Research Skills Workshops for Graduate Research Students

Developing Your Research Proposal

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\textit{Key reference:} \\
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Deciding on a central research question

The first principle of successful thesis writing is this:

* A thesis, at the highest level, represents the expression of a singular profound and embracive idea that permeates all aspects of the thesis production (Cantwell, 2006, p.182).

A thesis is only a thesis if it poses a central research question and then sets about answering it. One of the first tasks that you will be faced with on your PhD journey is to consider the formative development of a guiding research question. It need not be fixed, for it will inevitably be transformed as you read and critique previous published work on your topic, and collect, analyze and interpret your own data. So it can be taken for granted that it will be constantly *revised* as you make new discoveries in your work.

**Hypothesis? or Open-ended research question?**

An *open-ended research question* is different from a *hypothesis*. A hypothesis is a statement which asserts a causal relationship between concepts (or ideas). For instance if we look at the example below we have identified one of the possible factors which might determine why ‘some students get better marks than others’. We can diagram a simple hypothesis:

![Diagram of hypothesis](image)

The arrow in this diagram indicates that one concept (amount of study) does something to the other concept (academic performance). The plus sign indicates that the relationship is a positive one, that is, the more of the one will lead to the more of the other. The concept that does the causing is called the independent concept – it is the thing that acts upon something else. Given this, we are in a position to write a hypothesis to guide our research, for example:

*The more a student studies, the better will be the student’s academic performance.*

On the other hand, an open-ended research question is ‘inductive’ in the sense that it does not pre-empt a causal agent. Rather, in this sort of research (more common in the social sciences) answers to a research question emerge from the data.

**The process of composing a relevant focus question**
The development of your central research question inevitably begins at the point where you begin to read the previously published literature on your topic of interest. For every thesis writer, the first piece of research will be a review of the existing literature in the area. Writing a literature review allows you to define your topic more carefully, and put some limits around it. You will gradually find out what the real unanswered questions are and as such you will be engaged in the on-going formulation of a central research question. We will talk in more detail about the writing of literature reviews shortly.

Have you yet arrived at the point where you have formulated a central research question? Will it take the form of a hypothesis or an open-ended research questions?

It is vitally important that you set adequate limits on your research, as overambitiousness in topic selection can really be a major problem in a PhD project, why?

- Because you have limited time and resources
- Your study needs to be focused to achieve its aim of originality
- Your supervisor will feel more secure knowing that you know where your research niche lies.
- Most importantly, if you clearly set the limits to your study you are more likely to finish the thesis.

Don’t forget, defining the scope of your study also extends to other aspects of your work, such as in the case of the key concepts you are intending to use, especially if they are in some way contentious.

To illustrate better the importance of defining the scope of your research, I want to put to you a hypothetical research question: ‘What is the best restaurant in Kuala Lumpur?’ How feasible is it to answer this question? In the space below think of some related questions that would narrow the scope of the study.
In the exercise above we have ‘unpacked’ the many issues that are tied up in a stated topic or problem. We have begun to isolate factors and identify possible explanations. When we do this, we reveal many different avenues of research. We are then in a position to choose from that list a question that will focus our attention on a narrowed problem.

**The requirement of originality**

It is a requirement that if you are undertaking a PhD, you must somehow contribute to the creation of new knowledge. Unfortunately, I have found there is often little or no discussion between students and their supervisors as to what might constitute ‘originality’ in the PhD. However, from this list you may identify an aspect of originality which reflects the type of contribution you are making in your own doctoral study.

- Carrying out empirical work that hasn’t been done before. (Looking at areas that people in the discipline haven’t looked at before and thus setting down a major piece of new information in writing for the first time).
- Making a synthesis that hasn’t been done before, for instance in cross/interdisciplinary studies, especially when innovatively combining different methodologies.
- Using already known material but with a new interpretation.
- Trying out something in this or another country that has only previous been undertaken in other places.
- Taking a particular technique and applying it to a new area.
- Bringing new evidence to bear on an old issue.
- Providing a single original technique, observation, or result in an otherwise unoriginal but competent piece of research.

