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SCIENCE PROGRAM STYLE GUIDE

One of the essential skills of the scientist is to communicate ideas and research results effectively. Students learn to do this in their preparation of Formal Laboratory Reports and Formal Literature Research Reports.

The following is a general format for writing Formal Laboratory Reports. Guidelines for Formal Literature Research Reports appear later in this document. Additional details and requirements may be given by individual instructors.

Sections of a Formal Laboratory

- Title Page
- Abstract
- Introduction
- Materials and Methods
- Results
- Discussion
- Conclusion
- References

Title Page

The title page of the formal report should be brief and informative. Following the title list your name and student number, the date of the experiment, the course number, your instructor's name, the name of any laboratory partners, and the date submitted.

Abstract

The abstract is a concise statement of the aims of the experiment, the methods employed, the results obtained, and the conclusions drawn. It should be one paragraph of less than 100 words. It is best to write the abstract after the rest of the report has been written.

Introduction

The introduction is a statement of the subject and objectives of the experiment. Relevant background information (appropriately referenced) is given in sufficient detail that a person unfamiliar with the topic can understand the nature of the experiment. A good introduction is clear and concise.

Materials and Methods

This section describes the experiment and the equipment used in sufficient detail so that another person could repeat the experiment and obtain identical results. Often this information is given in a laboratory manual. In this case the reader may be directed to that source and only deviations from those directions are mentioned.

Data/Results

The data obtained from your experiments are presented in a clear and logical manner in this section. The actual data should be presented in the form of appropriately labelled Tables, Figures, or Graphs. All Tables, Figures, and Graphs should have descriptive titles and should include a legend for explanation. The reader should be able to understand all parts of this section without having to refer to the text. Do not discuss the results here, just present them.

Discussion

In the discussion section you analyze your results. Your focus should be the interpretation of the data. This section is often the most heavily referenced section as connections are drawn between the results obtained and the concepts presented in textbooks, laboratory manuals, etc.

Conclusion

In this section the significance of your findings should be stated. In order to know if what you have written is appropriate, ask yourself if you have fully addressed the objectives stated in the introduction of the report.

References

References are included in a report a) to give credit to the original source of an idea and b) to allow the reader to refer to the original source. There are several methods of citing sources of information used by the scientific community. One method is to use footnotes and to produce an appropriate numerical list of references at the end of the text. However, in report writing it is more common to cite the work in the text and to compile an alphabetical list of sources at the end of the text. The examples given below follow the format given by the Council of Biology Editors (Council of Biology Editors, Style Manual Committee.1994. *Scientific Style and Format: the CBE Manual for Authors, Editors and Publishers*. 6th ed. Cambridge: Cambridge University Press; 825p.) A copy of this book is available in the JAC library. In future work you may be required to use a different method than that given below.

***In the body of the text*, one refers to the published work by giving the author's name and the date the work was published. For example:**

Fox (1997) investigated the effects of hormones on the nest-building behavior of catbirds.

OR

Hormones have been shown to influence the nest-building behaviour of catbirds
(Fox, 1997).

In the **Reference section** the format of the citation depends upon the type of publication. This fictitious reference could have come from any of the following examples:

For books:

Fox, J.W. 1997. *Nest-building behavior of the catbird*. Berlin: Guttenberg Press; 316 p.

The format is: (Name of Author). (Year). (Title, *in italics*). (edition). (City of Publication): (Publishing Company); (Number of pages).

For articles:

Fox, J.W. 1997. Nest-building behavior of the catbird. *Journal of Ecology* 47: 113-117.

The format is: (Name of Author). (Year). (Title). (Journal Title (*in italics*) and volume): (Page numbers).

For Web sites:

Fox, J.W. 1997 Oct. Nest-building behavior of the catbird. World Wide Web J. Biol. 1 (1). <http://www.epress.com/w3jbio/wj6.html> Accessed 1997 23 Oct.

For on-line reference books:

Fox, J.W. 1997. In Encyclopedia Britannica [Online]. Available: <http://www.eb.com/xxx/xxx.html> Accessed 1997 23 Oct.

Other information will be provided by individual departments or teachers.

It is important to cite all references whether used to provide you with ideas or hard data. Failure to cite a source is plagiarism. Presenting the work of others as your own is plagiarism.

Formal Literature Research Reports

A literature research report is different from a laboratory report. A literature research report is a compilation of information acquired from a thorough review of the published literature on a specific topic. The following is a general format for writing Formal Literature Research Reports. Additional details and requirements may be given by individual instructors.

Sections of a Formal Literature Research Report

- Title Page
- Abstract
- Introduction
- Background
- Discussion
- Conclusion
- References

Title Page

The title page of the formal report should be brief and informative. Following the title list your name and student number, the course number, your instructor's name, the name of any partners, and the date submitted.

Abstract

The abstract should provide a short, comprehensive summary of the paper. It should be one paragraph of less than 100 words. It is best to write the abstract after the rest of the report has been written.

Introduction

The introduction is a clear statement of the question addressed and of the points of view taken in the paper.

Background

Sufficient background information must be given to acquaint the readers with the nature of the topic. This information is assembled from books, journals, and other sources applicable to the topic.

Discussion

In this section one discusses the evidence from the literature that was used to formulate the position taken in the paper. The evidence must be evaluated and weighed against alternative points of view.

Conclusion

The conclusion should summarize the arguments without presenting any new information.

References

See the information given in References under Formal Laboratory Reports.

Style of Research and Laboratory Reports

Good scientific writing is simple and clear. The basic rules of scientific writing are:

1. **BE CLEAR:** Short, informative sentences convey material most clearly. Long, complicated sentences can be difficult for the reader to understand.
2. **BE OBJECTIVE:** Data must be presented and interpreted in an unbiased and accurate manner. In a research report, you must show evidence to support your point of view, but you must also present a balanced viewpoint.
3. **BE ACCURATE:** The facts presented in your report must be accurate and complete. Use precise terms to say exactly what you mean.
4. **BE BRIEF:** Avoid unnecessary information and repetition.

Other style points to consider:

1. ***Active vs. Passive Voice***

Whether the active voice (“I weighed the flask”) or the passive voice (“The flask was weighed”) is used depends on the discipline. Although the active voice is becoming more popular, the passive voice has been the traditional choice of scientists.

2. ***Personal Pronouns***

Similarly, the traditional choice of scientists is to avoid the use of personal pronouns (“I” and “we”) in formal reports.

3. ***Presentation***

Use double spacing, regular fonts, reasonable margins, and remember to number all pages.

4. ***Miscellaneous***

Use the past tense in the Abstract, the Introduction, and the Materials and Methods sections of the report. Results and Discussion sections may be written in the present tense.

Do not use contractions or slang. Use complete sentences. Proofread your reports. Do not simply rely on “spell check.”