SNC 1D
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How to Write a Formal Lab Report

The purpose of experiments is to better understand a concept or for the discovery of a new one. Presenting the findings of the experiment is done through a lab report that outlines how the experiment worked and what the results were.

Tips on writing a lab report:

- ***Be concise***: In scientific writing, it is important to say as much as is needed while using as few words as possible. The entire report should be clear and straightforward.
- ***Write in the third person***. Avoid using the words "I" or "we" when referring to the experimental procedure. For example, instead of "I boiled 50 mL of water for 10 minutes," the report should read, "50 mL of water was boiled for 10 minutes."
- ***Be prepared for the lab***: Before coming to the lab session, read the procedure thoroughly. Write down a purpose, hypothesis, and a general plan for the procedure you will follow and bring them to the lab with you. If you understand what you will be doing before beginning, it will be much easier to take relevant notes during the lab and to see what you will need to include in the report afterwards.
- ***Take good lab notes***. When conducting the lab, it is important to write down all the results that will be needed for the report as well as all observations, any materials and equipment used, and anything out of the ordinary that may have happened.
- ***Write about what really happened*** in the experiment, not what "should" have happened. Instead, try to explain what might have gone wrong and suggest ways the experiment might be improved in the future.

Format

Teachers often give their students basic guidelines for format when they assign a formal report and may not include all these sections. Usually, laboratory reports are not double spaced. Use bold-face subheadings for each of the sections described below.

Title Page

- Title of the experiment *Ex: Isolation of Caffeine from Tea Leaves*
- Names of lab partners
- Date(s) on which the experiment was conducted

Purpose (NOTE, in senior years replaced by abstract)

One sentence explaining why you conducted this experiment in the first place.
Ex: The purpose of the experiment was to determine the percentage by mass of acetic acid in vinegar using acid/base titration

*Adapted from Writing a Formal Lab Report, Germanna Community College

Introduction

This includes background and theory pertaining to the experiment. This can include information from previous research, explanations of theories, methods or equations used.

In addition to the purpose and background information, you may also include:

- A hypothesis: what is expected to happen in the experiment.
- Safety information. The best resources for this safety information are Material Safety Data Sheets (MSDS).

Materials and Methods

This is usually a simple listing of the equipment used in the form of a bulleted list, but it should be complete and accurate. Graphics of more complex setups may also be included if they would be helpful.

Experimental Procedure

This section includes the process of the experiment exactly as it was done in the laboratory. It maybe written out step- by-step in the form of a numbered list. There should not be any results (things that happened when the procedure was being carried out) included in this section; only include the procedures carried out.

Results

This section contains all the results of the experiment, including:

- Raw data (weights, temperatures, etc.) organized into graphs or tables. Each graph, table, or figure should be labeled and titled properly.
- Important results in verbal form.
- Calculations. Usually, only a sample of each calculation is needed.

Discussion

The discussion section is the most important part of the report. This is the section where the results are explained, and a student can show the instructor that he or she has a thorough understanding of the concept of the experiment and the results obtained. The main question to be addressed in this section is “What is the significance of the results?”

Here are some strategies to help focus your discussion:

- Compare expected results with actual results.
- Analyze experimental error.
- Explain how the methods could be improved.

Conclusion

This section includes only one or two sentences that summarize results.

References/Appendices

If required, use APA format.

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