Make sure you are explicit in identifying how your research fulfils the requirements of originality. Here are some possible suggestions for doing this:

- “This study takes the next logical step in integrating……”
- “This study will extend……”
- “Until now it has not been possible to…., however ….“
- “Until now ……has not been understood, however……”
- “…..has been overlooked in previous studies of……”
- “Previous work was limited by ……, we propose to……”
- “It has been suggested by previous research that ……..be investigated further”

Can you state concisely how your thesis will fulfill the requirement that it make a ‘substantial and original contribution to scholarship’?
The ‘standard’ thesis structure
The standard thesis structure in the physical, biological and social sciences consists of four parts; the introduction to the research, the background, your ‘own work’ and the ‘synthesis’. Some of these parts will generally contain more than one chapter. The diagram below illustrates the logical arrangement of these parts and the possible chapters that may be incorporated into them.

Before describing in more detail these parts, it is important to remember that a thesis should never be ‘top heavy’. That is, the introduction and background chapters – where the focus is primarily on the work of others – should not be greater in volume compared to your own work, which incorporates the methods, analysis, discussion and conclusion chapters. A reader/examiner will not want to labour through huge (i.e. 40+ page) early chapters to finally arrive at your contribution to the field! What follows is a brief description of the four essential parts to a conventional thesis structure.

Part 1 is the introduction. Don’t mess around in it. Quite literally the only purpose is to introduce the research. For this reason it is always the shortest chapter in the thesis.

Part 2 is the background required before you can describe your own research. In these chapters you can set the context for your research (history, geography, culture); present a literature review; review current theory and/or practice.

Part 3 concerns your own work. It will contain a chapter on methods, research design and specific data collection instruments. It will also contain an ‘analysis’ chapter in which you systematically present the results of your investigations (i.e. data that has been categorised, coded and presented in the form of charts, tables, graphs and so forth).

Part 4, the synthesis, relates to the chapters where you develop your own contribution to the state of knowledge and understanding of the topic. It will usually contain a discussion in which you examine your own results in light of previous research (linked here to literature review). This may lead to the development of new theory.

If you stick to this four-part structure you will write a clear and comprehensible thesis. Above all, you should not neglect any of these four sections, and you should develop them in the
order given in the above diagram. Most theses will have between six and nine chapters (if you have more than nine you should expect that some are really only sections of chapters and you should look for some consolidation).

The introduction chapter

It is important to recognize that the standard thesis structure reflects the research process in its entirety, from inception to conclusion. And, each chapter of the thesis has a specific function; it demonstrates to the reader exactly what occurred at that particular stage of the research. For example, the introduction chapter must address the following elements, generally in the order given here:

One of the most successful strategies for moving forward with your doctoral project is to connect the research process to the writing of the thesis. This means that researchers must begin the writing of the thesis as soon as the project commences and continue throughout it; altering, adding and amending drafts continuously. Don’t wait until the data has been collected and analysed! Writing is a non-linear, constant process of producing and revising with the possibility of ideas emerging at all stages.

Exercise: Even if you are at the earliest stage of you doctoral study, can you identify the chapters in your thesis that you can begin to write now, even before you have begun to collect data?

With this principle in mind, we can now consider the nature of introductions in thesis and journal article writing. In the former, the writer is given more opportunity for detail, whereas in the latter, the information given must be more succinct and directed.

The purpose of the thesis introduction is to orient the reader to the research presented in the body of the thesis. The introduction should include all the information necessary to prepare the reader for the specifics of your research project; namely. What the thesis focuses on, the research question(s) or hypothesis driving the investigation, and the argument that you intend to present. These are indispensable elements of a thesis introduction; however there are other elements which should also be included, such as:

- Justification for the scope of the study. You may need to tell your reader precisely what you are covering and what you are not covering and why, perhaps to offset potential criticism for not doing something you never intended to do!

