

Resources for Planning your PhD Research

In preparing a research plan, pitch, or presentation, the following resources might be helpful:

Research skills for HDR students

<https://www.sydney.edu.au/students/hdr-research-skills.html>

Covers some useful material, especially the sections on originality and literature reviews. Brief excerpts:

Originality is one of the most important criteria for a successful thesis. Your thesis should be a significant addition to the accumulated knowledge within your discipline, which implies it must offer something new.

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As part of a thesis, literature reviews allow you to demonstrate your knowledge of previous work in your field and to situate your own research in the context of this work.

...

A literature review can have a number of purposes within a thesis. These include:

- to show gaps in the research
- to justify your own research
- to demonstrate understanding of your field
- to generate new research hypotheses
- to place your own research in its context
- to summarise and evaluate past research
- to show similarities / differences (or consistencies / inconsistencies) in previous research
- to give an overview of controversies in past research.

What are the Criteria for a PhD?

<https://www.findaphd.com/advice/finding/criteria-for-phd.aspx>

This resource touches on the meaning of a *significant contribution to knowledge* and how to achieve it. Brief excerpts:

Providing a significant contribution to knowledge is not as intimidating as it sounds. To understand your project's significance, it's worthwhile asking yourself a few questions:

- What question is my research answering and why is it important?
- Why do my conclusions matter?
- How do my conclusions fit in with the wider discussions taking place in my field?
- What are the limitations of my research?
- How might further discussion of your research question benefit the field?

...

Good research could be elaborating on an existing theory or model, combining two ideas or even critiquing existing evidence or theory. The key here is to make sure you're not trying to do too much. A good PhD thesis will provide depth, not breadth.

The Heilmeier Catechism and Variants

In preparing any pitch you might consider the *Heilmeier Catechism* that lays out a set of questions to ask of any proposed research program:

<https://www.darpa.mil/work-with-us/heilmeier-catechism>

The Heilmeier questions are:

- What are you trying to do? Articulate your objectives using absolutely *no jargon*.
- How is it done today, and what are the limits of current practice?
- What is new in your approach and why do you think it will be successful?
- Who cares? If you are successful, what difference will it make?
- What are the risks?
- How much will it cost?
- How long will it take?
- What are the mid-term and final “exams” to check for success?

A different view on these points offered by ACFR’s Director Ian Manchester is:

Significance

- Why is your problem important?
- Why does it need to be addressed now?
- Who will care if it is solved?

Innovation

- What is your new idea?
- What is the key insight?
- Why might this idea work where others have failed?

Feasibility

- Why are you and your team the people who can solve it?
- Can it be done with the resources available/requested?
- What is the plan?

The illustrated guide to a Ph.D.

Finally, understanding the place of your research in the world is important, and few have said it better than Matt Might in his infographic:

<http://matt.might.net/articles/phd-school-in-pictures/>

The above is the tip of a very large iceburgh, intended to address some of the common pitfalls in early research planning. We hope it helps you on your journey to a successful research project!