The Little Book of Research
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Contents

Introduction .................................................................3
Planning your research ................................................4
Putting your research in context ......................................8
Research ethics ..............................................................14
Approaches and methods ..............................................16
Writing up your research ..............................................36
Further reading and references .....................................39
Introduction

“In much of society, research means to investigate something you do not know or understand.”

Neil Armstrong (astronaut and university professor)

When we research, we collect, analyse and evaluate data on a particular topic, issue or problem. **Research helps us to make sense of the world.** It informs our actions and decision making.

Beginning your own research project can be daunting:

- You might be obliged to do investigative work as part of your dissertation.
- You might have a research topic in mind.
- You might be unclear on how research is carried out.
- You might not know what it is you want to find out.

**This ‘Little Book of Research’ should help you get started.**
Planning your research

Some stages in the research process

A straightforward view of the process is one where each stage unfolds in a chronological fashion. These stages would usually be:

1. Conceptualisation
   Defining the 'problem' and establishing the research question(s).

2. Contextualisation
   Putting the research in the context of similar research done by others - as described in the literature.

3. Data collection and/or generation
   Using your chosen research methods.

4. Data analysis
   Examining, categorising and analysing information collected in a manner appropriate to the type of data.

5. Reporting conclusions
   Writing up results and passing on your findings.
Your research idea

Your initial idea(s) might come from a range of sources such as reading or personal experience. Often new ideas will come from previous research you have encountered.

At the centre of this process is your research idea and the different factors which have contributed to this.
Your research question

Once you have decided on a topic area and focus for your project, you need to write a research question which defines **exactly what it is you want to know**.

A research question is a question which seeks an explanation. It should specify a problem which has meaning and importance to a particular research group, profession or industry.

Here are a few tips for writing a research question:

- Refine the question – the shorter the better.
- A better focused project might be easier to manage than a wide ranging one.
- Keep the wording clear and unambiguous – avoid jargon or technical terms.
- Would the question make sense to someone outside your subject area? Does this matter?

If you cannot write down what you want to research in a sentence, it might be best to rethink. The topic might be more extensive than you thought, or it might not have been clearly thought out.

Putting your research in context

Researching the background

After you have decided on your topic, you need to carry out a literature search to:

• See what information is available.
• Check what others have done before you.
• Put your ideas into context.
• Give authority to your assertions.
• Help you with the focus for your research.

An initial literature search should investigate all types of information open to you. If you will be relying mainly on published material rather than your own data (likely to be the case with most undergraduate dissertations), you should conduct a ‘pilot search’ of the literature to assess how much information is out there.

Literature means books, journal articles, newspapers, past dissertations, statistical surveys, websites, electronic journals and any other sources you find which are relevant to your topic.
Start your **literature search** by checking what is available in your own university library catalogue.

Then check your library’s web pages for:

- Links to internet gateways and other websites.
- Journal article abstracts and indexes.
- Full text electronic journals and newspapers.

Consider other options such as public libraries, other university libraries and the British Library.

Libraries are not the only information sources. Depending on your subject area, a variety of organisations might have useful information. In most cases, these organisations will make information available on their websites.

Check the ethical guidance for your programme of study and ask your dissertation supervisor before you request information directly from, or send questionnaires to, **outside organisations**. For many projects, particularly undergraduate dissertations, it is not appropriate to approach people outside your own institution.
Critiquing other people’s research

Critical reading of published studies will help improve your own writing and is an important element of your review of the existing research.

