

Phase 1: Foundation (Laying the Groundwork): DEng Program: The Art of the Engineering Literature Review

5 March 2026

Presenter: Emeritus Professor Akhtar Kalam

EIT EMERITUS PROFESSOR



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Introduction – Presenter

Emeritus Professor Akhtar Kalam

Emeritus Professor at Victoria University and EIT.

Academic Director and Chair of the Academic Board - Texila College Australia.

Director of Al-Kalam Educational Solutions.

Editor-in-Chief of AJEEE

Distinguished Professor/Adjunct Faculty in Australia, India, Malaysia and Oman.

He has published over 610 publications in his area of expertise and has written over 29 books.

Supervised 51 postgraduate research students to graduation, including 39 PhD's and 12 MEngs. Currently, 10 postgraduate research students (four PhD students at VU and six DEng students at EIT) are being supervised.

Public, University, and Motivational Lecturer.

Consultant for the electricity supply industries in Australia and overseas.

Assisted in change management plans for Universities and the higher education sector.

Education

The University of Bath, Bath, UK, D.Eng., Electrical Engineering

The University of Oklahoma, Norman, USA, MS, Electrical Engineering

Aligarh Muslim University, Aligarh, India, BSc. Eng., Electrical Engineering

St Xavier's College, Calcutta, India, Applied Science

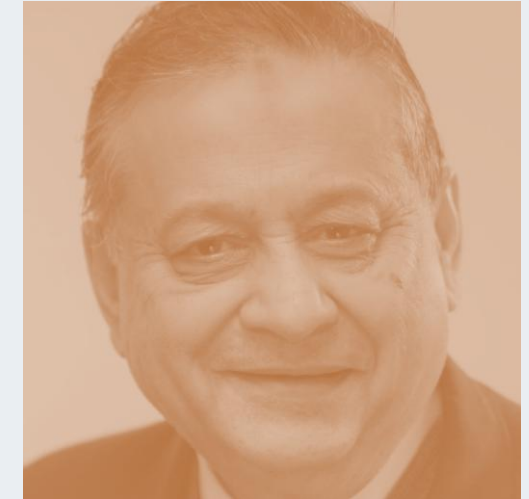
Professional Society Activities

Australian Institute of Energy – Fellow

Engineers Australia – Fellow

The Institution of Engineers and Technology, UK – Fellow.

The Institution of Electrical and Electronic Engineers, USA –Life Senior Member.



“My vision is to provide exciting higher education science and engineering courses, research, consultancy and collaborate in development work of the industry and communities within Australia and beyond.”

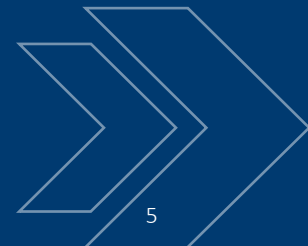
Agenda

1	What is a Literature Review?
2	Conducting a Comprehensive Search
3	How to write a Literature Review?
4	Choosing the right material
5	Conducting a Comprehensive Search
6	The Review process
7	Avoiding common pitfalls
8	Conclusion and Q & A





What is a Literature Review?



INTRODUCTION

- Importance of a doctoral literature review
- Purpose:
 - To provide a foundation for research, identify gaps, and establish credibility
 - It is not just summarising what other scholars have done before you.
 - One should analyse and evaluate the current body of work, situating their research within that context and demonstrating the significant original contribution their research makes
- Overview of key strategies for mastering the process



UNDERSTANDING THE PURPOSE OF A LITERATURE REVIEW

- Synthesizing existing research
- Identifying research gaps and justifying your study
- Establishing theoretical and conceptual frameworks

DEFINITION OF A LITERATURE REVIEW

A literature review:

- Survey scholarly articles, books, and other sources (e.g., dissertations, conference proceedings) relevant to a particular issue, area of research, or theory.
- Provides a short description and critical evaluation of work essential to the topic.
- Offers an overview of the significant literature published on a topic.



