REFERENCE: Lab Report Format

Objective: The purpose of this activity is help you learn how to effectively and accurately communicate observations, procedures, and conclusions within a scientific context. (AP Academic Standards: Environmental Science, "Laboratory and Field Investigation)

In this class, you will regularly perform scientific investigations tat require lab reports. These investigations will range from short, once class exercises to much longer, in-depth activities covering many days and/or weeks worth of research. In any case, your lab reports should follow the format below:

APA Format

APA (American Psychological Association) format is the standard for scientific writing in both the collegiate and professional environments. It is an incredibly detailed way of writing, but here are some highlights that you should be sure to follow in all lab reports:

Title Page: The cover/title page should include the title, the author's name(s), and the school or organization.

- Running Header: The title of the paper should appear on the top of each page along with the page number (right justified.) On the first page it should appear as:

`Running head: TITLE OF YOUR PAPER  1`

On all other pages it should just appear as:

`TITLE OF YOUR PAPER  2`

Margins, Fonts, & Spacing: All pages should one-inch margins on the top, bottom, left and right. The appropriate fonts are Arial, Times New Roman, or `Courier`, and all text should be 12pt type. The paper should be double-spaced, but there should be no extra spaces between lines (no "quadruple" spacing.)

Sections: Sections in the paper should have a short heading that says what it is that section. The heading should be **bolded** and centered as shown above and below. Titles for sub-sections within a section should be **bolded** and left-justified. Sections do NOT start on a new page.

Introduction

The introduction of your lab report will always include the following information:

- Statement(s) of the specific questions and/or problems being investigated
- Background information on the concepts being explored (Observations)
- Your hypothesis(es) and/or predictions (if applicable), written as an "if…then…" statement.

Materials

This section should include a list of ALL materials you will be using in your research. Remember that this is to be complete enough so that another scientist would be able to replicate your research protocol using your list.

Methods/Procedures

This is either a numbered or bulleted list of step-by-step procedures you used to carry out your investigation. As with the materials list, your procedures should be concise and complete enough for another investigator to carry out your investigation in such a manner that your results could be replicated (that is of course if your results were valid in the first place!) In your procedures, you should clearly point out experimental control groups, independent (manipulated), dependent (responding), and constant (controlled) variables as they are applicable in your research.

Data/Results

In this section it is important to a concise and clear presentation of all data in an organized manner. Depending on the nature of your investigation, this section should refer to tables, graphs, sketches, and/or diagrams that you collected/produced as part of the investigation. All visuals should be placed in the appendices, and should be referred to in the text of this section (Example: "As shown in Appendix B, the dissolved oxygen…) The units of measurement should be clearly and accurately stated in both this section and in your visuals. You should also include how data was calculated.

Analysis

This sectional will be used to describe any trends your data presents. This is not an area for conclusions based on your data (that is the next section). The analysis is "just the facts ma'am." Describe any important observations using basic, scientific descriptive terms. It is very important to cite specific numerical data (if applicable) from your tables and graphs in this section. In this section, you should address whether or not your hypothesis was supported by the data. You should also address any errors or anomalies that appear in your work.

Conclusion

This section describes the work you did, conclusions you dram from the worn and what you learned from the lab. It also includes, in a descriptive way, the results obtained and how they specifically point to your conclusion. This section can also be used, once again, to address your predictions and hypothesis in relation to your data. You should also address areas of potential, future research and any questions that arose as a result of your research.

Works Cited

Your works cites page should start on a separate page and should contain a reference to all research, including those from which pictures, diagrams, and other visuals were used. The format of the bibliographic citations (the whole citation that appears on the works cited page) should follow the APA guidelines. You can use a site like http://www.citationmachine.net to generate properly formatted citations. Also, keep in mind that as you refer to the sources in your work, you should you in-text citations that refer to the works listed on your works cited page. (NOTE: Trust me. Citation Machine is a beast.)

Appendices

APA format does not allow for the placement of any graphical representations in the text. All graphs, tables, pictures, etc, should be placed in the appendices and given a title by letter (For example, Appendix A: Dissolved Oxygen Saturation by Date of NC Creek). Each entry into the appendices should be on its own page and you should refer to the appendices within the text of your paper so that the reader can turn to it as needed. All too often, students fail to include graphical representations of tabulated data. If your data would be better presented in graph form to more clearly and effectively show trends and relationships, be sure to graph your data.

Questions

Some labs will have questions asked as part of the activity. Responses to those questions would go here along with a transcript of the original question.

Please use the above format for all lab reports in AP Environmental Science. Do not deviate from this format unless specifically directed to by the instructor.