

WHEN TO START WRITING



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Outline of the Lecture

- Thesis
- Good Thesis Statement
- Order of Thesis Contents
- How to Start Thesis Writing?
- Writing a Good Thesis
- Tips to Write Good Thesis
- Writing Each Chapter/Sections
- Format
- Research Ethics
- Reviewing
- What to expect from your supervisor?
- Key to Success



Thesis

A **thesis** (Often Bachelors/Masters) or **dissertation** (often Doctoral) is a document submitted in support of candidature for an academic degree or professional qualification presenting the author's research and findings. In some contexts, the word "thesis" or a cognate is used for part of a bachelor's or master's course, while "dissertation" is normally applied to a doctorate, while in other contexts, the reverse is true. The term *graduate thesis* is sometimes used to refer to both master's theses and doctoral dissertations.

WHAT THESIS WRITING
IS REALLY LIKE:



Source: <http://en.wikipedia.org/wiki/Thesis>

Good Thesis Statement

Good writing is essential in a dissertation.

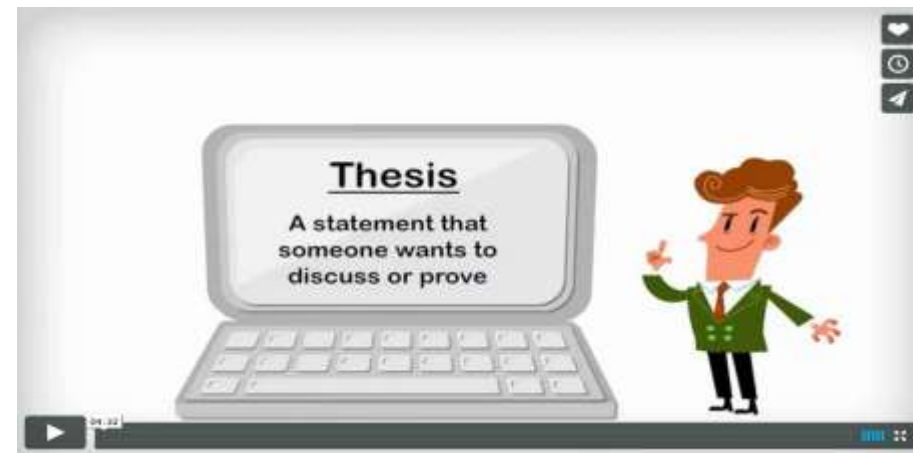
Good writing cannot compensate for a lack of ideas or concepts.

CLARITY

UNDERSTANDIBILITY

SIMPLICITY

RELEVENCY

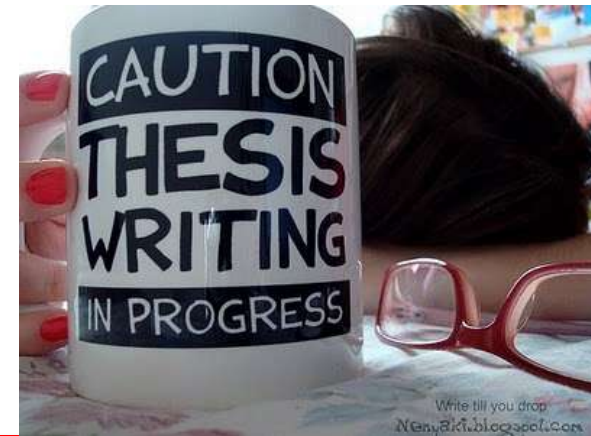


When to start writing?

- For example: You have worked out your methodology. This is a good time to write a draft methodology chapter. Remember you will probably need to modify it later but doing it now will help you think it through and spot any gaps or weaknesses.
- You've been reading 'around' the topic and are starting to build up a picture of this field of research and where your study fits. It is a good idea at this time to begin writing a preliminary review of the literature.
- Especially if you are establishing and justifying your theoretical framework, it is essential that you write about this and get it read and discussed with your supervisor.
- Start getting a clear picture of the whole thesis. Carry something shorter--and an abstract is ideal for this. You could see this abstract as a tool to control the flow of ideas throughout your thesis.

How to start writing?

