

# Thesis Writing Made Easy

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## Abstract

Increasing numbers of medical trainees perform research and many of them struggle to write a thesis. As a consequence, many students never complete their thesis. There is no clear and concise guide on how to write a research thesis. This article is aimed to fulfil the gap.

## INTRODUCTION

Although many trainee doctors perform research, not all of them submit their thesis (1). Supervisors are often too busy to teach their students on how to write a thesis. As a consequence, the trainees may struggle on their own and give up at the end. Writing up a thesis is a hard work and a difficult task (2, 3). Thesis writing is different from writing up a research paper and it should follow a set pattern (4). There is no clear guide on how to plan and write a research thesis. This article is aimed to provide an overview for students involved in research about the planning and writing their thesis.

## UNIVERSITY REGULATIONS

Each university has its own regulations such as order of headings and style of chapter. It is important that anyone undertaking a thesis reads the regulations of the own university and follows all details as well as visiting the library to look at theses which have been accepted. This article simplifies the thesis writing, which can be adapted to different Universities.

## LOG BOOK

The students should maintain an electronic and/or paper record of their data without losing them in a log book (5). Electronic records can be stored in a portable hard drive. I suggest that they should start writing a log book and their thesis from day 1 of their research.

## THESIS OUTLINE

A research thesis is normally written up in the following format (see table 1). The pagination may be set at a 4cm margin on the binding side and 2.5cm on the remaining 3 sides. The author used Microsoft word for writing up his

thesis. The total number of words is limited (set by your University), e.g. it should be less than 60,000 words for a PhD thesis. You may use Times New Roman or Arial format. Table 2 provides a summary of common difficulties encountered by the research trainees in writing up a thesis and possible solutions.

## ABSTRACT

It should be a concise summary of your thesis and limited to less than 300 words. It should be written in the same way as you write for research papers and research presentations. There is no need for subtitles such as introduction, methods etc.

## ACKNOWLEDGEMENT

Acknowledge those who helped in your research. Be explicit on which part of the thesis work was done by yourself and which part was done by others. It may not be possible to carry out every bit of your experiment by a single candidate within the time frame. Having performed research in the past, the examiners are fully aware of the limitations. For example, electron microscopy needs a special training which can be performed only by trained staff.

## CONTENT PAGE

If you format your chapter titles and subtitles using prefixed/preset Microsoft title styles found in the style menu, you can create a content page using the insert menu of Microsoft word. The advantage of the link is when you add or delete the text, the page numbers also move and you can recreate the content page without manually locating the page numbers.

## REVIEW

It should provide a literature review relevant to your thesis.

Ideally, you can write a review article when you start your research. If your review gets published prior to the completion of your thesis, it will be easy to accommodate your review within your review part of the thesis. The critical improvement of your paper by your supervisor, peer reviewers and editorial team will make your review section easy to read and digestible.

### **HYPOTHESIS**

It should be written clearly and concisely. Ideally it should be a small paragraph and never exceed a page.

### **MATERIALS AND METHODS**

You should split your methods section into several small subtopics and write under them. You are likely to forget the protocols after some time. Therefore, you should update this section at least once a week so that you record all the methods.

### **RESULT CHAPTER 1 (RC1)**

Results may be split into two or more chapters. You can plan to write each result chapter (RC) as a paper. This means that it should have an introduction, materials and methods, result and discussion. In “materials and methods” you can write an important summary of your methods and can say that further details are discussed previously under the main materials and methods chapter. The introduction and discussion should be evidence-based and at least 10-15 references should be cited in each of them.

### **RESULT CHAPTER 2**

It is similar to chapter 1. If you have too many results, you can write one more results chapter. Make sure there is continuity between the research chapters.

### **COMMON OR GENERAL DISCUSSION CHAPTER**

The rationale behind your experimental model and what was found can be included in this chapter. You should be able to explain your results sensibly and use previously published literature to explain various results.