DEFINITION OF A LITERATURE REVIEW

Literature review: An examination of the key research on a topic

- What have others said about this topic?
- What theories address the topic?
- Which policies address the topic? (If relevant)
- What research has been done previously on the topic?
- Do the existing research results agree with one another, or is there disagreement?
- What are the gaps in the existing literature?

PREPARING A LITERATURE REVIEW

This involves:

- **Searching** for reliable, accurate, and up-to-date material on a topic or subject.
- **Reading and summarising** the key points from this literature.
- **Discussing and evaluating** these ideas, theories, and concepts.
- **Synthesising** them into a summary of what is known.
- **Identifying** areas of debate or controversy.
- **Preparing** the ground for the application of these ideas to new research.



WHY CONDUCT A LITERATURE REVIEW?

1. For a review paper
2. For the introduction (and discussion) of a research paper, master or doctoral thesis/dissertation
3. To embark on a new area of research
4. For a research proposal



Conducting a Comprehensive Search

WILL CONDUCTING A LITERATURE REVIEW HELP?

- Determine if proposed research is needed.
 - Even if similar research is published, researchers might suggest a need for similar studies or replication.
- Narrow down a problem.
 - It can be overwhelming getting into the literature of a field of study.
 - A literature review can help you understand where to focus your efforts.
- Generate hypotheses or questions for further studies.

WHAT WILL CONDUCTING A LITERATURE REVIEW GIVE?

- Background knowledge of the field of inquiry
 - Facts
 - Eminent scholars
 - Parameters of the field
 - the essential ideas, theories, questions, and hypotheses.
- Knowledge of the methodology's standard to the field and a feeling for their usefulness and appropriateness in various settings.

DEFINING THE RESEARCH SCOPE

- Narrowing down research questions
- Developing clear inclusion and exclusion criteria
- Aligning the review with research objectives



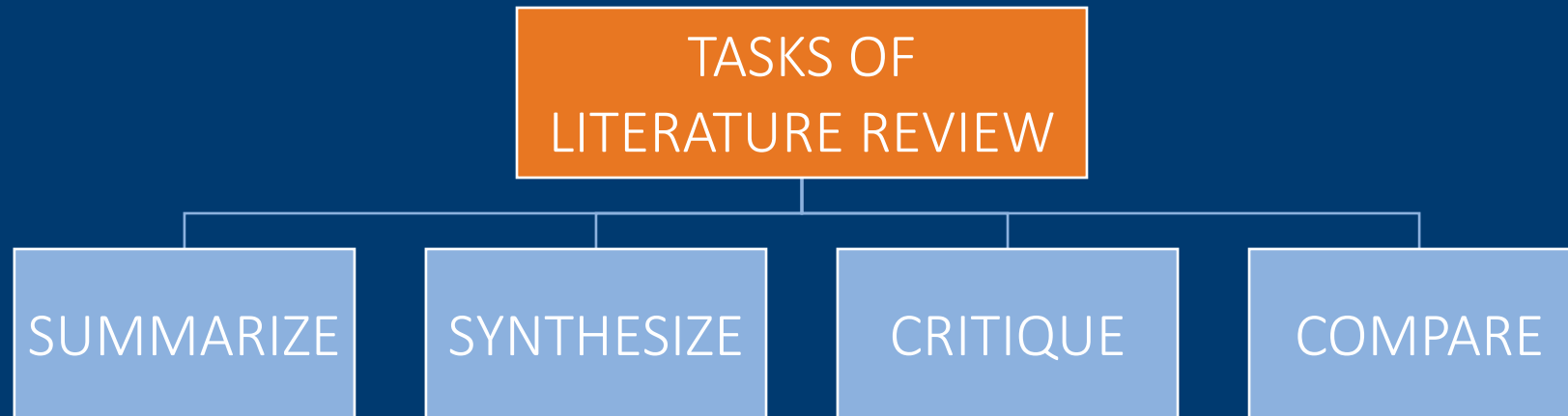
CONDUCTING A COMPREHENSIVE SEARCH

- Utilizing academic databases (Google Scholar, Scopus, Web of Science, etc.)
- Using Boolean operators and search strategies
- Leveraging grey literature and conference papers

EVALUATING AND SELECTING SOURCES

- Using relevance, credibility, and recency criteria
- Evaluating peer-reviewed vs. non-peer-reviewed sources
- Employing critical appraisal tools (e.g., PRISMA, CASP)

FOUR ANALYSIS TASKS OF THE LITERATURE REVIEW



HOW TO WRITE A LITERATURE REVIEW?

