SCIENCE WRITING

Scientific Lab Report Writing 101

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Note: While this handout reviews the general components of a lab report, it is always a good idea to also check against your rubric or professor.

1. **Abstract**
   Your abstract should include, in no more than 300 words a summary of the following: research question, methods used in your experiment, major findings, and the significance of your research results. In different disciplines, the conventions for writing an abstract may be different, but it should speak to scholars in the specific field you are working in AND allow someone who may not be in the field to understand (briefly) what your research is about.

2. **Introduction + Literature Review**
   Based on the theoretical background or previous experiments, you should write an introduction that summarises how your research problem and question arose. Define keyterms in your research and clearly state your research question. After explaining why your research question is important, you should also use this section as a link to why you will employ the methods that you use based on work done by previous scholars.

3. **Methodology/Experimental Techniques**
   Referring back to your lab notebook, clean up and clearly present your experimental set-up and step-by-step execution of the experiment. Include any pilot studies and modifications to your methodology that may have been important along the way. If necessary, you may wish to include photographs and diagrams of your experimental set-up and flow of action. Where necessary, footnote or reference works of scholars which may substantiate or provide alternatives to what you are doing. Depending on the requirements of your assignment and research, you may also present the methods used to analyse or process raw data that is obtained (especially if some data is transformed or mathematically-processed before data can be made sense of).

4. **Results and Analysis**
   Your results and analysis section should present clearly, in the most suitable format, the data or results obtained from your experiment. These may take the forms of photographs (for e.g colour-change, physical transformation of things), quantitative or qualitative charts, tables, and graphs. You should provide any analysis of your results in relation to your research question such that you draw closer to answering that question or explaining caveats to your data. If you are using additional formulas to manipulate your data for further analysis, it can also go into this section. Signpost potential downfalls for errors that may have emerged in your results, which are then picked up on in the discussion and evaluation segment.

5. **Discussion and Evaluation**
   Use this section to elaborate on the results and methods section as to why they may be improved, and how your entire experimental process has led you to new conclusions or information. In a lab report, you will first and foremost report the errors and areas for improvement in your experimental execution in relation to the results you obtained. If your results prove to be significant, you may want to provide further insights to how the experimental techniques can be applied to other kinds of data or variables. If your results are not significant, you may want to provide potential explanations for that too. Afterwards, recommendations for improvements and further research may be included.

6. **Conclusion**
   Briefly summarise the takeaways from this paper. In closing, provide a keen reflection on the significance of the results and methods in this research that looks both backwards at the initial research question as well as outwards to other perspectives and future research.

7. **References**
   Find out about the standard citation and reference style for your discipline of research, and check against the assignment rubric. Oftentimes, experimental techniques and methodology get sequentially modified from previously published papers, and it is unclear how many papers you will need to cite for your methods. It might be good idea to discuss with a supervisor to decide how far this process of citation should go!