Taming the Chemical Beast: Writing a Chemistry Lab Report

No. 24 in the Writing Center Handout Series

As a science major, or even as a humanities major fulfilling your science requirement, you will probably spend more time writing up lab reports than you care to think about. While lab reports are more technical than lyrical, the basic grammar rules of an English essay still apply. Remember that the details of the write-up will vary among lab proctors.

Part I: The Abstract

The abstract is a short, succinct statement of your purpose. In other words, *why* are you performing the experiment? Your purpose should reflect an academic or research-based mentality, rather than your personal feelings on the experiment: "The amount of Fe in an iron-supplement tablet was determined through the use of a Beer's Law plot and spectrophotometry in order to compare this value with the manufacturer's claim."

Part II: The Procedure

The procedure is a list of the steps you took in performing the experiment. The procedure should be written in the left column of your manual, with the corresponding data in the right column. As in the abstract, you will use passive voice (as opposed to active, or command form) in describing your procedure: "A 1.0 molar solution of NaOH *was prepared*", not "Prepare a 1.0 molar solution." This section should take the least mental energy, since the steps are generally listed in your lab text, but make sure to make note in your lab manual of any deviations you make from the text.

Part III: The Data

The data are the exact temperatures, weights, colors, times, volumes, etc. that you can directly observe: "The p-aminobenzoic acid weighed 1.20 grams," or "Bubbles formed upon the surface of the metal when it was placed in the solution." If you must add, subtract, multiply or divide your numbers, such as with determining density, then save it for the calculations part of your arguments/results section

Part IV: The Arguments/Results

The results is the section in which you present all logical or mathematical arguments upon which you will base your conclusions. Harness those creative abilities too--charts and tables are integral to this section. Arrange your data in tables or graphs with descriptive titles, clear labels, and explanatory legends. Units are essential and can make a tremendous difference in the meaning of your results. It is also helpful to include the structures of your starting materials and products, as well as to illustrate the reactions that have taken place. ChemDraw® is an excellent program for drawing structures and pasting drawings in from the Microsoft Paint® program works well too. For an organic lab write-up, you'll also want to include a brief statement presenting the purpose for performing the experiment and to describe the methods you used to reach your results in a few sentences. When describing your methods, you should try to incorporate the scientific language of the lab manual and textbook (e.g. "pipetted" v. "transferred with a pipette").

- see the other side of this handout for the last two sections of a chemistry lab report -

For more information on this topic, see:

A Short Guide to Writing About Science by David Porush
The Craft of Scientific Writing by Michael Alley
Your lab instructor's suggestions and guidelines

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Part V: The Conclusion

The conclusion is essentially the analysis of the data. The most important function of the conclusion is to relate your results to the purpose stated in the results section. In describing the significance of the data values, you should explain what methods were used. However, since the procedure already describes what was done in detail, it is not necessary to repeat the specifics of every step. First person pronouns (I, we) are permissible here, but don't overuse them. Make sure to include an explanation for any changes you needed to make in your procedure, or changes that could have been made to improve the outcome. As most experiments are not faultless, you should include sources of error. Again, these should be scientific speculations (e.g. "The percent yield was low because the reaction is reversible, and so not all of the reactants went to product"), so resist the temptation to cite human error.

Part VI: Significance

The significance should try to relate the lab experiment to issues not directly related to the experiment. In other words, of what use is your infonnation to the world? When writing up an organic lab, this section should be covered in the conclusion. After being analytical throughout the other parts of the lab, this is your time to think outside the box–be creative!

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