### **SUMMARY AND FUTURE RECOMMENDATIONS**

This should provide a concise summary of what was found in your experiment (facts but not explanations). Future recommendations should discuss about how your result can be translated into a human model.

### **APPENDIX**

It should contain the crude data behind your graphs such as

tables, protocols used, contents of various solutions etc. If you have photomicrographs of poor quality, you can put them in the appendix.

### **REFERENCE**

Most universities suggest the references to be cited as (author, year)-format. You have to check with own university regulations. Superscripts and numerical citations are often avoided. Use reference manager software for citing the references. A copy of it can usually be obtained from your university information technology department for a small fee.

### **PRESENTATIONS AND PUBLICATIONS**

It is a good idea to include all your research presentations and publications under this subtitle. You may just mention the titles of the papers or include entire published papers. Under this heading A4-sized posters can also be included. Some supervisors often say that if you have 4 or more peer-reviewed publications related to your thesis, you are unlikely to fail in your viva. The reason is that some universities used to accept 4 peer-reviewed papers instead of a research thesis for higher degrees in the past.

### **THESIS GRAPHS AND HISTOLOGY SLIDES**

Show them to appropriate persons such as a statistician and a pathologist so that you can write meaningfully and sensibly. Always record the power of the magnification in case of photomicrographs. If you do not record it while taking pictures you may find it difficult to recall it at a later date.

### **STATISTICS**

They should explain the statistical method and software used. SSPS, Graph Pad Prism and Microsoft Excel are commonly used for statistical calculations.

### **THESIS PROOF READING**

Your thesis should be written in plain English. Use short sentences. If you are a non-native English speaker, ask someone else to proofread. Your supervisors may be too busy to do this job. You can ask a colleague or pay someone like a secretary to do the job.

### **THESIS BINDING**

Ideally, a thesis should be professionally printed and bound. It should be printed using at least a 100 gsm paper, usually one side only. You need to submit one hard and one soft cloth binding copy to your university. Check with your university for the exact specifications. The cover should

mention the thesis title, university and month and year of submission. Your university regulation will tell you about this. Many printers ask for a PDF version rather than a word version of the thesis. The resolution of the photomicrographs can go down in the PDF version. Therefore you have to check the printed copy and you may need to print out your figures separately and bind them. You can also add photos, videos and CDs to your thesis. When it is professionally bound, check every page of it. Sometimes they can cut one margin too much and it may not be suitable for submission. Also check the page numbers. The tables can be bound upside down and the pages may not be in order. If it is the printers' fault, usually they will rectify it for free.

**THESIS DEFENDING**

It may take 3-6 months between your thesis submission and viva (thesis defending). Please refer to my article on how to prepare for a research viva for advice on how to prepare for defending your thesis (6).

**SUMMARY**

Thesis writing is a difficult task. It can be completed successfully by timely writing-up of the methods and results. Publications of peer reviewed papers related to your research work will be very useful because they can be slightly modified and incorporated into your thesis. The editing of your papers by the editorial team will enhance your thesis and make it easy to read.

**Figure 1**

Table 1

<b>Example of various components of a thesis</b>
Title page
Abstract
Acknowledgment
Content
List of figures
List of tables
Abbreviations
Review chapter
Hypothesis
Objectives
Overview
Methodology
Result chapter
Result chapter
Discussion
Summary
Appendix
References

**Figure 2**

Table 2: Difficulties encountered in writing up a thesis and possible solutions

Difficulty	Solution
Forgotten methodology	Keep an up-to-date log book, also record in an electronic format
Corrupt word file	Try to back up various copies with dates
Reference problem	At times you may have to go back to previous back ups
Content page error	You can use the format painter to format similar titles and subtitles
Page error: it may be difficult to insert a table in portrait	You can seek help from colleagues or medical illustration department
Grammatical mistakes	Seek help if appropriate
Difficulty in interpreting histology	Discuss with a pathologist
Your results are not significant	Discuss with a statistician

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