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<thead>
<tr>
<th>Title</th>
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<tr>
<td>• Does this tell you clearly what the research is about?</td>
<td>• Are the authors qualified to conduct the study?</td>
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<th>Abstract (summary)</th>
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<tbody>
<tr>
<td>• Does it grab your attention?</td>
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<tr>
<td>• Do you want to read further?</td>
</tr>
<tr>
<td>• Is it a good overview of what the researcher did and found?</td>
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<table>
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<th>Introduction and background or rationale</th>
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<tr>
<td>• Is this section helpful and comprehensive?</td>
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<tr>
<td>• Does the researcher tell you why this subject interested him or her?</td>
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<tr>
<td>• Has the researcher justified doing the research?</td>
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<tr>
<th>Literature review</th>
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<tr>
<td>• Does this give any insights into current knowledge about this subject?</td>
</tr>
<tr>
<td>• Is it fair and unbiased?</td>
</tr>
<tr>
<td>• Is it well structured?</td>
</tr>
<tr>
<td>• You will need to check at least a sample of the references.</td>
</tr>
<tr>
<td>• This section is often restricted in length by the journal publisher.</td>
</tr>
</tbody>
</table>
Method(s) used to collect data

- Is the description of the method(s) clear?
- Does this seem the correct approach and method?
- Are ethical issues clearly addressed?
- Could the research be replicated from the description given in the report?
- How was the sample selected?
- If the sample was meant to be random, is it?
- Is the sample large enough to detect the effect for which they were looking?

Analysis and results

- How were the results analysed?
- Do the numbers add up?
- Does the presentation illuminate or baffle?

Discussion

- Does the discussion relate to the results?
- Does the discussion relate to the literature?

Recommendations and conclusions

- Are the conclusions clearly stated?
- Do the recommendations relate to the results?
- Has the researcher critiqued their study?
- Has the researcher suggested further research?

Acknowledgements

- You may find clues here about the real purpose of the study or expert assistance.
Citations and references
• Are they comprehensive, relevant, up to date and correct?
• How many times has the author cited his or her own work?

Communication
• Who is this report aimed at?
• Is the style appropriate to the audience?
• Is it accessible?
• Is it well written?
• Is it published in the right forum?
• There is a difference between jargon and the legitimate terminology of research; you should be sceptical of the first but must learn the second.

Bias
• Why has the researcher done the study?
• Is there an underlying agenda that might bias the whole study?
• Who has sponsored or paid for the study? Is there a declaration of interests?

Ethics
• Does the study satisfy ethical requirements?
Using other people’s work

Ethical issues around plagiarism affect researchers when they are using other people’s ideas.

Could you be a plagiarist?

Plagiarism is a term used in academia for passing off other people’s ideas as your own. This includes ideas from any sources – written, internet or audiovisual media – even other students or members of staff.

Leeds Beckett University defines plagiarism as "The substantial unacknowledged incorporation in a student’s work of material derived from the work (published or unpublished) of another. ‘Work’ includes internet sources" (Leeds Beckett University, 2014a, C9. 3.8).

Plagiarism is regarded as serious misconduct and can ruin your academic career.

To avoid plagiarising:

• Be careful when taking notes.
• Correctly cite and reference any ideas that are not your own.

At Leeds Beckett the Harvard style of referencing is used. Our guide on this is called ‘Quote, Unquote’.
Research ethics

Ethical dilemmas in research

The Rik Scarce case:
Rik Scarce was conducting research on radical groups in the US, including animal rights activists. When a laboratory at Washington State University (his own institution) was raided by one of the groups he was researching, the police asked him for information on the group. He refused to comply and was eventually jailed for five months. His refusal was based on the grounds that he would be contravening the confidentiality guidelines of the American Sociological Association.

The Manchester bouncers study:
A researcher conducted a study of nightclub bouncers working in Manchester in 1996. The study was conducted covertly (that is, without the knowledge or consent of the people being studied). The researcher felt this was justified because of the difficulties of getting a true picture of this group; especially as it was likely that some criminal or borderline criminal behaviour might be involved.