- An explanation of why the research you have undertaken is important; that is, its significance

- A clear statement of the contribution your research makes to knowledge; that is, its originality
Definitions of key terms

An overview of the chapters in the thesis or your ‘plan of action’

Journal article and research proposal introductions do not include all of these elements. Rather, they tend to follow what is known as a CARS (Creating a Research Space) Model. This model demonstrates how writers of journal articles typically organize their introductions:

**Move 1: Establish the territory**
- Make topic generalization
- Claim centrality/significance
- Review items of previous research
- Raise question(s)

**Move 2: Establish a niche**
- Counter claim or indicate a gap
- Announce the present research

**Move 3: Occupy the niche**
- Reveal principle findings
- State argument
- Indicate structure of the article

**Example:**
Nuclear power is widely used throughout the world today. Functioning nuclear power plants produce large quantities of radioactive wastes needing to be transported to safe sites for proper management. With public emphasis on environmental protection and concern for safe transport of nuclear wastes, the problem of selecting an appropriate route for transporting nuclear wastes is a vitally important issue. The aforementioned route selection problem involves conflicting objectives among interested parties; therefore, we develop a multi-objective geographic information system (GIS) with ESRI ArcView GIS 3.x interface to practically support the involved parties for such a multi-objective route selection problem in engineering practices.

**The literature review chapter**
In the following section I want to talk about the development of a research design, however, before doing so I want to emphasize that this should not be attempted until after the literature review is written (in fact one cannot design the research instruments, finalize the research questions or start collecting the data until after the first draft of the literature review is written!). The process for writing a literature review is:

**Survey** ➔ **Record** ➔ **Summarise** ➔ **Critique** ➔ **Integrate**

**Survey** the literature to identify the most critical sources relevant to your study.

**Record** the bibliographic details as meticulously as you can (learn to use EndNote)

**Summarize** the work to capture the essence of the sources you have selected and identify their relationship to you work.

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1 The CARS model was initially proposed by John Swales who has undertaken a very substantial investigation of introductions in mainly science discipline journal articles. See Swales, J.M. (1990) *Genre Analysis*, Cambridge, Cambridge University Press.
**Critique** the source to discover its strengths and weaknesses. You may want to develop a *checklist to evaluate the work*. For instance some of the questions you may want to ask while you read could include:

**Integration** requires that each source should be *collated into categories or themes* with other related literature so that you can deal with (write) more coherently with the material in the literature review chapter.

- What is the stated research problem?
- Are the identified research aims likely to lead to some resolution of the research problem?
- Has an appropriate methodology been chosen and is it properly applied?
- What is your evaluation of the interpretation of the data presented by the author of the paper?
- Are you convinced by the argument(s) presented? On what basis?
- What do other papers on this research topic say? Is there a difference of opinion? What might account for these differences?
- What assumptions underlie the theoretical framework employed in different papers?
- What’s new/ what’s especially valuable about what is contained in this article (ie what is its contribution?)
- How well does the book or article fulfil the promises set out in the title, abstract/preface and introduction?
- How effective is the methodology?
- In summary, how effectively is the argument made? How persuasive is the evidence? What are the article’s strengths? What are its weaknesses?

**Methodology chapter**

I am a firm believer in templates. The reason is that as a researcher you are faced with turning chaos into order. By this I mean you must present what is an inherently messy, creative and often ad hoc process into something that appears as a calm, linear and orderly. Again, the structure of the methods chapter is dictated by academic conventions relating to an acceptable thesis structure. When think about the way that you will organize the information in your own methods chapter you might like to consider the following:
Note: it is important that you justify why you have decided to use a particular paradigm and methodology from the many competing viewpoints. You can do this by citing methodology literature in other research projects in the same area as yours. You must also explain why you have rejected other possibilities!
Why write a research proposal?

There are two good reasons why students are obligated to undertake the task of writing an effective and comprehensively planned Research Proposal. Firstly, this is a document that presents the case for an idea, your idea, and, because a Masters or PhD research project requires a large investment of time, energy and resources – by both you and the University - more experienced researchers must be persuaded that the idea (formulated as a research question) warrants this sort of investment. Why should this be the case? It is because each new project contains an element of risk or uncertainty. What you are proposing in this idea of yours has probably never been done before, indeed, this is what makes it significant and important. So it is logical that we should do everything possible to maximize your chances of success. The proposal approval system exists to ensure that you have made a realistic, well formulated judgement as to the significance and viability of your research question.

