

## Literature review

Reading for discovering the existing knowledge base and exploring the current state of the art / practice

### To get start

- Talk about your research to anyone who would like to listen!
- Read widely first and then narrow down to a specific and manageable topic.
- Meet your supervisor and discuss your progress regularly.
- Write down your thoughts whenever you have them.
- Write something everyday.
- Keep a good record of the different versions of your writing, and always have a backup! Computers do crash sometimes!
- Set up a template early and stick to it.
- Keep a record of whatever you read and develop your reference list from day one.
- Produce a research schedule and stick to the deadline!

### Research stages

- Literature review
- Research design
- Data collection
- Data analysis
- Writing up

### Why literature review?

Your reader not only wants to know what literature exists, but also your informed evaluation of the literature:

- **Information seeking**
- **Critical appraisal**

## What is a literature review?

- A literature review is a type of essay
- Summarises the *key* literature written on a subject (rarely exhaustive)
- A story that summarises material in a logical order, composed of critical arguments, concluding with your own reflections on the most important insights that emerge
- Mainly based on peer-reviewed material (>50%)

## The function of literature review

- Provide the context of your research.
- Discover the state-of-the-art researches in your research area.
- Identify the **knowledge gaps**: significant controversies, inconsistencies, unanswered research questions
- Identify the main **methodologies** and research **techniques** that have been used.
- Identify important **variables / concepts** relevant to the topic.
- Synthesise and gain a new perspective.
- Rationalise the significance of the problem.
- Enhance and acquire the subject vocabulary.
- Locate useful expertise.

## The literature review should

- compare and contrast different authors' views on an issue
  - Linking words are important: *similarly, in addition, also, again; however, on the other hand, conversely, nevertheless*
- group authors who draw similar conclusions
  - Do **not** just describe what one writer says, and then go on to give a general overview of another writer, and then another, and so on
- criticise aspects of methodology
- note areas in which authors are in disagreement
- highlight exemplary studies
- highlight gaps in research
- show how your study relates to previous studies
- show how your study relates to the literature in general
- conclude by summarising what the literature says

## Steps for literature review

1. Define your research problem
2. Gather background information
3. Identify key concepts
4. Determine where to perform the search
5. Perform the search
6. Evaluate what you have found
7. Decide whether to cite the material you found

## What is a **BAD** literature review?

- 'text book' knowledge
- Disjointed materials
- Descriptive without critical evaluation
- Too much direct quotes
- Dated materials
- Selective and biased
- From limited sources
- Misinterpreting / out of context

## Where to find literature?

- Learned Journals
- Conference proceedings
- Research papers
- Textbooks
- Thesis / Dissertation
- Technical Report
- Newspapers
- World wide web

## Reading strategies

- Where to read (good libraries, web sites)
- What to read (different sources,)
- Whom to read (key authors, citation index)
- How to find what to read (reference lists, classified directories, search engines)
- Use of effective search words and methods

## Speed reading

- Read titles only, skipping less relevant ones
- Scan read relevant abstracts
- Download relevant papers, speed read intro, results, discussion and conclusion, read slowly around key points
- Only read methods in detail for papers that are key to your argument or controversial (e.g. contradict mainstream views)

## Reading styles

- Five minute reading
- Selective reading
- Getting the gist (contents page, abstract, index, first and last sentences of paragraphs)
- Critical reading (assess worth, understand the logic and rationale, quality of data used, validity)
- Recording what is read and taking notes (tabulating)
- Reading the methodologies used

## Issues of concern

- Nothing has been written about my research area: too narrow or trivial
- Too much to read: Link, focus, classify
- It has all been done: differentiate your method or sample, change direction
- How many references do I need? Not too many not too less, identify a few key papers

## Create a database in Excel

Author	Year	Relevant key points / quotes	Theme 1	Theme 2	Theme 3	Your own thoughts

- Group into as few as possible major themes (3-6)
- Think what story you could tell to link these themes coherently (these become sub-headings in your literature review)
- Think about what sub-themes fit under each of these major themes, and their order
- Identify gaps in your story and arguments and target additional reading to fill gaps

## Can technology help?

- Zotero
- EndNote
- Mendeley
- Researchrabbt
- Elicit
- SCISpace
- Inciteful
- Consensus
- Scite
- Semantic Scholar
- Citation Gecko
- Consensus

## Conducting your literature review

- Make a plan / structure which logically guides the reader through the literature: theoretical framework
- Develop distinct **sections (themes)** and **sub-sections (sub themes)** with appropriate headings (up to **4** layers): a logic debate (a story that makes sense!)
- Compare / contrast different views in your chosen area: what is agreed / disagreed, and where is the **knowledge gap**
- Comment on the application / applicability of the literature, but do not make judgements (save your own opinions for your discussion!)

## In writing the literature and state-of-the-art survey

- Relate to the research problem, state it
- Give a review of theories found
- Give a review of methods found
- Critically refer to existing empirical works, applications/ practices and find gaps
- Present new ideas stimulated by the survey
- Tabulate by paper number
- Finally summarise the chapter, and fine tune problem

## Writing up your literature review

- Use a mixture of narrative and direct quotation
- Use direct quotes to explain complex or controversial issues
- Use direct quotes to reinforce a point
- Use appropriate terminology - *contends, argues, suggests* etc.
- Use key link words - *however, nevertheless, on the other hand* etc.

## Exercise 1

Please critically evaluate this paper:

- S.H. Kannangara<sup>1</sup> and W.M.J.I. Wijayanake 2015) "AN EMPIRICAL EVALUATION OF IMPACT OF REFACTORING ON INTERNAL AND EXTERNAL MEASURES OF CODE QUALITY"
- Your evaluation may cover the following aspects:
- What are the main issues raised and conclusions made in the paper?
- What is the research methodology used in the research? How does it serve the research aim? What are the problems with this methodology?
- What evidences did the author use to support his arguments? Are they all valid?
- What are the points you agree / disagree with the author? Why?
- What are the alternatives you would like to propose?

## Exercise 2

- Study Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020

## Task for Next Week

- Present your Literature review