

Hints for Scientific Paper Writing

Use scientific language and quantitative comparisons

This is probably the most important point. Avoid wishy-washy and ambiguous terms when describing your experiment and data, e.g., say “We waited 5 minutes” instead of “We waited a while”, or “The voltage rose to 5V, an increase of 25%...” instead of “The voltage rose a bit...”. Read a scientific paper or two to get an idea regarding the type of language used.

Be Authoritative

You are contributing to the scientific knowledge base and are the authority on your experiment. Be confident in what you write, yet remain honest in your assessments and discussions. *B.S. stands out like a sore thumb*. If your data are inconclusive, acknowledge that fact and put extra time into discussing how you might improve the experiment, what went wrong, etc.

Use Informative Captions Under Your Figures

Figures should be able to stand alone (without the rest of your paper) and describe your results. Many times a reader will not read your paper but just scan the figures and tables. Use the caption area to elaborate on trends in the data (quantitatively), Explicitly label different data sets, comment on how good your fits are to the data, etc. This is not simply a place to rewrite the title of the figure.

Think Like a Reader

Imagine that you are some other scientist who wants to reproduce the results of this paper. Are the procedures clear (again, are there explicit or wishy-washy instructions)? Do the results make sense? What issues are discussed and how can they be avoided in the future? What are possible avenues for future research?

Be Concise

There is no length requirement. Take the space you need to adequately describe your experiment and results; padding and fluff never help. Don't repeat yourself from one line to the next.

Cite Work That is Not Your Own

Rule of thumb: cite material that is not “common knowledge”. If you are unsure, cite it (or paraphrase). Otherwise you are essentially telling your readers that you deserve all the credit for every idea mentioned in your paper – this might be dishonest.

Look up the book, “The Craft of Scientific Writing”. This is a good resource and will be useful.

Generic Writing Scientific Paper outline

Title

Author list and affiliations

Abstract

I Introduction

Objective, theory/background

Topic Statement

Review of Existing Information

Application of Information to Specific Experiment

Summary of Experimental Intention

Statement of Experimental Purpose

II Methods/Procedures

Apparatus figures and diagrams

Outline of Procedure

Specific Measurement Details

Precautions

Apparatus Diagrams

III Results

Key tables and graphs

Measured Values

Description of Measurement Uncertainties

Computation of Final Answer

Graphs

IV Discussion

Comparison of experimental results and prediction, what went wrong, and how to improve

Comparison Between Model and System

Consequences of Discrepancies Between Model and System

Speculation Concerning Discrepancies Between System and Model

V References

Numbered in order of appearance in text and cited in the text by superscript number