Dilemmas partly adapted from Lee-Treweek and Linkogle (2000).
Get some guidance on research ethics

Leeds Beckett University has a guidance document on research ethics which gives detailed information on procedures for staff, undergraduate and postgraduate students conducting research. This is available on the University website:


This guidance suggests that researchers should:

- Benefit society by adding to human knowledge.
- Avoid or minimise harm.
- Give due consideration to ‘informed consent’ with regard to everyone involved in the research.
- Respect issues around confidentiality and anonymity.
- Disseminate research outcomes appropriately.
Your research approach

An important part of your planning is to decide on the general research approach that will be most appropriate. This means the character of the approach you adopt, rather than any methods of data collection you use, such as surveys or experiments.

Quantitative, qualitative and combined or mixed methodological approaches all have their particular advantages and limitations.

Quantitative versus qualitative

There is considerable debate regarding alternative approaches to research. The bottom line is:

Different problems require different methods for different solutions.
Quantitative and qualitative approaches to research

<table>
<thead>
<tr>
<th>Quantitative</th>
<th>Qualitative</th>
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<tbody>
<tr>
<td>Data consists essentially of numbers</td>
<td>Data is presented in a more descriptive form (words)</td>
</tr>
<tr>
<td>Uses relatively large samples</td>
<td>Sample sizes are relatively small</td>
</tr>
<tr>
<td>Concerned with collection of data and the conversion of that data into statistics</td>
<td>Concerned with understanding and explaining in a deeper and more holistic way; deals with opinions, attitudes and beliefs</td>
</tr>
<tr>
<td>Starts from existing theory</td>
<td>Favours theories that can be grounded in the evidence collected</td>
</tr>
<tr>
<td>Tests hypothesis(es)</td>
<td>Generates hypothesis(es)</td>
</tr>
<tr>
<td>Deductive and works from the more general to the more specific</td>
<td>Inductive and works from specific observations to broader generalisation and theories</td>
</tr>
<tr>
<td>Samples are carefully chosen to reflect the characteristics of the population, often by a deliberate random selection process</td>
<td>Samples are determined by whom the researcher meets and is put into contact with during the course of the fieldwork</td>
</tr>
<tr>
<td>Detached relationship between researcher and participants</td>
<td>Relationship with participants likely to be close (insider)</td>
</tr>
<tr>
<td>Usually short term involvement with sample group(s)</td>
<td>Sustained period of involvement with participants is likely</td>
</tr>
</tbody>
</table>

Comparison adapted from Cook and Campbell (1979) and Guba and Lincoln (1989).
Collecting your own data

Collecting your own data is usually at the core of a research or investigative type project. Most postgraduate level projects involve collecting original data. With undergraduate dissertations, original data will usually supplement information found from published sources (the literature search).

You might decide which method or methods you want to use for collecting data early on. Or you might wait until you have set your initial questions and completed your background research. This does not matter. But your methods must fit in with your general research approach and, crucially, they must allow you to find out what you need to know.

You must also have a plan for analysing your data before you begin to collect it.

Some widely used methods of data collection are:
- Questionnaires
- Diaries/logs
- Interviews
- Focus groups
- Observations
- Analysing documents
- Experiments.
Collecting data - Questionnaires

Questionnaires are extremely flexible and can be used to gather information on almost any topic involving large or small numbers of people. The respondents (either individually or in a group) are asked identical questions.

Data can be collected in the following ways:

• Face-to-face – questionnaires are handed out personally and completed there and then.

• Telephone survey.

• Questionnaires can be handed out and collected at a later date, which gives respondents more time to consider their answers. Questionnaires can also be posted out or put online but this might result in a poor response rate.

The questions on a questionnaire can be closed, open-ended or a mixture of the two.
Ideas for writing a questionnaire

• Make it as short as possible.
• Only ask for information which you really need.
• Give clear instructions on how to fill in the questionnaire.
• Put the questions in a logical order.
• Avoid ambiguous questions.
• Be sensitive to the respondents – if you need personal information such as age or salary, allow them to give it in ‘bands’.
• Include a covering letter stating:
  - The purpose of the questionnaire
  - Who has authorised or sponsored it
  - Who you are
  - Why the respondent should fill it in
  - Information about confidentiality
  - What you will do with the results
  - The completion date
  - Thanks to the respondents for their participation.
Collecting data - Diaries/journals

Researchers can use diaries or journals as a method of data collection. There are several ways of using diaries as a source of information. For example, researchers can use journals to keep records of their experiences in the field (also known as field notes).

