

Internal Assessment

Introduction

Background — Provide the setting for your project. Explain the underlying physics behind your research. At the end of your background, the reader is not surprised by your research question. Start with broader concepts, and work your way to concepts and citations more closely related to your research question. Include sources used.

Statement of your question/Variables — State your research question. Your dependent and independent variables will appear in a proper research question. List your dependent, independent and controlled variables explicitly. You may also state a hypothesis.

Method

Materials — A listing of all materials or simulations used should be included here. List specifically which equipment you used.

Diagram of lab setup — Annotated to illustrate how the variables were specifically involved in the procedure. Diagrams are generally clearer than pictures.

Procedure — The procedure should be paragraph form. A peer should be easily able to complete your procedure from this section. Include a rationale for how you selected your variations and the number of trials. The data collected must be shown to be adequate so as to allow some sort of analysis involving statistics and/or graphing. There should be included an adequate data range (10-20 variations) and an adequate number of trials (3-5). Specifically state how each controlled variable is maintained unchanged throughout the procedure.

Results

Raw data — This is a table representation of the data collected while carrying out the procedure. The title of the table includes the independent and dependent variable. The independent variable is generally listed in the left-hand column, the dependent in the right. Units are clearly stated. The uncertainty of measurements is stated, usually in a column heading. The same level of precision (number of decimal places) is used for all recorded values. Do not split a data table between pages. If absolutely necessary, due to large volumes of data, include title and complete column headings on the second page.

Data processing — This section is a brief explanation of the manner you have chosen to process your raw data. Justification should be given as to how the processing will allow the hypothesis or research question to be adequately fulfilled. One example showing how you actually transfer one piece of raw data into processed data using the explanation in this section should be included. If your processing utilizes a graphical approach like linearization, explain how.

Processed data presentation — Tables again will be utilized here. Use the same guidelines for a proper table as mention above. If a graph is going to be used be certain it is properly done including title, axis labeling, units, etc. Error bars should be utilized on the graph if at all possible as they represent uncertainties and errors associated with the raw data. The final results should reflect the correct number of significant figures.

Conclusion

Evaluation — State a conclusion which is based on a logical interpretation of the data obtained in the procedure. This conclusion will either support or refute the hypothesis if you made one. Give justification for your conclusion using graphed data or specific processed data. Do not talk of “proof” in this section. Compare your results and conclusion to any known or accepted values from the scientific literature. This may help to establish validity of the results. Be certain to include a reference to any literature that is quoted.

Limitations — Comment on the weakness of the study and how the quality of the data may have been affected by these weaknesses. Discuss procedure problems. Mention the precision and accuracy of the measurements. Do error bars or statistical analysis indicate valid, reliable data?

Improvements could be made based on the weaknesses just discussed. Specifically mention modifications to the procedure which may produce more valid and reliable results. These modifications should be realistic and clearly stated.

Checklist for your IA

- ☐ A descriptive title

Intro

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