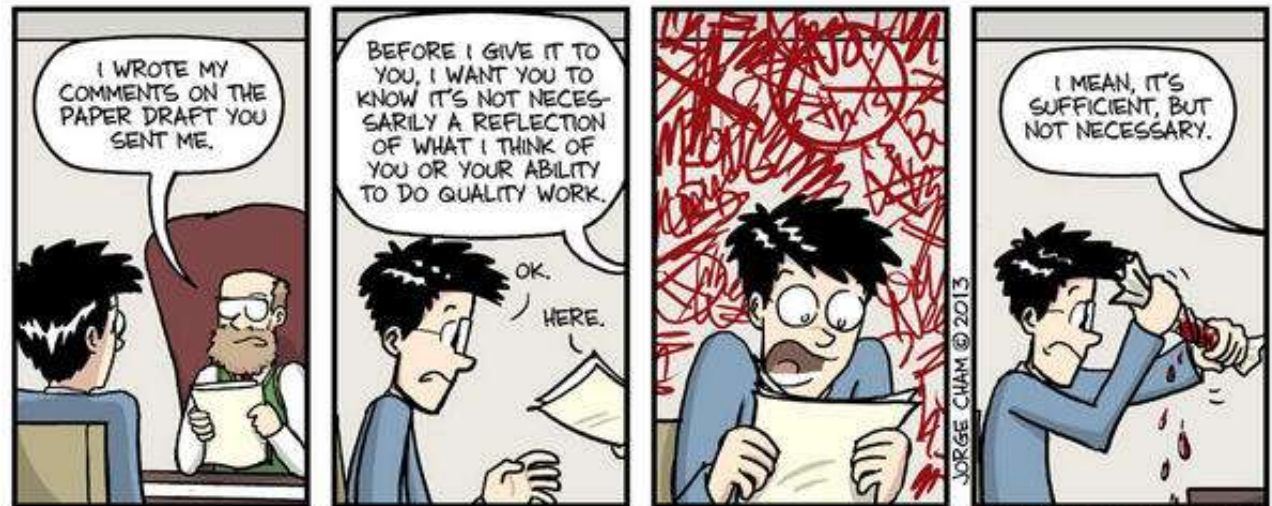
- When do I actually start *writing* my thesis?
 - 6 months before the end of my PhD?
 - No, the day you start your PhD
 - Start today! Tomorrow is too late!
 - When you have something to say
- Best way is to prepare an extended outline
- Begin by making up the Table of Contents
 - List each section and subsection
 - Write a brief point-form description of contents
 - The entire outline might be 2 -5 pages long
 - Carefully review this outline
 - ❖ Unnecessary material?
 - ❖ Missing material?



How to start writing?

- Writing is a test of your understanding and it forms a solid basis for moving forward or revealing the gaps in your work.
- There is every reason to begin it early.
- Making sense of the **literature** (pursue some recent review articles to begin.)
- Making sense of the literature - **first stage**. (getting a feel for the whole area, an idea of its scope, appreciate the controversies, to see the high points, and more familiar with the major players)
- Making sense of the literature - **second stage**. (continue the process of making sense of the literature by gaining more expertise which allows you to become more confident, and by being much more focused on your specific research)
- Making sense of the literature - **final stage** (able to identify points or issues that lead directly to your research)
- Developing a **picture** of the thesis as a whole. (Once you have the idea of what the plot is, you need to go further with it and build up a story of the whole thesis.)
- Keeping your research focused (First when you have settled into the topic and the time for wider exploration has to end. When you may have gathered lots of data and are starting to wonder how you are going to deal with it all.)
- Writing an **abstract**. (help you to see the relevance of what you are currently working on within the bigger picture, and help to keep the links which will eventually unify your thesis.)

HOW TO PRODUCE A GOOD QUALITY THESIS



Order of Thesis Contents

Preface

- I. Title Page
- II. Original Literary Work Declaration
- III. Abstract
- IV. Acknowledgements
- V. Table of Contents
- VI. List of Figures
- VII. List of Tables
- VIII. List of Symbols and Abbreviations
- IX. List of Appendices

Text

1. Introduction
2. Literature Review
3. Methodology
4. Results
5. Discussion
6. Conclusion
7. Recommendation

Supplementary

Research instruments such as:

- Questionnaires
- Maps
- Computer programmes

Appendices:

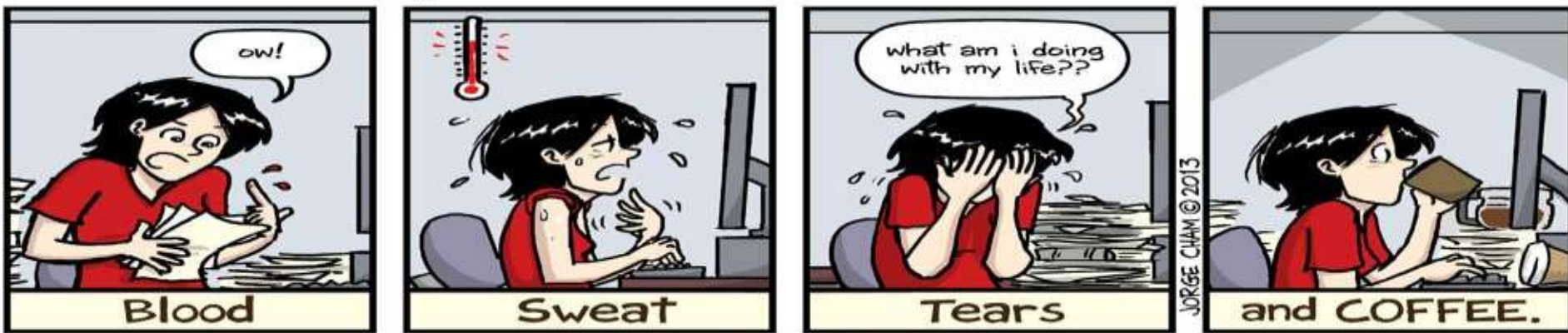
- Additional illustration of data sources
 - Raw data
 - Appendices can be divided into Appendix A, B, C
- References



Writing a Good Thesis

- The text must be clear
- Good grammar and thoughtful writing: *easier to read*
- Scientific writing is a little formal: *No slang*
- Short, simple phrases and words are better than long ones
- Thesis must be a connected, convincing argument
- Not just a list of facts and observations

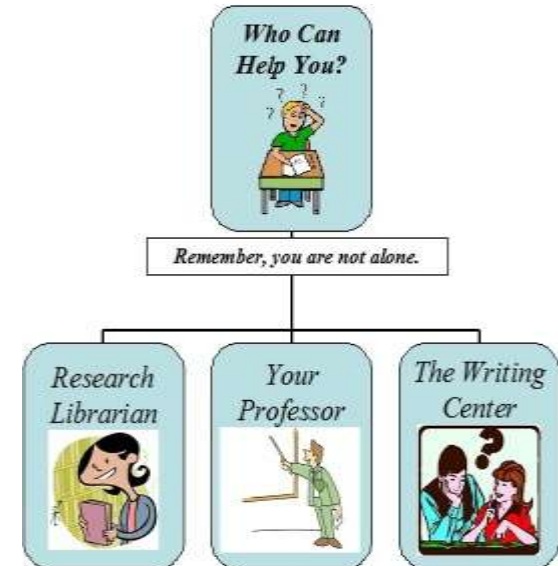
My thesis is written in



WWW.PHDCOMICS.COM

Tips To Write Good Thesis

- Spend enough time planning the structure.
- Get copies of other (good) thesis. Talk to your supervisor.
- Avoid repetitions (copying your own sentences several times).
- Must not copy other peoples' sentences. Develop your own style.
- Maintain thread between adjoining chapters (joining words/sentences).
- Define all variables in equations and in calculations.
- Use variables according to general practice.
- Don't use the same variables for different things.



Tips To Write Good Thesis

- The International System of Units (SI) must be used. If other units: converted to SI units and placed in parenthesis
- Describe test and computational conditions. The reader usually is not familiar with your facilities
- Leave out material that does not contribute directly to the discussion or development of an idea
- Apply punctuations correctly
- Avoid bombastic words, rarely used vocabulary
- Writing in the “active voice” improves the reading pace and dynamics.
- Illustrations and diagrams: readable in terms of graphic style and explanations of variables
- Put down a draft (as rough as you like) for your own purposes, then clean it up for your adviser to read



Terms And Phrases To Avoid

- jokes or puns

They have no place in a formal document.