Step 1 - Search for relevant literature.
The first step to writing a literature review is looking for your sources. ...

Step 2 – Evaluate your sources. ...

Step 3 - Determine the themes, debates, and gaps. ...

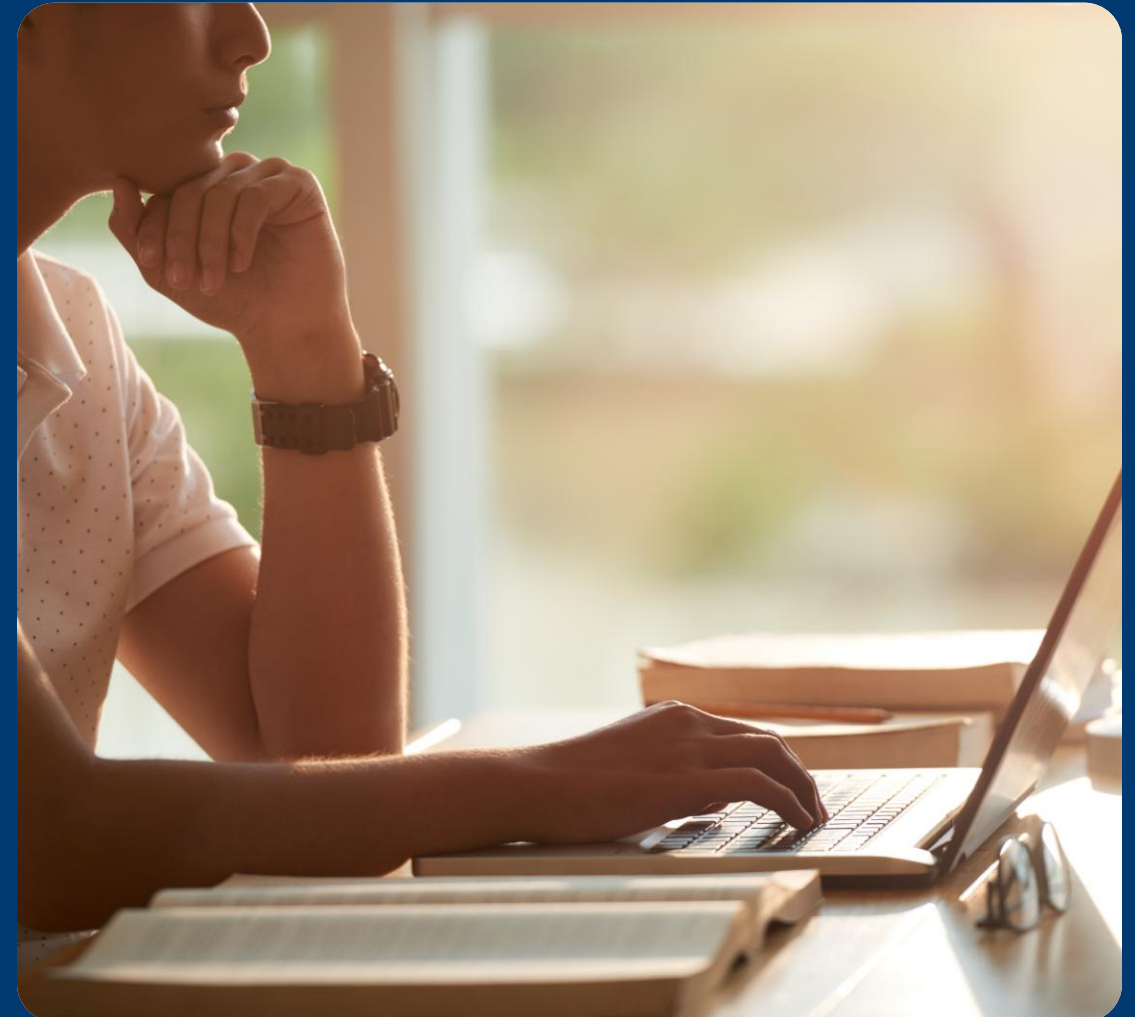
Step 4 - Outline the structure. ...

