

Scientific research reports

Format of research reports in the faculty of Science

Research reports in the Sciences contain common elements and generally follow the basic format outlined as follows.

Title

Your title should be brief, topic-specific and informative, clearly indicating the purpose and scope of your study. Include **key words** in your title so that search engines can easily access your work. Example:

Measurement of water flows around Station Pier

Abstract

An abstract is a concise summary that enables readers to quickly assess the contents and direction of your paper.

It should be brief (around 5% of the total), written in a single paragraph and should cover the **scope** and **purpose** of your paper.

For more information on writing an abstract please refer to the Academic Skills flyer: *Writing an Abstract*.

Introduction

The introduction sets the context for your research. It should supply sufficient background to allow the reader to understand and evaluate the present study without needing to refer to previous publications.

After reading the introduction your reader should understand **exactly** what your research is about, what you plan to do, why you are undertaking this research and which methods you have used.

Introductions generally include:

- the **rationale** for the present study. Why are you interested in this topic? Why is this topic worth investigating?
- **key terms** and **definitions**
- an **outline** of the research questions and hypotheses; the assumptions or propositions that your research will test.

Literature Review

A literature review is a critical survey of recent relevant research in a particular field. Its purpose is both to offer the reader an overview of the current state of research and to situate your paper within that research.

Frequently, the review is part of the introduction

The review should be a selection of carefully organised, focused and relevant literature that develops a narrative 'story' about your topic. Your review should answer key questions about the literature:

- What is the current state of knowledge on the topic?
- What differences in approaches / methodologies are there?
- Where are the strengths and weaknesses of the research?
- What further research is needed?

The review may identify a gap in the literature which provides a rationale for your study and supports your research questions and methodology.

Methodology (Materials and Methods)

The purpose of this section is to detail how you conducted your research so that others can understand and replicate your approach. You need to briefly describe the subjects (if appropriate), any equipment or materials used and the approach taken.

If the research method or method of data analysis is commonly used within your field of study, then simply reference the procedure. If, however, your methods are new or controversial then you need to describe them in more detail and provide a rationale for your approach.

The methodology is always written in the past tense. This section should be written succinctly.

Results

This section is a concise, tabular or graphic summary of your findings, listed under headings appropriate to your research questions.

Present your results in a consistent manner. For example, if you present the first group of results as percentages, it will be confusing for the reader and difficult to make comparisons of data if later results are presented as fractions or as decimal values.

Do not discuss your results here. Any analysis of your results occurs in the Discussion section.

Raw data or details about the method of statistical analysis used should be included in the Appendices.

Notes on visual data representation:

- Graphs and tables may be used to reveal trends in your data, but they must be explained and referred to in adjacent accompanying text.
- Figures and tables do not simply repeat information given in the text: they summarise, amplify or complement it.
- Graphs are always referred to as 'Figures', and both axes must be clearly labeled.
- Tables must be numbered in the top left hand corner, and they must be able to stand-alone or make sense without your reader needing to read all of the accompanying text.

Discussion

The Discussion focuses on the hypothesis or research question. This section is where you interpret your results, account for your findings and explain their significance within the context of other research.

Consider the adequacy of your sampling techniques, the scope and longevity of your study, any problems with data collection or analysis and any assumptions on which your study was based.

Checklist for the discussion

- To what extent was each hypothesis supported?
- To what extent are your findings validated or supported by other research?
- Were there unexpected variables that affected your results?
- On reflection, was your research method appropriate?
- Can you account for any differences between your results and other studies?

The discussion may include some statements of conclusion; or you may be required to present the conclusion separately.

Conclusion

The conclusion is generally fairly short and should follow on naturally from key points raised in the discussion. In this section you should discuss the significance of your findings.

- To what extent are your findings conclusive?
- Are there any practical applications?
- Have your findings uncovered new questions or directions to be extended or explored in future research?

Reference List / Bibliography

A **Reference List** contains all the resources you have cited in your work, while a **Bibliography** is a wider list containing all the resources you have consulted (but not necessarily cited) in the preparation of your work.

It is important to check which of these is required, and the preferred format, style of references and presentation requirements of your own department.

Appendices

Appendices (singular 'Appendix') provide supporting material to your project.

Examples of such materials include:

- relevant letters to participants and organisations (e.g. regarding the ethics or conduct of the project);
- background reports;
- raw data;
- detailed calculations.

Different types of data are presented in separate appendices. Each appendix must be titled, labelled with a number or letter, and referred to in the body of the report. E.g.:

The data obtained are summarised below.

The detailed data are given in Appendix 3.

Appendices are placed at the end of a report, and the contents are **not** included in the word count.

Further Resources

Evans, D. (1995). *How to write a better thesis or report*. Australia: Melbourne University Press.

Lindsay, D. (1995). *A Guide to Scientific Writing*. (2nd edition). Australia: Longman Books.

Matthews, J.R & Matthews, R.W. (2008). *Successful scientific writing: a step-by-step guide for the biological and medical sciences*. Cambridge: Cambridge University Press.

Swales, J. & Feak, C. (2002). *Academic Writing for Graduate Students*. University of Michigan Press: Ann Arbor.

University of NSW, The Learning Centre. (2008). *Technical Writing Features & Conventions*. Retrieved 29 July 2011, from <http://www.lc.unsw.edu.au/onlib/pdf/techwrit.pdf>

University of Sussex: *A quick guide to writing a psychology lab-report*. Retrieved 29 July 2011, from www.sussex.ac.uk/Users/grahamh/RM1web/How%20to%20write%20a%20lab%20report.pdf

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