Written Report Project Outline

(This is the order in which your final report for CASEF will be arranged)
(The oral presentation for PJAS will contain similar information)

Title: Displays a title in the form of a question and relates directly to your project.

Abstract: A summary of the project that is written after the experiment and research paper are completed (approximately 250 words).

Table of Contents: Lists the parts of the research paper and the page numbers for each.

Problem: Poses the central question that the experiment will answer.

Background Information: "Educates" the reader so he or she can understand the concepts and data the experiment shows.

Hypothesis: Tells what you think the answer to the problem might be. This answer should be based on the information gathered during the research for the project. You will also describe the variables in your project, how to control them, and what your control group will be.

Materials: This is a list of everything that is needed in order to complete the experiment.

Procedure: Shows a series of numbered, step-by-step instructions that need to be followed in order to complete the experiment. It will also identify the variables and the experimental and control groups found in the experiment. (The procedure should be written clearly enough so that anyone could read it and reproduce your results.)

Results: (i.e. Observation & Data) Usually contains the largest section of the paper. Displays a neat and well organized record of all observations and measurement using journal, data table, and graphic formats.

Conclusion: Answers the question posed in the problem statement and tells if the hypothesis is accepted or rejected.

Analysis: Explains the reasons why the results turned out the way they did. Describes possible errors in the experiment and how they may have affected the results. Addresses the level of uncertainty within the results.

Recommendations: Describes refinements and additions that may improve the experiment and describes follow-up experiments that may compliment the results obtained in the first experiment.

Bibliography: Cites at least 3 sources that were used in the research for your project.

Acknowledgments: Identifies people who have assisted you in the completion of your project.

Title

(centered on page as shown)

1) Should be in the form of a question.
2) Should correspond with the project.

Abstract

(Complete at the end of the project!)

This goes directly after the Title page and serves as a short review of your entire project. Write in complete sentences. The abstract should be about one paragraph in length with a maximum of 250 words.

1) What did you try to find out?

2) What did you expect to happen?

3) How did you test the problem?

4) What happened?

5) Why do you think it turned out this way?

6) What did your sources (background information) tell you that may be relevant?

7) What are possible applications or extensions of this project?

Table of Contents

(Complete at the end of the project!)

Problem

1) **What** are you trying to find out?

2) **How** will you test the problem and what will you observe?

3) **Why** did you choose this project instead of something else?

4) **How** could the results be helpful or useful to other people?

Background Information

1) The purpose of the background information is to "educate" your reader about the topic you will be investigating so that he or she will have good foundation of knowledge to understand the project. Present your information as if the reader has no previous knowledge of your topic. **Always properly cite your sources when you share specific bits of information**!

Hypothesis

1) **What** exactly do you expect to happen?

2) **Why** do you expect it to happen in this way?
(Relate your expectations to outside reading that you have done)

3) **What** things, if **not** held constant, will make a difference in the way the experiment turns out (ex. Temperature, amount of light)? Label these as your **variables**.

4) **How** are you going to make sure that these potential variables are held constant?

5) **What** is your **control**? ("standard for comparison")
Describe the difference between the experimental group(s) and control group(s).

Materials

1) **Exactly** what materials are you going to need? How much? What size? (**List them**!….. Do not write them in paragraph format.)

Procedure

1) Write **step-by-step** instructions that are specific and clear enough so that someone else could follow them and obtain the same results. **Number each step!**

Results
(Observations)

1) What did you observe while carrying out your investigation that might be relevant to why it turned out the way it did? **Be very specific**!

* If Data Tables alone will report your findings, this narrative section may be omitted. **Check with one of us before you do this**!

Data Table(s)

1) Put you data into data tables. You do not have to wait until you have data to construct your data tables. Prepare them beforehand! Make as many data tables as you feel are necessary.
   Be sure to:
   Label your lists.
   Use **metric units** if you have measurements.
   Put **titles** on your data table and columns.
   Calculate averages whenever possible.

2) Make a data table showing **overall** results.

Graph(s)

1) Choose the appropriate kind of graph(s) to display your data and use a computer to generate your graphs(s). Be sure that each axis has a label and units. Title each graph appropriately.

Conclusion

1) What Happened?

2) What changes or differences did you find between the experimental group(s) and the control group(s)?

3) How much difference was there? Is this a significant difference?

4) Did you accept or reject your hypothesis? Why?

Analysis

Use the information you gathered during your background research readings to help you answer these questions:

1) **Why** do you think it turned out the way it did? How sure are you?

2) **What** errors may have affected your results?

3) Do you think these errors were significant to your results? Explain.

Recommendations

1) How could this project be improved if you were to do it over again? How could you have been more accurate?

2) What could you test next about the same subject that would be an extension of your project?

Bibliography

1) A **minimum of three** consulted references should appear in your final bibliography. Be sure to cite your references using proper citation formats.

Acknowledgments

1) Thank **all** the people who assisted you in any way in the completion of your project!