Diaries can be used as a chronological record of significant events. Typically, this consists of a brief description of progressive events or steps followed, with times and dates. Descriptions should be as objective as possible. In this way, the diary provides a brief, easy-to-read, overall picture of significant events.

Diaries can be structured, unstructured or a mixture of both.

• In a **structured** diary, the participants will record only what is asked of them. This may include ticking boxes or writing certain measurements. The researcher provides guidelines on how to complete the diary.

• In an **unstructured** diary, the researcher does not provide any guidelines and participants decide what to record.
Collecting data - Interviews

At the most basic level, interviews are conversations with the purpose of obtaining information.

Interviews can be structured, unstructured or semi-structured.

- **Structured** interviews are like a questionnaire which the interviewer fills in together with the respondent.

- **Unstructured** interviews are like informal conversations. They allow greater insight and more in-depth understanding of the topic researched than structured interviews, but they require more expertise to conduct. Unstructured interview data is complex, unpredictable and takes longer to analyse than data from structured interviews.

- **Semi-structured** interviews allow the researcher to cover specific issues but the sequence and wording of the questions are decided as the interview goes along. Semi-structured interviews allow the capturing of respondents’ perceptions in their own words. The aim is to gather detailed material that can be analysed. The length of each interview depends on the issues you want to explore.
Collecting data - Focus groups

Focus groups are a type of interview that involves a group of selected individuals (up to fifteen) who usually do not know each other but share some characteristics relevant to the topic; for example, a group of female, final-year engineering students.

The purpose of focus groups is to generate qualitative data. People can consider their own views in the context of the views of others, and new ideas and perspectives can be introduced.

- In the focus group, the researcher acts as facilitator and listener and asks open ended questions. People work as a group, listen to each other's comments and answer the questions. As a rule, the focus group session should not last longer than one and a half to two hours.
Collecting data - Observations

Observation is one of the most common, yet demanding, methods of data collection.

The technique provides researchers with an opportunity to collect data on a wide range of behaviours and interactions, and is particularly useful for discovering whether individuals or groups do what they say they do, or behave in the way they say they do. The researcher aims to be unobtrusive so that behaviour remains as normal as possible.

- Observations are useful for observing behaviours, undisturbed in their natural setting.

- The most common criticism of observation is that it is highly subjective. Researchers might attempt to eliminate this by, for example, using recording sheets or by noting activity (or lack of it) at set time intervals.

- Another criticism is that an awareness of being observed might change people’s behaviour.
Collecting data - Analysing documents

All researchers use and analyse documents. Some researchers will base their entire study on documents and others may use documents together with other techniques such as interviews or questionnaires.

The role of the researcher is to collect, classify, order, synthesise, evaluate and interpret the material available in relation to a particular research question.

Documents might include:

- Official and unofficial records
- Minutes
- Personal accounts
- Books
- Scientific papers
- Websites and databases
- Newspapers
- Diaries and letters
- Transcripts of conversations
- Annual reports
- Statistical records.
Documents are normally classed as:

- **Primary** sources – created at the time such as letters, diaries, law reports.

- **Secondary** sources – later accounts or interpretations such as books or articles.

**The advantages of using document analysis are:**

- It is cheap and unobtrusive.
- Events can be compared over time.
- Data never changes and can be re-analysed.
- For some topics, it is the only way to do research.

**The disadvantages include:**

- Inaccuracy of some data.
- Evidence may be out of date.
- Availability problems.
- Document analysis can be time consuming.
Collecting data - Experiments

Experimentation is concerned with seeing what changes occur if something new is tried out. It is a method particularly associated with the physical sciences.