Second, the Research Proposal outlines a convincing plan to answer that question using the principles of academic enquiry relevant to your discipline. Each of the key elements within the proposal contributes, in an integrated fashion, to this overall plan of action. For instance, you will need to have a method in mind for collecting and interpreting the data, a budget which shows you have considered (and have access to) the funds needed to bring your project to fruition, and a realistic timeline identifying the various stages of the research and the dates by which these will be completed. You must also show that you will have adequate supervision over the course of the project, and that you have considered any pertinent ethical issues. Overall, what a successful thesis proposal demonstrates is that you understand the steps that are involved in turning a good idea into a thesis.

Whilst there are many rewards that come from innovative research, there are also many pitfalls that await the novice researcher. The Research Proposal process is a mechanism that can potentially obviate problems that might not emerge in a project until two or perhaps three years down the track. A well formulated Research Proposal provides a solid foundation for the research and sets the stage for successful and timely completion.

The cornerstones of the Research Proposal

Most Research Proposals generally share a number of common elements including a title, aims of the research, literature review, methodology, resources, bibliography and so forth. Nevertheless, even before considering these elements (as we will do shortly) you should be aware that the Research Proposal is underpinned by three principal questions. These questions must be addressed in your Research Proposal; they are the ‘what, ‘why’ and ‘how’ of the research. The ‘what’ of your research refers to the particular problem which your thesis will address. The ‘why’ of your research sets forth the value or benefit your research will generate. (This is often expressed in terms of its contribution to existing knowledge). The ‘how’ of your research simply refers to the methods you will use to gather, analyze and interpret your data.

If you do not address these fundamental questions, then it is unlikely your Research Proposal will be approved. The building blocks of the Research Proposal are:
Essential elements of a PhD research proposal

A. PROPOSED STUDY

1. Title

2. How will the proposed study make a substantial and original contribution to knowledge? (Refer to University Rule 3.3.3)

3. If the proposed study includes a creative component, describe the creative component. You must also show how the thesis and creative components will be linked.
B. RESEARCH PLAN

1. Please provide a time plan, including estimated dates of completion for your project.

2. What are the specific aims of the project?

3. What are the methods to be used or the approach to be taken? You must justify your choice of methods by referring to other research where a similar approach has been taken.

4. What efforts have been made to ensure that the project does not duplicate work already done?

C. SCHOLARS

Identify and provide contact details for some of the leading scholars in your research field.

D. BIBLIOGRAPHY

Provide bibliographic details of some of the major publications in your research field (no more than twenty).

E. FACILITIES

Identify any special facilities or resources you will need to conduct your proposed research. Specify whether you have these, or if not, how you will obtain them.
F. ESTIMATED COSTS
Please provide a detailed budget for the proposed research. You must indicate expected contributions from your School.

G. FIELDWORK
If you are conducting fieldwork as part of your research, you must read the University’s Field Work Policy which can be found at http://www.safety.uwa.edu.au/policies/field_work. You must also ensure that you familiar with the University’s Insurance Policy which can be found at http://www.safety.uwa.edu.au/policies/student.

H. SUPERVISORS
Please list your supervisors and briefly outline their area of academic expertise. You must indicate their role, including percentages, as explained on the Research Proposal Cover Sheet.

I. CONFIDENTIALITY & INTELLECTUAL PROPERTY
If your thesis is likely to contain information of a confidential nature, the matter must be drawn to the attention of the Board of the Graduate Research School from the outset, or as soon as it becomes apparent.

The Board’s attention must also be drawn to any intellectual property issues that need to be considered, including any existing intellectual property of value that is pertinent to the research and to any agreements that may affect the candidate’s right to intellectual property arising out of the research.

Please outline any aspects of your research which may contain confidentiality or intellectual property issues.

J. APPROVALS
Please outline all necessary approvals that either have, or need to be obtained in relation to the proposed research.