- ``bad'', ``good'', ``nice'', ``terrible'', ``stupid''

A scientific dissertation does not make moral judgements. Use ``incorrect/correct'' to refer to factual correctness or errors. Use precise words or phrases to assess quality (e.g., ``method A requires less computation than method B''). In general, one should avoid all qualitative judgements.

- ``perfect''

Nothing is.

- ``we were surprised to learn...''

Even if you were, so what?

- ``You will read about...''

The second person has no place in a formal dissertation.

- Use active constructions. For example, say ``the operating system starts the device'' instead of ``the device is started by the operating system.''

Terms And Phrases To Avoid

- ``I will describe..."

The first person has no place in a formal dissertation. If self-reference is essential, phrase it as ``Section 10 describes..."

- ``we" as in ``we see that"

A trap to avoid. Reason: almost any sentence can be written to begin with ``we" because ``we" can refer to: the reader and author, the author and advisor, the author and research team, experimental computer scientists, the entire computer science community, the science community, or some other unspecified group.

- ``Hopefully, the program..."

Computer programs don't hope, not unless they implement AI systems. By the way, if you are writing an AI thesis, talk to someone else: AI people have their own system of rules.

- ``...a famous researcher..."

It doesn't matter who said it or who did it. In fact, such statements prejudice the reader.

- Be Careful When Using ``few, most, all, any, every".

A dissertation is precise. If a sentence says ``Most computer systems contain X", you must be able to defend it. Are you sure you really know the facts? How many computers were built and sold yesterday?

Writing Each Section / Chapter

Abstract

- **Most abstracts contain following common elements:**
- **Problem:** Describe the major topic or problem addressed in the document.
- **Method:** Describe the specific approach or method used to solved the problem.
- **Results:** Write most important results.
- **Conclusion.** Describe the conclusion drawn from the results.
- Contain not more than 500 words.

What was done?

Why was it done?

How was it done?

What was found?

What is the significance of the findings?



Writing Each Section / Chapter

Introduction

- Step back mentally and take a broader view of the problem
- How does it fit into the broader context of your discipline?
- State briefly state-of-the-art of the research issues and objectives of the work
- Show rationale that explains what issue or controversy needs resolving
- Why is the topic important?
- State the problem(s) as simply as you can
- Introduction should be interesting
- Provide necessary and relevant background information
- Aims and objectives of the study
- Provide outline of the thesis contents



Writing Each Section / Chapter

Literature Review

- A literature review shows the reader what **relevant** work has already been conducted on your chosen topic,
- Addresses what is known about the issue: background, from where the problem arose, and how others have attempted to resolve the problem
- What other methods have been tried to solve it?
- Should be organized by ideas rather than by authors or works
- Concentrate on most important publications: Use primary literature
- Keep it confined to topics really relevant to your own work
- Make sure you do not miss the latest developments
- Make sure you understood what you have cited



Writing Each Section / Chapter

Problem statement

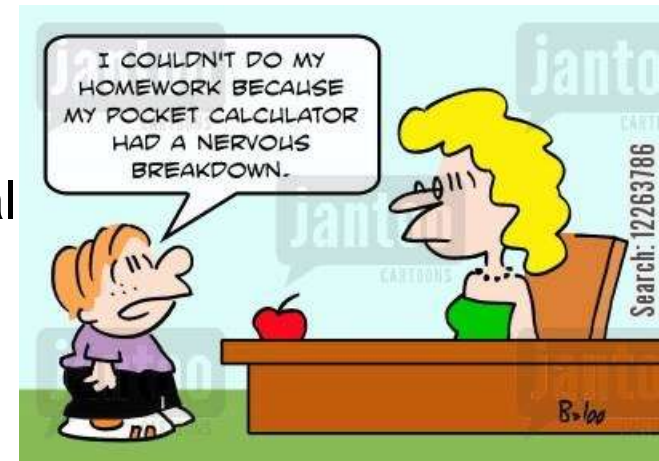
- Identify the problem and its importance
- Explain, defend, and/or prove that the current literature and findings are inadequate, outdated, and/or wrong
- Discussion of why it is worthwhile to answer this question
- Asserts that your research will solve the problem
- The answer must serve as a contribution to knowledge



Writing Each Section / Chapter

What the examiners look in a Review of literature?

- Is the literature relevant?
- Is the review critical or just descriptive?
- Is it comprehensive?
- How well has the candidate mastered the technical or theoretical literature?
- Does it link to the methodology in the thesis?
- Does it summarize the essential aspects?



