

Some Advice...

William Zinsser, author of On Writing Well, had these suggestions for effective science writing:

- **Write like a person, not like a scientist:** use a linear style, avoid technical jargon, and relate esoteric processes to something any reader can visualize.
- **Nothing should be 'just implied':** fact and deduction rule.
- **Don't assume your audience:** Aim for an educated reader who is not an expert. Don't assume the reader knows everything you know, but don't assume he is completely uneducated, either.
- **"Take the reader through the same sequence of ideas** and deductions that made the process clear to you", William Zinsser recommends (150).
- **Start with one narrow fact:** Imagine science writing as an upside-down pyramid. Start with one fact the reader must know before he can learn anymore, then use the next statement to broaden the first, etc (150).
- **When technical words are necessary,** they should always be explained or can be quickly looked up
- **Keep it concise:** avoid wordiness and slang and use shorter sentences to make your point as clear as possible.

Gopen and Swan:

- **Students have a tendency of separating the subject from the verb; for purposes of clarity, these should be as close as possible**
- **Know the audience: this will dictate how well terms must be defined or concepts explained**

Works Consulted

- Zinsser, William. On Writing Well. New York: Collins, 2001.
- Gopen, George D. and Judith Swan. "The Science of Scientific Writing" *American Scientist*. 78, 1990.
- Pechenik, Jan A. A Short Guide to Writing about Biology. New York: Pearson, 2004.

Writing in Biology



Updated 2007

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A Brief Guide to
Scientific Writing

Lab Reports: Common Elements

Lab reports generally consist of 9 sections that may not always be labeled. Each professor has their own preferences, so the student should always consult their professor regarding the format of the assignment.

1. Title: the name of the lab or one-sentence summary of the paper

2. Abstract: a brief summary of the entire paper. It usually includes objectives, how the study was conducted, what the results were, and what the significance is

3. Introduction: refers to past studies and explains what the paper or lab hopes to do

4. Methods: a summary of the experiment, how it was conducted. "I" or "we" is often used in this section

5. Results: what happened in the experiment. Statistics, tables, and diagrams may be included and discussed in the section

6. Discussion: the writer's interpretation of the results and any subjective speculation as to why certain things did or did not occur are discussed

7. Conclusion: the writer restates the results and suggests avenues for further research

8. Acknowledgements: special thanks to research assistants or for grants, uncommon at the undergraduate level

9. Works Cited: be sure to cite every source consulted in APA format

NOTE: many students confuse sections 5, 6, and 7. It is important to be able to help them understand the distinctions.

Information on Using Statistics

-used to analyze data from experiments, but can be risky to rely heavily on conclusions drawn from these numbers

-Null Hypothesis (H_0): proposition to be tested; usually assumes no change takes place in an experiment
(eg "There is no relationship between sunlight and plant growth.")

-Alternative Hypothesis (H or H_1): opposite of null hypothesis
(eg "There is a relationship between sunlight and plant growth.")

-Hypotheses can never be proved, but it can either be supported or disproved
(eg "We reject the null hypothesis" or "We fail to reject the null hypothesis")

Quick Tips

- Acronyms are common and acceptable.
- Chemicals are not proper nouns: don't capitalize them!
- Put a zero in front of naked decimals, e.g. .78 → 0.78
- Use the metric system.
- Do not use footnotes.
- Italicize scientific names.
- Reserve the word significance for instances when referring to statistical data, e.g. significant at the 0.05 level.
- Though past tense is traditionally used in scientific papers, the trend recently has been towards allowing the use of the present tense, as it is clearer and more precise.
- Avoid quotes: paraphrase with citations instead.
- Don't worry too much about using a word too often, as there may only be one clear way to describe something.
- Avoid double parentheses (one is ok) (but not next to another)
- ***If you are ever unclear on ANY expectations, ASK THE PROFESSOR.***