Step 5 - Write your literature review.



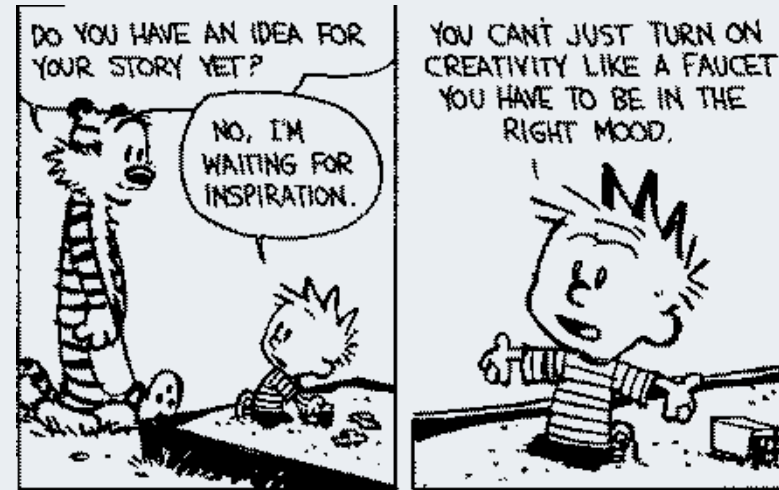
HOW TO DO A LITERATURE REVIEW?

- Define your research scope. ...
- Plan your research approach. ...
- Search strategically: be efficient but thorough. ...
- Manage your literature with online tools. ...
- Critical reading and analysis. ...
- Benchmark from other literature reviews. ...
- Assemble the texts and write.



BASIC ELEMENTS – THE ABC PRINCIPLE

- An introduction or background information section;
- The body of the review, containing the discussion of sources; and
- A conclusion and/or recommendations section to end the paper.



LITERATURE REVIEW (1/2)

- › Identify the main topic and the anchor authors;
- › Undertake a citation tracing process to check who is citing whom and whether you've reached conceptual saturation
- › Read, summarise, synthesise, WRITE
- › Generate the main themes for your Conceptual Synthesis Excel Dump and headings for your literature review based on specific topics you're researching
- › Repeat the process until reaching conceptual saturation
- › Write the literature review as though you were answering questions about each subheading
- › A conclusion and/or recommendations section to end the review

LITERATURE REVIEW (2/2)

1. Introduction.
2. The role of activism in policy change.
3. Activist strategies' repertoire: online and offline.
4. Experiences of online activists in influencing domestic policy change.
5. Environmental activists' repertoires: online and offline.
6. How do environmental activists use online strategies to influence policy change?
7. Gaps in the literature.
8. Conclusions.



Choosing the right material



CHOOSING THE RIGHT MATERIAL

Focus your search; start by asking:

- What is my research's specific question, topic, or focus?
- What material do I need (e.g. theory, policy, empirical data)?
- What type of literature is available (e.g., journals, books, government documents)?
- What kind of literature is particularly authoritative in this academic discipline (e.g., psychology, sociology, pharmacy)?



FINDING THE RIGHT MATERIAL

Where to find the substantial, up-to-date academic books, journal articles, and other publications you need:

- **Module bibliography:** choose one or two books/articles recommended in your module guide and scan through the bibliographies provided by their authors
- **Library catalogue search engine:** enter key, highly focused words, and scan results for the most relevant sources
- **Library bookshelves:** Browse subject area, examining book titles, contents pages, introductions, and indexes to locate relevant texts
- **Online:** For up-to-date journal articles, click the 'Indexing Services' button on the Templeman Library website or the Drill Hall Library catalogue.

