Introduction

What contributes to good research?

Exercises: scan (do not spend time reading them in detail) through some research papers or existing dissertations or theses.

Literature Review

The usual starting point for research, whether or not you are starting with a clearly defined research problem, is to read about the subject.

Identify unanswered questions or controversies.

Once the problem is defined it can be broken down into a set of specific questions or hypotheses.

This should help suggest the most appropriate line of investigation.

Breaking down questions or hypotheses is referred to as `operationalizing`.

Does the focus emerge as the research progresses?

Identify unanswered questions or controversies.

Does each one seem to define the research problem explicitly, e.g. as a list of hypotheses?

Once the problem is defined it can be broken down into a set of specific questions or hypotheses.

Find out about the background.

Does the focus emerge as the research progresses?

Exercise: scan (do not spend time reading them in detail!) through some research papers or existing dissertations or theses.

Ask yourself:

- Is there any indication that the research problem changed in direction or focus of hypotheses?
- Does the focus emerge as the research progresses?
- Does each one seem to define the research problem explicitly, e.g. as a list of hypotheses?

Literature Review

If can take skill and imagination to spot such hidden useful nuggets.

Poor research may nevertheless contain the essence of a good idea.

Experimental methodologies, analyses of data, reporting, etc.

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Find out about the background.

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Research Methodologies

A research methodology is a rationale for gathering and processing data, deciding on what sequence and what data to use. It is a well-informed and argued case for designing a piece of research in a particular way.

Counter arguments need to be explored and dealt with rigourously and fairly. The language in which the case is argued should be precise and clear. Counter arguments need to be explored and dealt with rigourously and fairly. The language in which the case is argued should be precise and clear.

Competence in Research

Data collection in research investigations needs to be relevant and accurate. The data collection needs to be relevant and accurate. The data is known to be accurate. The data collection needs to be relevant and accurate. The data is known to be accurate. The data collection needs to be relevant and accurate. The data is known to be accurate.

Academic Argument and Academic Discourse

A paper or thesis should be much more than a presentation of the data collected in your research. Evidence can be from the literature (properly acknowledged) or data collected in your research.

To make a case:

1. The notion of arguing a “case” in the manner of a lawyer can be useful here. Several solutions to a research problem.
2. It should be well-documented and well-argued. Case for one or more collected or a report of the work carried out.

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Academic Argument and Academic Discourse

If is vital to distinguish between existing work from literature and your own work. Plagiarism is a serious offence in research degrees (and in research in general).

Counter arguments need to be explored and dealt with rigourously and fairly. The language in which the case is argued should be precise and clear.

Exercise: When reading papers and theses consider whether you think that the investigations have been competently conducted.

Counter arguments need to be explored and dealt with rigourously and fairly. The language in which the case is argued should be precise and clear.

Data collection in research investigations needs to be relevant and accurate.
Academic Argument and Academic Discourse

When reading a research article try to identify the case being made for the presented research. Look in particular at:

- the abstract.
- the first and last paragraph of each chapter or section of the report.
- the first and last paragraph of the article.
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- look in particular at presented research.
- the first and last paragraph of the article.
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Do you feel anywhere that the cases are blurred with "padding"?

Do you feel that counter-arguments are dealt with fairly?

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Use of Data

Presenting data is not enough. It has to be processed and meaning imposed on the findings. Exercise: Scan papers and dissertations.

- Has the data been processed appropriately?
- Are the conclusions drawn from the data explicit and supported by evidence?
- Are the limitations and conditions for which the findings are valid discussed?
- Is there any alternative explanation for the findings or conclusions for which the data were collected?

Reliability of Research

Reliability can be increased by double marking.

- Consistency of the instruments used to collect the data?
- The competence with which the data was collected?

Validity of Research

Validity is often questioned, especially when dealing with subjective answers. Experiments with human subjects based on subjective answers, e.g., happy.

- Meaning is valid?
- Is there any agreement on the limitations or conditions on which the findings are based?
- Have the authors argued the cases for their findings or conclusions?

Originality and Significance

A thesis or research article should make its claim for original contribution clear, even if only implicitly.

- Is there any argument for the originality or contribution of the work?
- Sometimes significance is clear, other times it is not, and examiners are required.

Validity of Research

Validity is achieved when the findings are not challenged.

- The higher the level of degree (or publication), the greater will be the chance of the examiner to reject the findings.
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Reliability of Research

Reliability can be increased, e.g., by double marking.

- The more reliable the data, the less will be the chance of the examiner to reject the findings.
Creative Thinking in Research

Research is often thought of as involving only logical analysis.

However, this is not necessary if you are taking things over to facilitate ideas or comments. You may choose to talk with an expert in the field in order to get their views and ideas. Other people often find that the very act of taking seems to stimulate their own thinking.

Keeping an Open Mind

There can be considerable time spent "mulling over" the problem before arriving at a solution. The idea of a solution just "pops into their head."

This is no way of predicting how long this might take. Keeping an open mind is over-hand ground work. Creative research, the following are some techniques which can prove useful in developing anything else either.

- Usually when they are not thinking about the problem, or probably the idea of a solution just "pops into their head."
- There is no way of predicting how long this might take. Therefore, before considering some special solution for most people:

Taking Things Over

How Does Intellectual Creativity Work?

Creativity in research can be encouraged through the use of various techniques. Some obvious, some not so obvious:

- Metaphor, analogy, "luncheons," etc.

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Brainstorming

Brainstorming is a well-known problem-solving technique, but it may not always be useful in academic research. Brainstorming is normally carried out in groups, but can be done individually.

Imagine you are interviewing an expert in your field. What questions would you ask?

**Imagining Imaginary Experts**

Conceive of a complete new theory to explain them.

Imagination and/or mental models can be extremely valuable in envisioning new ideas, even if they are not practical.

Even if your results do not fit your existing theories, look among them to see if there are any other unexpected trends or details which suggest further areas for investigation.

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**Negative Brainstorming**

This can again be done individually or in a group.

Negative Brainstorming can be used for solving academic research problems.

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Negative brainstorming methods can produce ideas that would never have been thought of via more direct methods.

Nevertheless, negative brainstorming really does have a proven worth. It often produces seemingly useless or unuseful ideas, and many of the reversed ideas often turn out to be meaningful.

This may seem a useless idea, but many of the reversed ideas often may be productive.

**Viewing the Problem from Imaginary Perspectives**

Instead of trying to solve the problem directly, try to solve it from the perspective of an expert in your field.

**Concentrating on Anomalies**

Don’t ignore results that don’t fit the theory.

Concentrate on anomalies and see if they represent something worth investigating.

**Focussing on Byproducts**

Don’t ignore results that don’t fit the theory.

Look for unexpected results, e.g. unpredicted trends within your results.

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Byproducts of research can be useful for solving academic research problems.

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**Interrogating Imaginary Experts**

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Viewing from the Perspective of Another Discipline.

Talk the problem over with people from other disciplines to see how they would approach it. They may not technically fully appreciate your problem, but their comments and ways of exploring the problem may inspire new insights or research ideas.