SCIENCE REPORT WRITING

This handout outlines how to write a report on scientific research.

Check your course materials to see if there is a specific structure for your report. You can also read published, peer-reviewed scientific papers in your field to see how these are structured. Below is a typical structure.

1. Title Page
2. Table of Contents
3. Abstract
4. Introduction
5. Materials and Methods
6. Results
7. Discussion
8. Conclusion
9. [Acknowledgments *optional*]
10. [Recommendations *optional*]
11. References
12. [Appendices *optional*]

TITLE PAGE

Purpose: The title page has two purposes.

1. It should have all the information needed for a report title page.

- A clear title that describes the research. For example: *Differing rates of reading development in single-gender and mixed-gender classrooms: a study of 7-year-old girls.*
- Your name as registered with the university

2. It should contain all the information your marker needs in addition to your name

Your student number
The course code
Due date for assignment
Possibly the assignment question you have answered
Possibly the name of the course co-ordinator and/or your tutor
Possibly the time of your tutorial session
Possibly word count

- Check to see if your course has specific presentation requirements

TABLE OF CONTENTS

The table of contents lays out the contents of the report as a list of headings and sub-headings that you have used. This is usually a numbered list.

Table of Contents

What does each of these sections do?

ABSTRACT

Purpose: To give your reader a clear, concise summary of the contents of the report.

The abstract appears first in the report but is written last. It briefly tells the reader what issue the report investigates (it may mention why the issue is important), what methods were used, what the key findings are and what conclusions the findings led to. An abstract is usually about 150 – 250 words long. Your course co-ordinator may specify how long your abstract should be.

ACKNOWLEDGEMENTS [optional]

Purpose: To thank people or organisations who have helped you conduct the research.

For example, you might want to thank an organisation for funding the research, or your workplace for giving you time off work, or an individual who helped you with access, data collection or analysis.

INTRODUCTION

Purpose: To provide context for, and define the nature of, the research question.

Outline the research question, the aims of the research, your predicted findings and the hypotheses that were tested during the research. Your course outline may give you specific guidance about some or all of these parts of the introduction. This section typically has many in-text citations.

Context: Outline the relevant work done in the area and explain the importance of your research.

Definition: Define the nature of the problem or area of interest and clarify the research boundaries (usually you cannot investigate every relevant factor).

Research

[1] *Italics* indicate the section is optional

Question: State the research question.
Aims: Outline what the research aimed to achieve.
[Predictions: Predict what you expected to find optional].
Hypotheses: You may have specific hypotheses that you tested (e.g., *the reading level of 7-year-old girls will improve more rapidly if they are taught in single-gender classroom*): if so, you should outline them in the introduction.

MATERIALS AND METHODS

Purpose: To lay out the method/s that you have used to conduct the research.

Your course outline may stipulate specific headings such as: Participants, Stimuli, Apparatus, Procedure etc.

You should introduce and justify the tool (theoretical framework, data analysis etc) used to analyse your data.

In a scientific report you often need to provide enough evidence to enable another researcher to replicate and, potentially, falsify, the results of the experiment.

Typically, there are few citations in this section unless a specific method was followed from a particular source.

RESULTS

Purpose: To describe the data that you gathered and the outcomes of the analysis of that data.

This section usually contains graphs, tables and charts to highlight the data analysis in relation to the aims of the research. The graphs etc. are accompanied by a written description of the findings. Key findings are highlighted in some way.

If you have outlined a hypothesis or the aims of the research in the introduction you might comment briefly in the results section on how the results support/ fail to support, the hypothesis or aims. There are usually no in-text citations in this section

DISCUSSION

Purpose: To explain what the results mean and their importance/relevance in the context of the wider literature.

Describe how your research has added to knowledge about the topic you are researching, **and the specific aim laid out in the introduction**. You usually link to the wider literature (not just the literature you have used to design and undertake your research). You may wish to describe the significance of the results in the context of your academic field.

You may also discuss the limitations of your research and comment on why the results are still valid and/or useful despite the limitations. You may discuss how the research design could be improved. You can also make recommendations for future research related to the topic. This section usually has a lot of in-text citations.

CONCLUSION

Purpose: To show clearly and concisely how your research addresses the issues raised in the introduction.

The conclusion briefly summarises how the research has answered the questions raised in the introduction. If the introduction has stated a hypothesis to be tested, the results of that testing process will be summed up in the conclusion. The main points should be discussed in order of importance: most important first.

No new information is presented in the conclusion.

Sometimes there is no separate section for the conclusion. In that case, the final paragraph of the Discussion Section acts as your conclusion.

RECOMMENDATIONS [optional]

Purpose: To list the recommendations for action, based on the research that you have conducted and then documented in the report.

Recommendations should be brief and focus on the action that needs to occur. All the arguments and rationales for the action should be in the discussion section.

REFERENCES

Purpose: To list all the sources you cited in your Report.

The reference list is a standard reference list in a recognised format (APA, Chicago etc.). You may be asked to use a specific format.

APPENDIX/APPENDICES [optional]

Purpose: An appendix provides extra information, not directly related to your research process.

For instance, if your research was testing the hypothesis: *the reading level of 7-year-old girls will improve more quickly in single-gender classrooms* and you had information about the disadvantages of single-gender classrooms that was relevant to one aspect of the research but not concerned with 7-year-old girls, you **might put that information in an appendix. There can be more than one appendix (the plural form is *appendices*).**

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Additional Resources:

Scientific Writing - Hourglass Method — The Rosalind Franklin STEM Ambassadors

Related resources:
Structure of an essay
Structure of a paragraph
All study resources