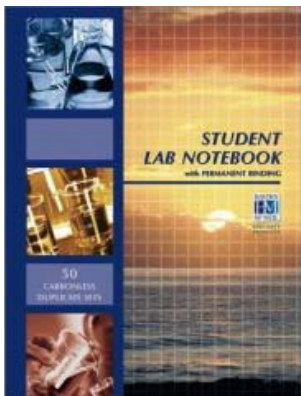


Writing a Laboratory into a Data Book



When you do an experiment you will be recording your data in a record book. This will allow you to keep detailed records of all your work and serve as a reference for more extensive reports in the future. The rule is; don't commit a single thing to memory. Write it all down! **You must actually record what you are doing as you do it.** Don't write on scrap paper or a binder, you need to write directly in the lab data book. The type of lab book for class laboratory exercises should have a copy page that will be turned in. **It must be clearly legible.**

Format Should Include: There should be a heading on each section on a separate line and underlined as follows:

Summary or Introduction:

A brief summary of what the laboratory exercise involves. Be concise, and clear. You should be able to fully understand the motivation behind the exercise. Give enough **background** information to help understand the subject and **purpose**. The purpose for undertaking the exercise should also be stated very clearly. If there is a research question that will be explored, state the question completely, clearly and with the proper variables identified. A sentence or two **summarizing** the experiments conducted should also be included.

Hypotheses:

Develop a series of hypotheses about the exercises you will be completing. They should be in the "hypothetico-deductive" format. These hypotheses should be written before you carry out the work. They should guide what you do and should have clear independent and dependent variables.

Example: **If** quantity of enzyme is related to rate of reaction, **then** as more enzyme is added to a reaction the faster the rate of reaction.

- In the above example, the quantity is the independent variable and the rate of reaction is the dependent variable.

Procedures:

The step-by-step procedures used during the laboratory exercise. You can use the hand out as a guide or use a summarized set of procedures. You should also have a diagram of any setup etc... used in the laboratory. The procedures should be **numbered in a list** and should be easy to follow. Remember; don't say to do something without giving specific detail. What, how much, how long, what magnification, name of slide, etc... all are important information to include. If you did not come up with your own procedures, make sure to site them in the reference section. Make sure after writing them, you could conduct experiment

just as you did after reading them. Include quantities, measurements, and models of machines etc...

Data/Results:

You need to record all findings into your data book in an organized and systematic way. All data should be in a table and graphed when possible. A detailed **written summary** is also expected. Clear observations of what happened should be clearly listed. If diagrams are drawn, detailed labels and size must be included. A written summary of what was observed would also be expected. **All tables and figures should be numbered with a brief caption.** They should be able to be stand-alone. **Graphs and diagrams should be labeled as figures** that are numbered **with captions** as well. They should stand alone as well. **Tables and Figures should be referred to by number** in your results and also in your conclusion if necessary when you are making a point.

Conclusions/Discussions:

This should **explain your findings** and give possible reasons for the observations. The conclusion should relate to the purpose and be based on observable, reproducible findings (give evidence for your conclusions). The conclusion/discussion should explore the data with detail and have as much analysis as possible. Any **weaknesses or inconsistencies in procedures** should be explained in this section. These weaknesses and inconsistencies should be explored and suggestions to correct (**further experiments**) them given. Remember, you should not use the words prove or disprove... a better choice of words are support or refute. Your data is only going lead you to conclusions are you should always look for how confident you are in them and do they support or refute your hypotheses and or research question.

References/ Bibliography:

At the end of each laboratory exercise you should take time to note all references used to help complete the experiment or exercise in **proper bibliographic format**. Make sure to include lab partners (and what they did) and any material used before, during and after the experiment. It is important to include citations from resources trying to look at the literature regarding the topic and subject being explored.

Examples:

Brown, Kirk *Crazy Caffeine, How much is In Our Drinks? Handout*. Sept. 10, 2003.

Jones, Robert *Protozoan in the Modern World*. Benjamin Cummings 1989

Stevenson, Jamie *Laboratory Partner; Help with conducting experiment*; Sept. 10, 2003.

Graphic for Caffeine Molecule <http://www.accessexcellence.org> accessed Sept 10, 2002

Signing each Page:

Each page should be signed by you and witnessed by another (signed) and dated. This should be done as you do the lab.

Mistakes:

Any mistakes you make should have a ~~single line~~ through the mistake. You should be able to read what was there before. Don't remove any pages from your lab data book. Any large blank pages should have an "X" through them.

Plagiarism:

Just to remind you, it is Plagiarism if you read someone else's lab report before completing your own. These are not team activities. You should write your report with no help from any other student. If you need any assistance, you should speak to me.