HOW MUCH TO REVIEW?

This will depend on:

- the length of the dissertation
- the nature of the subject
- the role of the review in your work
(e.g., simply setting the scene or more integral to the core study)
- the level of study (undergraduate, Masters, doctorate)

But, as a rough rule of thumb:

- – 8 to 10 major pieces (books/articles) for an 8,000-word dissertation
- – up to 20 significant pieces of work for 12-15,000 words (and so on)
(If in doubt, seek advice from your supervisor)

SELECTION CHECKLIST

Your selection of material should:

- ✓ Be broad enough to include all significant relevant material
- ✓ Be narrow enough to exclude irrelevant material
- ✓ Be sufficient for the level (Doctorate, Master, Undergraduate) of your dissertation or thesis
- ✓ Explore all the significant viewpoints surrounding your topic
- ✓ Be relevant and valuable to the reader

ASSESSING THE LITERATURE

Critically evaluate the material by asking:

- What does the author make the points?
- Are they supported by convincing evidence and argument?
- Are the author's research, methodology, or logic flawed?
- Has the material been written from a particular perspective?
- Has the author explored alternative viewpoints or theories?

And much more...

TAKING NOTES ON THE LITERATURE

Your notes for each text should therefore include:

- Summary of key points or arguments made in the text
- Notable supporting evidence, quotations (clearly identified), examples, or case studies
- Critical observations concerning the strengths and weaknesses of the arguments and evidence presented
- An overall evaluation of the text's scholarly contribution to the relevant field of study
- Bibliographic details



STRUCTURING YOUR LITERATURE REVIEW

Like an essay, you need a beginning, a middle, and an end...

Introduction: setting out your strategy for selecting the material and indicating how you will present your analysis of it

Main body: presenting your analysis in a logical order, such as...

- › Text by text (one book or journal article at a time)
- › Theme by theme (grouping texts under key ideas or approaches)
- › Chronological (following the genesis of ideas around the topic)

Conclusion: Summary of key findings, including gaps in knowledge

EXAMPLE OF MAIN BODY STRUCTURES

- **Text by text:** Analysing and comparing the views of different authors:
 - › **Author A:** what they say about themes X, Y and Z
 - › **Author B:** what they say about themes X, Y and Z
 - › **Author C:** what they say about themes X, Y and Z
- **Theme by theme:** Analysing and comparing viewpoints within themes:
 - › **Theme X:** what leading authors/sources say about it
 - › **Theme Y:** what leading authors/sources say about it
 - › **Theme Z:** what leading authors/sources say about it
- **Chronological:** Charting and analysing the development of ideas over time
 - › **Earlier:** what authors thought of themes X, Y and Z
 - › **Later:** what authors came to think of themes X, Y and Z
 - › **Currently:** what authors now think of themes X, Y and Z

EXAMPLE OF MAIN BODY STRUCTURES

- **Text by text:** Analysing and comparing the views of different authors:
 - *Unlike Author A, **Author B** suggests that factor X is crucial in... The author goes on to appraise factor Y, concluding, shared by many of his peers, that it is...*
- **Theme by theme:** Analysing and comparing viewpoints within themes:
 - *There is a consensus in the literature relating to Theme X. Authors A and B believe that... However, Author C adds a note of caution, presenting new evidence that Theme X is...*
- **Chronological:** Charting and analysing the development of ideas over time
 - *Before introducing Theme X, the consensus was... with Authors A and B of the view that... With Theme X in place, views began to change. Author C soon acknowledged its impact...*

WRITING YOUR LITERATURE REVIEW

Your writing should:

- Avoid overuse of quotes or overlong descriptions of text
- Summarise and evaluate what you think is most important about the texts you are examining
- Convey an objective, tentative tone: ‘It could be argued...’
- Be straightforward, easy to follow, and accurately referenced
- Be free of errors – always allow time for editing and proof-reading

USING YOUR LITERATURE REVIEW

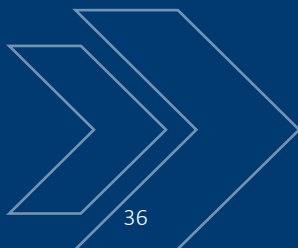
Refer to your literature review in your methodology and discussion chapters:

- Use it to explain your choice of methodology in the context of methodologies used by others
- Use it to highlight similarities, differences, and contradictions between your findings and those summarised in your literature review.

