 4th Ed.
Sage Publications Ltd, 2014.


Gerard Hall and Jo Longman (Editors)
The Postgraduate's Companion, Chapter 10,
Sage Publications Ltd, 2008.


Christian W. Dawson.
The Essence of Computiong Projects: A Student's Guide
Prentice Hall, 2000.