Writing Each Section / Chapter

Methodology

- The goal of this section is to explain two important things about thesis:
 - ❖ **What you did**
 - ❖ **How you did it**
- Justify your choices, explaining why your plan was appropriate for thesis.
- Describe the ways in which you performed your experiments
- Be as comprehensive and adept as possible in detailing your techniques
- A competent researcher should be able to reproduce exactly what you have done by following your description

Writing Each Section / Chapter

What the examiners are looking for Methodology?

- Is there a clear methodology?
- Are precautions taken against bias?
- Are the limitations identified?
- Under the circumstances, has the best methodology been chosen?
- Is the data collected appropriately?
- Is the methodology justified?



Writing Each Section / Chapter

Results and Discussion

- Common practice to combine them, as their content tends to be interrelated
- Include summaries of the findings and what is significant about them. Do not include every single data point in the text.
- Results are commonly presented in the form of text, figures and tables with data analysis that will be very useful in illustrating your results
- Described the conditions under which obtained each set of results:
 - What was held constant?
 - What were the other relevant parameters?

Writing Each Section / Chapter

Results and Discussion

- Explain the meaning of your results
 - Where they fit in the current literature ?
 - Whether they concur with or deviate from others
 - Are they consistent with current theories?
 - Do they give new finds?
 - Do they suggest new theories or mechanisms?
- Make sure your captions make sense and describe what the Figures, Tables really illustrates.

Writing Each Section / Chapter

What the examiners are looking for results and discussion?

- Do the solutions obtained relate to the questions posed?
- Is the level and form of analysis appropriate for the data?
- Could the presentation of the results be made clearer?
- Are patterns and trends in the results accurately identified and summarized?
- Does the software appear to work satisfactorily?
- Is the candidate aware of possible limits to reliability/ validity of the work?
- Have the main points to emerge from the results been picked up for discussion?

Analysis of Data

- The analytic methods used need to be justified and need to be shown to be sufficient for the task.
- Any problems arising in the analysis should be recognized and tackled appropriately.
- Candidates should show sensitivity to problems of reliability, measurement error and sources of bias.
- Candidates should understand the assumptions behind the test or tests used.
- Where appropriate, candidates should demonstrate imagination and creativity in identifying and analyzing emergent properties of the data which may not have been foreseen.
- The analyses should be clearly linked to the explicit hypotheses, predictions, or questions which formed part of the stated research problem.
- The data should be presented in a well structured manner, so that a clear presentational sequence unfolds.
- In sum, candidates should be able to demonstrate WHY each particular analysis was conducted, HOW the analysis was done, and WHAT the analysis tells us about the data.

DISCUSSION OF OUTCOMES

- The discussion should summaries, without undue repetition, what has been achieved in the research project.
- It should evaluate the project's contribution to the research area.
- Links should be drawn between the candidate's own work and the work reviewed in the literature review.
- The main findings should be interpreted and related to theory and practice where appropriate.
- In many cases it will be appropriate to include a section in which the candidate discusses the limitations of the research design and methodology in the light of knowledge acquired whilst undertaking the research, and outlines alternative or additional approaches which might be pursued.
- There should be some pointers to future work, either by the candidate or by others.
- An attempt should be made to identify issues that require further carification.

Writing Each Section / Chapter

Conclusion

- Short, concise statements of the inferences that you have made in the your work
- Conclusions should be directly related to the research question stated
- Show the importance or implications of the research
- Don't try to pretend things which you have not achieved

Writing Each Section / Chapter

Recommendation

- Share your thoughts as to how your thesis can serve as the starting point for future research.
- Intend for future researchers who may be interested in taking your ideas further

Writing Each Section / Chapter

Appendices

- Include materials that are not essential parts of thesis but provide useful information to readers seeking more detail.
- Typical materials included in appendices:
 - Detailed explanations
 - Additional diagrams
 - Additional tables summarizing data
 - Long lists
 - Experimental protocols or survey questions
 - Computations directly relevant to discussions