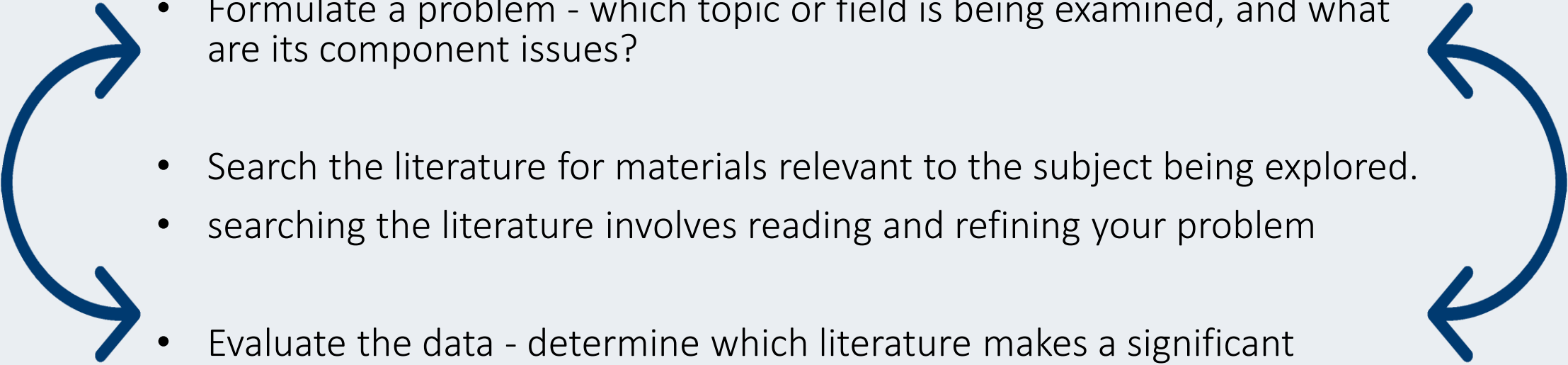




The Review process



OUTLINE OF REVIEW PROCESS

- 
- Formulate a problem - which topic or field is being examined, and what are its component issues?
 - Search the literature for materials relevant to the subject being explored.
 - searching the literature involves reading and refining your problem
 - Evaluate the data - determine which literature makes a significant contribution to the understanding of the topic
 - Analyze and interpret - discuss the findings and conclusions of pertinent literature
 - Format and create bibliography

ORGANISING AND MANAGING REFERENCES

- Using reference management tools (Zotero, EndNote, Mendeley)
- Creating annotated bibliographies
- Developing a systematic filing system

SYNTHESISING THE LITERATURE

- Identifying themes and patterns
- Using thematic coding and conceptual mapping
- Comparing and contrasting different studies

WRITING A COHERENT AND STRUCTURED REVIEW

- Structuring the literature review (Introduction, Thematic Sections, Conclusion)
- Ensuring logical flow and coherence
- Maintaining an academic and critical tone



Avoiding common pitfalls



AVOIDING COMMON PITFALLS

- Lack of critical analysis
- Over-reliance on outdated sources
- Poor organization and lack of focus



ENSURING RIGOR AND VALIDITY

- Cross-referencing sources
- Acknowledging biases
- Incorporating a methodological framework



UTILISING TECHNOLOGY AND AI TOOLS

- AI-powered literature review tools (Elicit, Scite)
- Automating citation management
- Text analysis and summarization tools



COLLABORATING AND NETWORKING

- Engaging with academic communities
- Participating in research forums and discussion groups
- Seeking mentorship and peer reviews



