Writing a PhD Thesis

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Objectives

- Identify and address concerns
- Key Areas
  - the examiner's role
  - the BIG ideas behind a PhD
  - tips on structure and organisation
  - practical advice
- Further Help

I know it is going to be awful, because….

- What are you dreading?
- Why have you come to this session?
- What do you want to know about thesis writing?

When you are about to begin, writing a thesis seems a long and difficult task…..

That is because it is a long and difficult task.

Joe Wolfe, University of New South Wales

What is a thesis ?

Your thesis is a research report. The report concerns a problem or series of problems in an area of your subject and it should describe what was known about it previously, what you did towards solving it, what you think your results mean, and where or how further progress in the field can be made.

Joe Wolfe, University of New South Wales

Definition of a PhD

PhD Candidates ... are required to show ability to conduct original investigations, to test ideas, whether their own or others', and to understand the relationship of their work and its themes to a wider field of knowledge.

... thesis …. should exhibit substantial evidence of original scholarship and contain material worthy of publication.

So, what are the BIG ideas?

- New Knowledge
- Significant contribution to your field
- Critical judgement
- Testing ideas
- Worthy of publication

Fit for Purpose

- The purpose is to pass…
- To show you have done the work
- And to make your viva as pleasant as possible

What do Examiners look for?

- “Adequate” knowledge of the field and relevant literature
- Well reasoned and well designed studies
- Logical presentation of results
- Effective arguments and conclusions

- In short – a coherent, readable story

Examiners don’t like

- Poor use of English
- Poor reasoning
- Poor experimental design
- Repeating or confirming established work
- Insufficient analysis
- Sloppy presentation
- Errors or omissions in references

Big Idea #1

New Knowledge

Originality

- Discuss with a senior colleague with knowledge in your research subject area
  - The ways in which your work WILL be original
- Then
  - The ways in which your work WON'T be original

Originality

- New work
- New interpretation
- New application
- New way of testing knowledge
- New connections

Big Idea #2

Judging the context of your work

Context

- A chance to do some writing!
- Write so someone outside your field will understand
- Keep your ideas simple and clear

In 100 words summarise what work has been done in your research area

Then give to a colleague to read

In 50 words, state your research aim

Then give to a colleague to read

How do you link your work to your field?

- Be clear about how your work builds on existing research:
  - Are you contesting a view?
  - Are you making existing theories more robust with additional perspectives?
  - Are you filling a gap?
- How are you adding value to your field?

In 50 words, explain how your research will contribute to your field

Then give to a colleague to read

Big Idea #3

Critical Judgement and testing your ideas

Context

- Why do we critique literature?
- To learn about our field
- To reveal areas which invite development
- To work out where our ideas come from

Critical judgement

- Refer to the key papers
- Identify the value of others' work
- Compare researchers' approaches and conclusions

Testing your own work

- Why did you use this method/approach
  - Be clear on its advantages and limitations
- Is your interpretation the only possible explanation?
  - Support from literature
  - Confirmation from further work
- Anticipate the debate!

Test your work

- How will you demonstrate that your experiment design or methodological approach is rigorous, valid and relevant to your research?

Where will you demonstrate…

- Originality
- Context
- Critical thinking
- Significant contribution
- Novel concepts
- Innovative ideas
- Publishable outcomes

Planning and writing

Practical tips and advice

Getting Started

- Read existing theses from your group
- Summarise these into 3-4 pages
- Use this as a basis for your thesis plan

This should help you to see the big picture

Getting Started – Thesis Plan

- introduction
- literature review
- core chapters
  - materials and methods
  - theory
  - results and discussion
- final chapter
  - conclusions and suggestions for further work
  - references
  - appendices

http://www.phys.unsw.edu.au/~jw/thesis.html

The results chapters

- Introduce chapter
- Data or figures
  - Describe these
  - Identify themes
- Observations
  - Common features
  - Expected or unexpected results
- Why?
  - Literature
  - Relate to aims

Now's your chance

- Produce an outline thesis plan
- Your "real" plan should take hours to produce – this is just a sample!

Where to start - Chapter One ?

