A4 Scientific reports

1 Scientific research

This is usually conducted in order to support a hypothesis or to validate the work of others. An accurate written record of the experiment is important because it allows other researchers to share your work. At graduate level or above your research is adding to an international body of data on your particular area of study.

In general, scientific reports follow the same guidelines as other academic writing in terms of style and vocabulary. However, your department may well have its own requirements, for example the organisation of a report, so it is advisable to ask if these exist.

2 Format

Reports of laboratory experiments in disciplines such as biology, chemistry and physics generally include the following sections:

Title

Abstract

Introduction

Methods

Results

Discussion

References

(a) Title

This should contain the essential elements of the report in (ideally) no more than 12 words:

The effect of temperature changes on the germination of wheat (*Triticum aestivum*)

(b) Abstract

The function of an abstract is to help a potential reader identify whether your report is relevant to his/ her research interests. It is essentially a summary in about 200 words of each part of the report, and so it commonly written after the last draft is finalised. It should include the principal conclusions, and be written in the same tenses as the main report.

(c) Introduction

The introduction should contextualise your work with reference to other similar research. It should cite previous research papers which you have studied, in order to explain the purpose of your work, e.g. to confirm or extend their findings. It must contain a purpose statement (why you did this experiment) or a hypothesis you wished to evaluate, or both.

(d) Method

This section explains how you did the research. It should allow another researcher to repeat your work, so it needs to include a description of equipment and materials used, as well as the process you followed. You may wish to include diagrams or photographs to illustrate the set-up in the laboratory. The passive is normally used (*three samples were prepared*) rather than the active (*we prepared* ...). As the research is concluded, the past tense should be used throughout.

(e) Results

Again using the past tense, here you summarise all the results obtained. Detailed data may be presented in tables and graphs, with only the most important features highlighted in the text. You must include all results, including unexpected ones which do not conform to your hypothesis.

(f) Discussion

This section links back to the introduction by comparing your results with the original purpose or hypothesis. It aims to evaluate the experiment in terms of your findings and compare them to your expectations. It may be necessary to refer to the relevant literature. The conclusion should make it clear whether you feel that your hypothesis has been supported, and if there are changes that you would make to the design of the experiment if you were to repeat it.

(g) References

As in all academic writing, this is a list of all the sources you have specifically mentioned in your report. See Unit 1.8 References and quotations for details of organising references.