ADAPTING TO EVOLVING RESEARCH TRENDS

- Staying updated with emerging research
- Using preprint servers and open-access journals
- Attending conferences and workshops



FINALISING AND REVIEWING YOUR LITERATURE REVIEW

- Proofreading and editing
- Seeking feedback from peers and advisors
- Ensuring alignment with research objectives



Conclusion and Q & A

EXAMPLE OF RECOMMENDATION (1/3)

My recommendations to a student as to what I considered needed to be done before the thesis could be sent out for examination are as follows:

- The thesis presented here, as a Doctorate, while falling short of the requirements, shows potential. The expected word count for a Doctorate thesis is between 80,000 and 100,000. Your thesis, at 41,079 words, is just over half of the minimum requirement. However, proper guidance and revision can transform it into comprehensive and impactful research.
- Chapter 1, the Introduction, contains references, but very few for the seminal part of the thesis. It is not explicit how this work advances from previous work in the area.

EXAMPLE OF RECOMMENDATION (2/3)

- Chapter 2, the Background and Literature review, contains no literature references. It also includes images and diagrams copied and pasted directly from the internet and other sources. While acknowledged as from external sources, their use is not contextualised. There is a curious lack of specificity when describing the work of others, including the images/diagrams. This chapter needs to be rewritten in a critical literature review style. This research needs to be conceptualised and contextualised, which can only occur after a proper literature review.
- The three data chapters are cursory at best:
 - › Chapter 3 – 8 pages total with several of the images from internet sources
 - › Chapter 4 – 8 pages total with several of the images from internet sources
 - › Chapter 5 – 38 pages with, at best, 5 written pages and the remaining pages various images and data tables.
- Chapter 6, the Conclusion—1.5 pages that do not integrate the data chapters and present as a valid addition to the field of research

EXAMPLE OF RECOMMENDATION (3/3)

- The writing style is generally conversational, and the grammar and sentence structure are poor. The thesis lacks systematic structure and cohesion, making it difficult to interpret the research and place it in context within the field. Whilst the data/data analysis may be valid and even ground-breaking, it is impossible to determine this from the present thesis.
- The published article is to be included in the appendix as it appears in the journal. This should include the original journal formatting, page numbers, headers, and footers.

The Principal Supervisor works closely with the student to revise the thesis. Your guidance and that of the Associate Supervisor are crucial to addressing the issues. Have you been meeting with your supervisors? If you haven't, it's essential to do this immediately and to agree on a plan of action to address the concerns outlined in the dot points above.

Q&A

- Recap of key strategies
- Encouragement for continuous engagement with literature
- Questions and discussion

Thank You!

Upcoming courses

Courses	Start Date
Doctor of Engineering (online) 36 months	20/07/2026
On-Campus – Doctor of Engineering 36 months Perth/Melbourne	27/07/2026

Find MORE courses here: <https://www.eit.edu.au/schedule/>

Upcoming Doctoral Webinars

All upcoming Doctoral Webinars:

<https://www.eit.edu.au/event/doctoral-research-toolbox-chat-with-emeritus-professor-akhtar-kalam/>

Phase 2: Research Practice (Designing and Executing Research)

2 April – Designing Rigorous Engineering Research: Methods, Models, and Validation

7 May – Tools of the Trade: Simulation, Experimentation, and Data Analytics

4 June – Research Integrity, Safety, and Ethics in Engineering

2 July – Supervisory and Industry Collaboration: Working as a Research Engineer

6 August – Managing the DEng: Planning, Time, and Resources

Phase 3: Completion & Impact (Delivering and Beyond)

3 September – Communicating Engineering Research: Writing and Presenting Effectively

1 October – From Lab to Field: Translating Research into Real-World Engineering Applications

5 November – Resilience, Reflection, and the Doctoral Mindset

3 December – Building Your Research Identity: Patents, Publications, and Professional Pathways

Survey

Thank you for participating.

Kindly fill out this survey:

<https://forms.office.com/r/zpQsV2bgUd>



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