- Start with the most comfortable chapter (previously published paper, clearest results)
- Lay out all results or figures and “tell the story” in note form
- review other theses - look for good practice
- refer back to your plan frequently

Organisation

- Develop a filing system
  computer based and physical
- BACK UP EVERYDAY
  “No back up, no sympathy!”
- Copy your lab book
- Check University regulations
- SMART Objectives

SMART

- Specific
- Measurable
- Agreed
- Realistic
- Time

Supervisor management

- Establish the ground rules
- Keep a record of your meetings
- Don’t expect too much
- Some cannot tackle English and Science simultaneously
- They cannot judge the work unless it is presented completely (i.e. including figures, tables etc)
- Give them a neat, complete version of each chapter (proof-read thoroughly and spell checked)

Effective writing

1. Establish a routine, don't be distracted, take breaks
2. Who are you writing for ?
3. Set clear goals for each week/day/hour
4. Use your outline & be organised
5. Don't stall on details, walk away (SHORT break!)
6. Short and simple phrases
7. Clear English and good grammar
8. Seek help from the experts - supervisor, library, faculty training programmes

Practical Issues

- Draft versions - coloured paper or different fonts
- It's not a work of art - beware displacement activity
- Use key words - don't worry about constant repetition of terminology
  - Use a thesaurus for non-technical words
- Make sure figures and tables are introduced and referred to - or omit them
- Health and Safety - be comfortable

Checklist for revising a draft

- does the content match the title ?
- are important points emphasised enough ?
- is the content within each section appropriate ?
- is there a logical sequence ?
- are information sources acknowledged ?
- do the conclusions relate to the objectives ?
- have you followed the conventions and regulations ?
- is the meaning of each sentence clear - or open to interpretation ?
- can long sentences be broken down ?

Dr. Richard Young, Quality and Standards Unit, University of Newcastle upon Tyne 1999

Expert Advice

- You need to practise writing.
- You need to practise reading PhD theses (not least so you know what being the audience for a thesis is like).
- You need to practise reviewing / reshaping the essential logical skeleton or argument of your own thesis or research.

Steve Draper, Psychology, Glasgow University

A GOOD PhD THESIS

- Has an appreciation of what came before
- Focuses on the interesting and important
- Is well-reasoned
- Has well-designed experiments (hypothesis-driven)
- **Will change the way people think**
- Has publishable results
- Is logical in presentation, analysis and argumentation
- Is well-illustrated with figures and graphs
- Is written without grammatical and spelling errors
- Has an appreciation of what comes next

Professor Colin Whittemore, Edinburgh University

A BAD PhD THESIS

- Is not interesting
- Deals with small or badly described problems
- Reasons poorly
- Has badly-designed experiments
- Repeats or confirms well-established things
- Is inadequate in quantitative analysis
- Has poor presentation of graphs and illustrations
- Contains grammatical and typing errors

Professor Colin Whittemore, Edinburgh University

External Examiner's checklist

- Research aims clear?
- Literature reviewed/critiqued?
- Key papers included?
- Theoretical basis sound?
- Conjectures consistent with theory?
- Appropriate methodology?
- Evidence collected ethically?
- Sufficient evidence?
- Convinced of reliability and validity?
- Findings assessed against literature?
- Findings make significant contribution to the field?
- Any inconsistencies?
- Conclusions?

IS THIS PERSON AN EXPERT?

Typical questions/topics

- what are your main findings?
- what is original about your research?
- describe your methodology and why you decided to use this
- can you highlight the major contribution that your thesis makes?
- how do your findings relate to the literature?
- who are the most exciting researchers in your field?
- what have they published in the last 6 months?
- but also – **anything** from your undergraduate or previous studies (evidence of fundamental understanding of the area)

Useful websites

- http://rses.anu.edu.au/gfd/Gfd_user_links/andrew.kiss.directory/thesis_writing/thesis_guide.html *general*
- http://www.learnerassociates.net/dissthes/
- www.grad.ac.uk/writingup
- http://www.phys.unsw.edu.au/~jw/thesis.html *physics*

How to write a thesis
Rowena Murray
ISBN 0-335-20719-9

Highly recommended