

Diploma Thesis

June 9, 2005

How to Write a Thesis

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Project period: No Begin Date given - No End Date given

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Acknowledgements

I would like to thank ...

Abstract

A good abstract explains in one line why the paper is important. It then goes on to give a summary of your major results, preferably couched in numbers with error limits. The final sentences explain the major implications of your work. A good abstract is concise, readable, and quantitative.

- Length should be 1-2 paragraphs, approx. 400 words.
- Information in title should not be repeated.
- Be explicit.

Answers to these questions should be found in the abstract:

- What did you do?
- Why did you do it? What question were you trying to answer?
- How did you do it? State methods.
- What did you learn? State major results.
- Why does it matter? Point out at least one significant implication.

Zusammenfassung

... und das ganze auf Deutsch.

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Chapter 1

Introduction

This is a general introduction to what the thesis is all about – it is just a description of the contents of each section. Briefly *summarize* the question (you will be stating the question in detail later), some of the reasons why it is a worthwhile question, and perhaps give an overview of your main results. This is a birds-eye view of the answers to the main questions answered in the thesis (see above).

Background Information (optional)

A brief section giving background information may be necessary, especially if your work spans two or more traditional fields. That means that your readers may not have any experience with some of the material needed to follow your thesis, so you need to give it to them. A different title than that given above is usually better; e.g., "Frammis Algebra."

Review of the State of the Art

Here you review the state of the art and related work relevant to your thesis. The idea is to *present* (critical analysis comes a little bit later) the major ideas in the state of the art right up to, but not including, your own personal brilliant ideas.

You organize this section by idea, and not by author or by publication. For example, if there have been three important main approaches to Software Evolution Analysis to date, you might organize subsections around these three approaches, if necessary:

3.1 Software Evolution

3.2 Architecture Recovery

3.3 Information Visualization

Research Question or Problem Statement

Engineering theses tend to refer to a “problem” to be solved where other disciplines talk in terms of a “question” to be answered. In either case, this section has three main parts:

1. A concise statement of the question that your thesis tackles
2. Justification, by direct reference to section 3, that your question is previously unanswered
3. Discussion of why it is worthwhile to answer this question.

Since this is one of the sections that the readers are definitely looking for, highlight it by using the word “problem” or “question” in the title: e.g., “Research Question” or “Problem Statement”.

Describing How You Solved the Problem or Answered the Question

This part of the thesis is much more free-form. It may have one or several sections and subsections. But it all has only one purpose: to convince the examiners that you answered the question or solved the problem that you set for yourself in Section 4. So show what you did that is *relevant* to answering the question or solving the problem: if there were blind alleys and dead ends, do *not* include these, unless specifically relevant to the demonstration that you answered the thesis question.

Chapter 6

Conclusions

You generally cover three things in the Conclusions section, and each of these usually merits a separate subsection:

6.1 Conclusions

Conclusions are *not* a rambling summary of the thesis: they are *short, concise* statements of the inferences that you have made because of your work. It helps to organize these as short numbered paragraphs, ordered from most to least important. All conclusions should be directly related to the research question stated in Section 4.

6.2 Summary of Contributions

The Summary of Contributions will be much sought and carefully read by the examiners. Here you list the contributions of new knowledge that your thesis makes. Of course, the thesis itself must substantiate any claims made here. There is often some overlap with the Conclusions, but that's okay. Concise numbered paragraphs are again best. Organize from most to least important.

6.3 Future Research

The Future Research subsection is included so that researchers picking up this work in future have the benefit of the ideas that you generated while you were working on the project. Again, concise numbered paragraphs are usually best.

Appendix

What goes in the appendices? Any material which impedes the smooth development of your presentation, but which is important to justify the results of a thesis. Generally it is material that is of too nitty-gritty a level of detail for inclusion in the main body of the thesis, but which should be available for perusal by the examiners to convince them sufficiently. Examples include program listings, immense tables of data, lengthy mathematical proofs or derivations, etc.

References

The list of references is closely tied to the review of the state of the art given in section 3. Most examiners scan your list of references looking for the important works in the field, so make sure they are listed and referred to in section 3. Truth be known, most examiners also look for their own publications if they are in the topic area of the thesis, so list these too. Besides, reading your examiner's papers usually gives you a clue as to the type of questions they are likely to ask.

All references given *must* be referred to in the main body of the thesis. Note the difference from a Bibliography, which may include works that are not directly referenced in the thesis. Organize the list of references either alphabetically by author surname (preferred), or by order of citation in the thesis.