Writing Each Section / Chapter

References

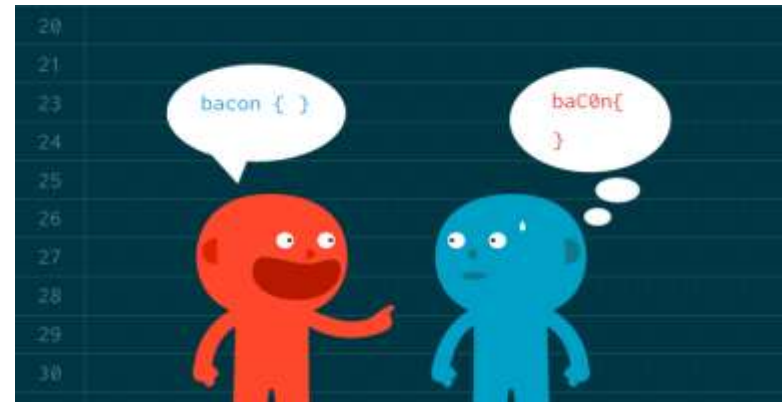
- Figure out what **citation style** you are going to use in your thesis (**Please check your university guideline, Follow strictly the format according to the guideline**).
- Include a references page at the end of your document.
- Every citation made in thesis must appear in the list of references



Format

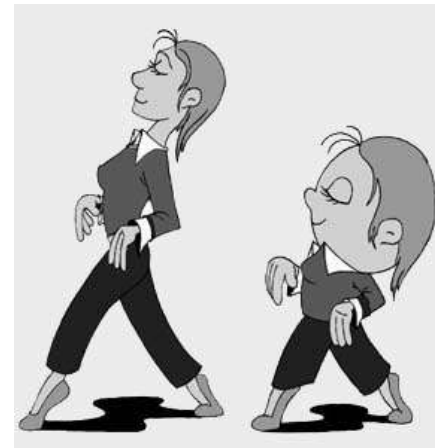
Length

- The maximum length (excluding footnotes, appendices, tables and prefaces) for a submission is:
 - Research Report : 20,000 words
 - Dissertation : 60,000 words
 - Thesis : 100,000 words
- To exceed the number of words specified must apply to the Senate through the respective Faculty at least three months before the submission and provide reasons



Research Ethics

- Research Ethics involves all the moral and professional issues relating to research.
- The most serious breach of ethical standards in writing thesis is the offence of plagiarism.
- Plagiarism is defined as the use of original work, ideas or actual texts created by others, without acknowledging the original source.
- Check it through anti-plagiarism software (e.g. Turnitin)



Reviewing

- Get other people to read your drafts
- Set it aside for a week or more, then go back and edit it again
- Re-Write first draft
- Run a spell check so that your supervisor does not waste time
- Check for any grammatical mistake
- Get the bugs out before the committee see it



What to expect from your supervisor?



- Your supervisor is on your side
 - Your success is their success
- Intellectual support
 - Quality assurance
 - What standard a thesis should reach
 - Indication of when to stop
- Emotional support
 - Encouragement
 - Constructive atmosphere



Key to Success

- There is a key to success: **practice**. Nobody can learned to write without practice.
- So, you need to practice, practice, practice.
- A researcher should check, recheck, cross check, ... all the results before submitting thesis



Key to Success

BACKUP, BACKUP, BACKUP!

There is NO excuse for losing your thesis or dissertation!!!

You should have MULTIPLE copies saved: on your computer, in Dropbox, on an external hard drive, etc

Key to Success

Oxford student killed himself hours after being told PhD thesis wasn't good enough

By [DAILY MAIL REPORTER](#)

UPDATED: 17:45 GMT, 25 February 2009

Read more: <http://www.dailymail.co.uk/news/article-1154981/Oxford-student-killed-hours-told-PhD-thesis-wasnt-good-enough.html#ixzz3aSVsRoJX>

The Good News



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- John W. Chinneck, How to Organize your Thesis, <http://www.sce.carleton.ca/faculty/chinneck/thesis.html>
- Joe Wolfe, How to Write a PhD Thesis, <http://www.phys.unsw.edu.au/%7Ejw/thesis.html>
- Maletic, JI. Everything you wanted to know about Thesis & Dissertations but were afraid to ask!
- San Francisco Edit, www.sfedit.net
- Armin Gruen, Thesis Writing, ww.photogrammetry.ethz.ch
- When do I start writing? <https://www.uq.edu.au/student-services/phdwriting/phfaq15.html>