The researcher deliberately alters at least one particular element or factor of the study, known as a variable, to assess the effects of this change.

Measurement is required before, during and after the experiment. The experiment has to be replicable if it is to have any significance.

Points for successful experiments:

• Careful preparation is essential.

• Experienced researchers should be consulted before experimentation begins.

• Project design, sample selection and measurement of dependent variables are crucial.
Analysing qualitative data

Categories for sorting qualitative information, such as interviewees’ comments, might only be settled on after some data has been collected and examined.

Miles and Huberman (1994) suggest the following steps for analysing qualitative data:

• Affix codes to a set of field notes drawn from observation or interviews.

• Note ideas and remarks in the margins.

• Sort and sift through these materials to identify similarities, relationships, patterns, themes, differences between subgroups and common sequences.

• Isolate patterns and processes, commonalities and differences and consider them during the rest of the data collection.

• Highlight any generalisations related to your original research themes.

• Analyse the generalisations in relation to theoretical perspectives.
Analysing quantitative data

It is useful to distinguish the different types of quantitative data you might have. How you analyse and present the data will depend on this.

Two types of data are called **categoric** data:

1. **Nominal** data: this is when the numbers are simply codes for different categories or values. For example, you might use 0 and 1 to stand for male and female respectively; or 0 and 1 for No and Yes responses to a question.

2. **Ordinal** data has some order to it: for example, age categories from younger to older or – very commonly – a Likert scale response (‘... where 1 is very unhappy and 5 is very happy’).

The third type of data is:

3. **Metric** data (called **Scale** data in SPSS) is real numbers, counts or measurements (number of children in a family, height, weight).

You can only meaningfully calculate the mean or standard deviation of **metric** data. With ordinal data, such as a Likert scale, the median might be used.

With nominal data, the numbers assigned are arbitrary and no statistics should be calculated.
Points to remember when interpreting statistical data

An important part of interpreting any information is understanding exactly what is being shown and what is not being shown. Always ask questions about the purpose and origins of data:

• How specific/vague is the data?
• How accurate is the data likely to be?
• Are there information, data, or factors that are being ignored?
• Who has gathered and presented the data and what are their motivations?
• What are the actual values being shown?

Although charts are useful for giving an immediate visual marker of trends and comparisons, be aware that what can look like a dramatic increase, decrease, change, etc, in a chart, may only be a tiny percentage once you look more closely at the actual data.
Writing up your research

Writing a report or dissertation is a creative task that requires hard work and discipline.

Think about constraints on your time and how long you will need to write a report of the specified length.

You should have records of the literature you have reviewed, a diary of the process of doing the research, and clear research aims, objectives or questions.

Here are a few tips to help you write your report:

• Give yourself deadlines for writing each section or chapter.

• Write regularly – set aside times during the week when you can write without interruption.

• Complete the paragraph or section you are writing before you break off – keep the momentum going.

• Give yourself a minimum amount of words to write at each session.

• Tell family and friends of your plans – to avoid interruptions.
The structure of your report or dissertation and the titles of the sections or chapters will vary depending upon the individual research study, your course assessment requirements and the subject area you are working in. A typical list of sections would be:

- Cover sheet
- Abstract
- Table of contents
- Introduction
- Literature review
- Research methodology
- Statement of results
- Analysis and discussion
- Conclusions and recommendations for further research
- Bibliography.

As you progress, you may find that you decide to ignore some areas you previously thought important – and develop others further. The ‘Conclusion and Recommendations’ should be written after the main body of the dissertation. Write the ‘Introduction’ and the ‘Abstract’ last – when you know exactly what you have said in the rest of the report.
Ask a friend or colleague to proofread your report. This will help you check for problems with grammar, spelling and clarity.

Allow plenty of time for final corrections and also for printing and binding at the end.
Further reading and references

Further reading about research


List of references


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