Write a Scientific Report

Scientific reports are brief summaries of what researchers set out to do, how they did it, what they found out, what they thought about what they found out, and how they related their study to the rest of the world.

A scientific report includes a(n):

1 Cover page
2 Abstract
3 Introduction
4 Materials and Methods
5 Results
6 Discussion
7 Reference List
8 Appendix

1. Cover Page:

Includes: title of report,
your name,
name of your partner(s),
instructor's name,
course name,
date.

2. Abstract :

An abstract is a brief summary (no more than 200 words) written after you have finished the report.

Includes: the purpose,
summary of the method,
and a summary of your results.

3. Introduction:

Includes your purpose(a), background information(b), and your hypothesis(c).

a. State the purpose of your investigation

- While writing the purpose keep in mind the question(s) that drives the investigation.

b. Present information background of researched topic

- Present relevant theory about tested variables and processes.
- Make sure that key terms are defined.
- Cite references within your report following this format: (Author(s) last name or organisation, date: page number).
  Ex.: (Miller and Levin, 2000:92)

  If there is more than 2 authors you need to write the first author's last name and use the Latin locution "*et al.*" meaning "and others".
  Ex.: (Mackenzie et al., 1996 :31)

  Example of referencing within the report:

  A mosquito is an insect that can transmit dangerous diseases. Malaria is a good example of a disease transmitted by mosquito. This disease affects 200 million people each year (Campbell et al., 2000:336). Malaria is caused by a protist called plasmodium that is carried by infected mosquitoes. (Miller and Levin, 2000:388; Campbell et al., 2000: 336).

  The full reference citation including all the authors names appears in the reference list section of your report (see section 7)

You must cite your references:

Definitions, diagrams and other information taken from the work of others must be acknowledged. Material copied without crediting the author, will be considered plagiarism (that is illegal!) and marks will be deducted.

Plagiarism can potentially lead you to suspension or expulsion from VCC and ANY colleges and universities

3. Introduction (cont'd):

c. Develop a hypothesis or hypotheses

- A hypothesis is a prediction of the experiment results supported by a rationale linked to the theory.
- Using a format of "**if**...**then**...**because**..." will ensure that you include all the elements of a good hypothesis

  i.e.: "**if** ...independent variable... **then**... dependent variable... **because**... theory rational..."

  e.g.: "**if** light levels are increased, **then** plants will produce more oxygen, **because** light provides the energy for photosynthesis, a by-product of which is oxygen."

4. Materials and Methods:

Explain to your reader how the experiment was carried out. The reader should be able to repeat the experiment.

a. Materials and Methods should not be copied from the manual. Instead, refer to the experiment protocol in the format suggested in the introduction (section 3b).

b. Indicate and describe any changes made to the original protocol (new procedure, omitted section, modification to experimental settings, etc.)

c. Describe your experimental set-up, and the subjects of your study (whether they be people, bacteria, goldfish, or plants).

d. Identify the study team. For a field study, include date and specific location (a small map may be useful).

e. If applicable, state how you analysed your results.

5. Results:

In this section you present your data analysis by using graphs and tables.

a. Present your data in graphs, tables or illustrations, clearly titled and labelled.

b. Summarise your results: Describe in sentences the trends or main tendency the graph/table/illustration shows (1 or 2 sentences):

c. When applicable, compare your personal data to the class average.

d. If required, the complete class data table or "raw data" should be submitted in the Appendix *not* in the Results section (see section 8).

e. Avoid any explanation or analysis of your results such as reviewing your hypothesis, this should be kept for your discussion.

6. Discussion:

This is one of the most important sections of your report. Here you get to explain what you have discovered during this experiment and link your observations to what you have learned in class and to the real world. Furthermore, you can elaborate and speculate on hypotheses for future research.

a. Discuss whether or not your results support your experimental hypothesis.

b. If you have more than one hypothesis, discuss them all separately.

c. Relate your results to theory and background information theory.

d. Compare your personal results with the class average and range.

e. List all known and potential sources of error and discuss how they may have affected your results. Be specific. Human error is not valid.

f. Discuss your opinions, ideas, speculations, and questions. If these come from a classmate, acknowledge him or her (Smith 2004: pers. com.).

g. Propose ways to improve your study, new hypotheses and new experiments.

6. Discussion (cont'd):

g. End your discussion with one or two conclusive sentences which suggest possible improvement of the experiment and/ or suggest new studies

h. Be creative. New scientific ideas emerge from this section of the report.

7. Reference List:

All the references you used must be cited in your text (see section 3b). Your reader may need to refer to this literature. Therefore you must list and properly format all the literature used for your lab write up. The following is the format we strongly recommend using:

a. **From a book**: author, date, book title, edition, publisher, place of publication, pages.

E.g.: Miller, K.R., and Levine, J. 2000. *Biology*. 5th ed., Prentice-Hall, Englewood Cliffs. pp 720:723.

b. **From a journal**: author, date, title of article, journal, pages.

E.g.: Wilson, E.O. 1995. Wildlife: legions of the doomed. Time 146: 59-61.

c. **From a website**: author, date, title [web page] web address [date accessed].

E.g.: Scott, G., and Marchilden, S. 2003. B.C. quietly releases coal regulation, will lead to more pollution. [web page] http://www.davidsuzuki.org/Campaigns_and_Programs/Climate_Change/News_Releases/newsclimatechange012003 01.asp [Accessed March 4, 2003].

8. Appendix:

Is an attachment section. Appendix are used to add any extra bit of information that is not essential to the main theme (body) of the report.

Quick Writing Tips:

- Write it in the first or second person, active voice (I found this; we discovered that).
- Write a concise text with paragraph division (one subject per paragraph).
- Leave letter format margins (3cm).
- Write at double interline spaces.
- Paginate your report
- Type your report and use spell check before printing your final version.

Check List:

Title Page
- ☐ title,
- ☐ your name and partner's name,
- ☐ instructor name,
- ☐ course name,
- ☐ date,

ABSTRACT
You have mentioned in the text your:
- ☐ Purpose,
- ☐ Summary of the method,
- ☐ Summary of your results.

INTRODUCTION
- ☐ purpose statement
- ☐ Background information
- ☐ hypotheses
  (one hypothesis per dependent variable)

Materials and Methods:
- ☐ Refer to the materials and methods section of the lab manual.
- ☐ Indicate any changes to materials and methods.

Results:
- ☐ One graph / table per experiment.
  Each graph / table must have:
  - ☐ title,
  - ☐ legend,
  - ☐ axes labelled and reasonably calibrated,
  - ☐ 1-2 sentences briefly describing results indicated by graph.

Discussion:
- ☐ discuss results as they relate to hypotheses.
- ☐ discuss results as they relate to theory.
- ☐ discuss variability of results.
- ☐ point out sources of mechanical or experimental error, and their effects.
- ☐ Indicate how the experiment could have been improved.
- ☐ conclusive sentence(s).

References:
- ☐ Use suggested format