

## Writing a Laboratory Report: Format Instructions

Laboratory reports should include the following sections:

**Title**  
**Abstract**  
**Introduction, Background, and Objectives**  
**Procedures**  
**Results**  
**Conclusions**  
**References**

Include section headings in the report.  
(The title does not need a heading.)

**Title:** A statement of **exactly** what was tested during your experiment.

In biology experiments, when an organism is involved, the scientific name of the organism must be included in the title. Scientific names are written in italics, with the genus capitalized and the species not capitalized. Human beings are written *Homo sapiens*.

**Abstract:** An abstract is a short paragraph that summarizes your experiment.

The reader should be able to understand the nature of your work by reading just the abstract. The abstract usually includes

- what was studied,
- a brief overview of how data was gathered,
- and summary of results.

The abstract is an expansion of your title, with an overview how data were gathered. The abstract concludes with a brief statement of the results, or the trends observed in the results.

### **Introduction, Background, and Objectives:**

This section is perhaps the most important section of your lab report, "outside" your experiment portion. In order to give meaning to the topic being researched, background information is necessary. Often, the reader needs this information in order to understand fully both the significance of the experiment as well as the importance of certain procedures and the usefulness of certain materials. If the reader will ask, "*Why is this procedure being performed?*" or "*What is the purpose of this material?*", "*How will this device collect and provide meaningful data?*", then you must inform the reader here. If a living organism is involved in the experiment, begin with descriptive background on this organism.

Many times, presentation of background information will involve some research. Define any content-specific terms to ensure comprehension of ideas, procedures, and results. Occasionally it is difficult to determine which terms require a definition or a description, and which do not because they fall into the realm of "common knowledge." If you are not sure whether to include a description in your introduction, it is best to define.

All chemicals and equipment that play important roles in your experiment should be described. These materials allow the reader to understand how you perceived the data gathered in your *Results* section.

Finally, if you made a hypothesis, state your prediction in this section, justifying your logic. Make clear the nature of the results you hope to obtain - *qualitative* or *quantitative* data.

Remember to accurately **cite any references utilized** during the research discussed during this section.

## Procedures:

Using the **past tense and the passive voice** in this section, clearly describe the steps that were followed and the methods that were used to observe your results. By listing your procedures, you will include all the materials involved in the experiment. *A separate materials list is **not** necessary.*

The reader should be able to duplicate your experiment by reading this section of your lab report! If it is not common knowledge how to use any scientific equipment involved in your work, concisely inform the reader during your prior *Introduction, Background, and Objectives* section. Too many descriptive directions can be confusing when attempting to carry out exact procedures.

### Why do we write procedures in lab reports in passive voice?

(From the Chemistry Department of Purdue University)

It's part of the scientific point of view. We observe and record as objectively as possible, avoiding personal bias by removing ourselves. Using the passive voice also clarifies procedures and descriptions so they can be easily reproduced and compared.

**NOTE:** DO NOT write reports as directions, such as those given in your lab manual. For example, do not write, "Heat the solution until it boils." Instead, write "The solution was heated to boiling."

<http://guides.lib.purdue.edu/c.php?g=352816&p=2377936>

## Results:

In paragraph form, summarize the results of your experiment. The information in this section should include the quantitative or qualitative results of the observations you mentioned in your procedures. Specific numbers need only be included in the paragraph when illustrating any meaningful trends that you observed in the data.

Preceding all data, references to these tables and graphs must appear. For example, "*Refer to Table 1,*" or "*Refer to Graph 2.*"

Qualitative data demand a data table, whereas quantitative data demand both a data table as well as a graph. These can have the same title listed above, since they describe the same data.

Below or next to each table and graph, include a one-sentence explanation of the information contained therein. This explanation is essentially an expansion of the title of the table or graph, ensuring that the reader can interpret these results (and perhaps their significance.)

## Conclusions:

Succinctly state the conclusions you can make based on the data presented in your results. Conclusions should discuss **why** you obtained your results and / or what relevant information can be gained from your results.

Your *Results* section should obviously support your conclusions; **make clear how specific data or specific data trends observed in the Results support your conclusion(s).** These conclusions should also relate to both the hypothesis (if you made one) and the objectives, which were mentioned in your introduction.