

Some notes on writing a good project report:

1. **EDIT.** Never turn in a first draft. **ALWAYS** edit your project report. The best way to improve your writing is to examine your work critically and rewrite. This means more than simply running your report through a spell checker and/or grammar checker, although you should definitely do both of these. Remember, though – spell checkers don't catch everything, and grammar checkers often catch too much.
2. **EDIT AGAIN.** Never turn in a second draft. See above.
3. **BE CONCISE.** Avoid unnecessary words and phrases, even entire sentences. If you can look at a word or phrase or sentence and say, "If I leave this out, the meaning is not changed and the clarity of the report does not suffer," then omit the word or phrase. Also, avoid unnecessary repetition. (Some repetition is good; see 20 below.) "Tight" writing is the clearest sign (to me, at least) that you have edited your work in a thoughtful manner.
4. **ORGANIZE** what you have to say. Often a good organization will not only increase the readability of the report, but it will shorten the report as well.
5. **KNOW YOUR AUDIENCE.** Take time to reflect on what you can and cannot reasonably expect your audience to know. Define terms that are potentially unknown or ambiguous. Consider what you want to accomplish for the people who will be reading the report. Are they technically savvy? Do they want to know about the nitty-ditty details of how you accomplished your work, or are they just interested in the end results?
6. When you use figures and/or tables, label each (e.g., "Figure 1"; "Table 3"). Refer to the figure or table by its label. You can abbreviate "Figure 1" as "Fig. 1". "Table" is never abbreviated; I suppose it's already too short.
7. Figures and tables should have short, direct captions that describe **BRIEFLY** what the figure or table is about and gives any information about interpreting the figure or table that is not included in the figure or table itself. Do not rely on the text in the section in which you reference the figure or table to give the reader all of the context for it.
8. Equations look best if you use an equation editor of some sort. MS Word has one built in. If you use LaTeX, it offers elegant typesetting for equations.
9. Equations can be either in-line (e.g., "Today I discovered that $e = mc^2$ is wrong.") or blocked off on a separate line (called *displayed equations*).

"Today I discovered that

$$e = mc^2$$

is wrong.”

Often, displayed equations are numbered in the right margin.

“Today I discovered that

$$e = mc^2 \tag{3}$$

is wrong.”

The equation is referred to in the text as “Eq. 3”. The norm is to use “Eq.”, not “Equation”. Don’t number an equation that is not directly referenced elsewhere in the report.

10. Do not use informal language. You can be too rigorous with this rule, but more often than not, the tendency is to go too far the other way. Slang is right out. Contractions are generally regarded as informal.
11. Don’t “editorialize.” Words like “unfortunately,” “obviously,” and “luckily” are unnecessary.
12. Splitting infinitives is sometimes necessary to avoid awkward-sounding sentences. Otherwise, don’t do it.
13. Dangling participles are NEVER necessary, and should be avoided like the plague.
14. Make pronouns agree with antecedents. Make sure that the antecedent of each pronoun is clear.
15. Avoid passive tense as much as possible. This sounds easy, but wait until you try to do it.
16. Never use “I”. Use “We” instead, or, better yet, find some way to reword what you want to say that avoids personal pronouns altogether. It may be that a passive tense verb will be necessary. Use your judgement.
17. Get a second opinion. Have your roommate, a friend, a lab partner, or someone from the **Cain Project** critique your report. Listen to what they say.
18. Get a book that answers questions about grammar, word usage, etc., and USE it. One of the classic books in this area is a little paperback titled *The Elements of Style* by William Strunk, Jr., and E.B. White (yes, the same E.B. White who wrote *Stuart Little* and *Charlotte’s Web*). I particularly recommend Section II: “Elementary Principles of Composition.” You might want to supplement this with a book on technical writing, but just following the guidelines in Strunk and White will take you

a long way towards good writing of any kind. A much more recent book on punctuation that is entertaining as well as informative is *Eats, Shoots, and Leaves* by Lynn Truss (“A panda walks into a café. He orders a sandwich ...”)

19. To me, writing is not a linear process. I will sometimes start in the middle. Since I know I am going to edit the entire document anyway (see 1 and 2), this works for me. You may want to approach it differently.

20. A report should have structure (see 4). One common way of organizing a report is in three parts. Informally (this isn't a report, and I can get away with being informal – note all of the contractions), the overall structure is:

- Tell'em what you're going to tell'em.
- Tell'em.
- Tell'em what you told'em.

This means the following.

Tell'em what you're going to tell'em. - The report starts with a summary of the key ideas and results that you want the reader to get from the paper. The idea is to give a clear idea of what the paper has to offer, and hopefully to persuade someone that the rest of the paper is worth their effort. (By the way, you may have noticed that I just violated 14. English does not provide us with a gender-neutral pronoun for people. One can always say “him or her” but that gets tiresome quickly, and you're left with the question of why you didn't use “her or him.” Alternating pronoun gender – using “her,” then “him,” then “her,” etc. – has some merit, I think, but can be distracting to the reader, which typically isn't a good idea. Using “their” as a gender-neutral singular pronoun is just plain wrong, but may be an acceptable compromise, especially in speaking. Try to be creative in avoiding the need for any of these.)

Tell'em. – Present the complete set of ideas, definitions, previous work, results, and interpretations/conclusions. Use graphs, tables, and figures as appropriate.

Tell'em what you told'em. – This is again a summary of the key ideas and results, but isn't simply a rewrite of the first part. The emphasis here is much more on the results and what they mean. In a research paper, it's also an opportunity for you to say something about ongoing work, or possible follow-up directions. You're not trying to interest someone in the rest of the report; you're trying to highlight the important points that you want to leave with the reader.