



A Model for Technical Report Writing in Biology

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ABSTRACT

Verbal communication is temporal and easily forgotten, but written reports exist for long periods and yield long-term benefits for the author and others. Individual scientists and groups of researchers perform experiments to test hypotheses about biological phenomena. After experiments are completed and duplicated, researchers attempt to persuade others to accept or reject their hypotheses by presenting the data and their interpretations. The report or the scientific paper is the vehicle of persuasion; when it is published, it is available to other scientists for review. This model of technical report in biology therefore looks into the right way in putting the reports together in a way that is acceptable to other researchers and readers.

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Introduction

A technical report is a formal report designed to convey technical information in a clear and easily accessible format. The technical report outlines the statistical analytical methods used by the analyst to obtain the information and data included in the report [16]. It is divided into sections which allow different readers to access different levels of information. A model for technical report is a guide that explains the commonly accepted format for technical report writing; explains the purposes of the individual sections; and gives hints on how to go about drafting and refining a report in order to produce an accurate and a professional document [13]. It might involve the use of technical unclear terms depending on the field of concern, but the terms used will be clear and explicit to readers and assessors of the same field. The fundamental purpose of scientific discourse is not the mere presentation of information and thought, but rather its actual communication. It does not matter how pleased an author might be to have converted all the right data into sentences and paragraphs; it matters only whether a large majority of the reading audience accurately perceives what the author had in mind.

Technical report writing in biology specifically talks about a biological research involving laboratory work and biological terms.

Structure

A technical report should contain the following recommended sections:

- **Title page:** This must include the title of the report, i.e. the focus of the report. A good report title is concise and to the point. It tells the reader the purpose of your experiment or the major outcome of your experiment, who prepared the report and the date of submission [9]. The title should be neither too general nor too specific.
- **Abstract:** An abstract is a concise description of the report including its purpose and most important results. It gives a summary of the whole report including important features and

conclusions, It is important to state the aim, methods used in carrying out the research, discussion and conclusion but all must be in a summary format [11]. An abstract should give an overview of the research where the final recommendations must be able to hit the aim and justification of the research done. There is no need breaking words into paragraphs, the word limit must be taken in to consideration depending on the outline given by the institution where the report is to be submitted and other bodies accepting the report.

- **Table of Contents:** This Include all the report sections, subsections, and appendices numbers. It is a list of all section and subsection headings with page numbers [9].

- **Introduction:** It involves giving an overview of the main content, stating the objectives of the report and the way the topic of report is to be treated. This aspect involves the following:

Justification of the study – This speaks about the need for the study.

Aim – This is the basic concern of the research and a well written report should be centred on a particular aim.

Objectives – The objectives must complement the aim, state how to achieve the aim in listed format.

The introduction which is tagged chapter one in the report leads straight into the report itself [4].

- **Body of the report:** This is tagged as chapter two in the report and also called the literature review. Here works that have been done by other researchers related to the present research, their findings and recommendations are to be cited with appropriate referencing.

- **Materials and Method:** This aspect deals with the equipment used and the methodology of the research; it is usually the chapter three in the report. It should introduce the study area; describe location, name of place, local government area, state and county where the research was carried out. It can also include a map of the area with key to describe the climate and vegetation.

As the name implies, the materials and methods used in the experiments should be reported in this section. The difficulty in writing this section is to provide enough detail for the reader to understand the experiment without overwhelming him or her. When procedures from a lab book or another report are followed exactly, simply cite the work, noting that details can be found in that particular source [10]. However, it is still necessary to describe special pieces of equipment and the general theory of the assays used. This can usually be done in a short paragraph, possibly along with a drawing of the experimental apparatus [11]. Generally, this section attempts to answer the following questions:

What materials were used?

How were they used?

Where and when was the work done? (This question is most important in field studies.)

- **Results:** This makes up the chapter four of the report, which comprises of all the results gotten in the process of the research. The results of the work should be presented using neatly organized and completely labeled tables and/or graphs whenever possible. When comparative data is available, present the data in a way that facilitates the comparison [8]. For example, if theoretical and experimental values are available, present the values alongside one another accompanied by percent error. If it would help the reader understand the results, include a few sample calculations but put lengthy calculations in an appendix. Statistical analysis and various biological means of comparing results should be used [12].

- **Discussion:** This involves making inferences from the results. The discussion section should not just be a restatement of the results but should emphasize interpretation of the data, relating them to existing theory and knowledge [10]. In writing this section, you should explain the logic that allows you to accept or reject your original hypotheses. You should also be able to suggest future experiments that might clarify areas of doubt in your results [8].

- **Reference:** This contains a comprehensive list of every author or authors work cited and it must be written in the acceptable format given by the institution or body in which the research will be submitted.

- **Appendices:** Any further material which is essential for full understanding of the report (e.g. large scale diagrams, computer code, raw data, specifications) but not required by a casual reader are stated at the appendices [14].

Reference

[1] Alley, Michael, *The Craft of Scientific Writing, Writing Guidelines for Engineering and Capitalization* <http://stipo.larc.nasa.gov/sp7084/index.html> Basic information on writing well.

[2] Business Dictionary: <http://www.businessdictionary.com/definition/technical-report.html#ixzz42ObTTtoCF>

[3] CBE Style Manual Committee. 1983. *CBE style manual: A guide for authors, editors, and publishers in the biological sciences*. 5th ed. Bethesda, Md.: Council of Biology Editors.

[4] Citing Full Text and World Wide Web Documents Using APA Format . (n.d.). Retrieved December 21, 2008 from <http://libraryreference.sunydutchess.edu/citations.htm>.

[5] Creating Parenthetical Citations and Reference List Pages Using APA Format. (n.d.). Retrieved

[6] Davies J.W. *Communication Skills - A Guide for Engineering and Applied Science Students* (2nd ed.) Retrieved December 21, 2008 from <http://libraryreference.sunydutchess.edu/citations.htm>

[7] Emden J. (2001) *Effective communication for Science and Technol*. Retrieved from: <http://libraryreference.sunydutchess.edu/citations.htm>.

[8] *Intermediate skills manual* (2001), *Scientific writing*. Retrieved from https://sydney.edu.au/science/biology/...skills/scientific_writing.pdf.

[9] Leah, M.A and Jefferson, H.A. (2009). *Technical report writing guidelines*. Retrieved from <http://www8.sunydutchess.edu/faculty/>

[10] Lindsay, D. (1984) *A guide to scientific writing*. (Longman Cheshire: Melbourne).

[11] McMillan, V.E. (1988). *Writing papers in the biological sciences*. New York: St. Martin's Press, Inc.

[12] NASA publication: *A Handbook for Technical Writers and Editors*, Grammar, Punctuation, Valley, USA.

[13] Prance, D. (2010) *Guide to Technical Report Writing*, School of Engineering and Design, University of Sussex.

[14] Warren, D. (2001) *Writing Lab Reports & Scientific Papers*, Iowa State University. Retrieved from: <http://www.mhhe.com/biosci/genbio/maderinquiry/writing.html>.

[15] *Writing a Report in Biology*: Source: www.usyd.edu.au/learningcentre/wrise/biology.

[16] Young, M. 1989. *The technical writer's handbook*, University Science Books, Mill.