

Rubric for all parts of your Applied Discovery Project(SCIENCE FAIR)
Make a google slide for each section of your project.

A. Write the purpose and Title:

Write the purpose in the following format: *The purpose of this experiment is to determine _____*. If you do not know an exact purpose, write a general idea of what you want to look up.

YOU MAY DECIDE ON YOUR EXACT PURPOSE AFTER ALL RESEARCH IS DONE.

The purpose of the experiment tells *the reason for doing the experiment*.

1. The purpose tells the cause/effect relationship that is to be determined.
2. IT MUST BE MEASURABLE in numerical terms.
3. A brief history of background information leading up to the explanation of the problem to be solved may also be included.

Example: The purpose of this experiment is to determine which method of removing cattails will clear the most cattails so that they do not grow back; pulling the roots totally out of the lake's bottom, cutting them halfway from the bottom of the lake, or cutting them 5cm above the bottom of the lake.

B. Write the hypothesis:

The hypothesis is a testable statement which offers an *explanation* as to the expected outcome of the experiment based on research completed by the student.

1. Write the hypothesis in the form of an If/Then/Because statement to show cause/effect relationship. The hypothesis may be two sentences to add the 'because' in a grammatically correct manner.
2. If (the independent variable) is (specifically changed), then the (dependent variable) will (specifically change i.e. increase/decrease) as a result because (background research).
3. Write the hypothesis *AFTER RESEARCH* but *BEFORE EXPERIMENTATION*.

C. Type the list of materials:

Materials are a list of all items used or to CONDUCT the experiment.

1. Include *amounts (quantities)* and *measurements (sizes)*. Make sure to include enough materials to complete the total number of trials.
2. Use metric units.
3. Include ALL equipment used – except pen and paper unless it is part of the experiment.
4. List in a columnar format.

D. Write the procedure:

The procedure is a specific set of steps taken in order to do the experiment. Someone who does not know anything about the project should be able to read the procedure and duplicate the experiment without any questions.

1. Number all procedures and skip spaces in-between each step.
2. Use a NARRATIVE tone – no personal pronouns and PRESENT tense.
3. Match procedures to purpose.

4. Include a control (comparison) group (where appropriate).
5. *Change* only ONE variable – the independent or manipulated variable.
6. Use metric measurements.
7. Write down ALL steps including when and/or how to record the information gained from the experiment.
8. Write down amounts used in the steps.
9. Include as many trials as possible (at least 5). When using plants or humans the higher the number the better.
10. Instead of retyping steps for another trial use the term “repeat”.

E. Data:

Data is information collected during the experiment that includes observations that are both qualitative (descriptive) and quantitative (numerical).

1. The data in the log book should be handwritten in a chart format(data table). This is where the numbers being measured are FIRST recorded as the experiment is taking place. Written qualitative observations should also be included.
2. The data can then be placed into graphs or charts for comparison and analysis.
3. THE FINAL GRAPH(S) FOR PRESENTATION SHOULD ONLY INCLUDE AVERAGES OF DATA, NOT THE INDIVIDUAL DATA. (*The individual data will be in the chart in the log book.*)
4. All data tables and graphs must have the following:
 - a. A Title: descriptive, explains exactly what was tested and compared, using independent and dependent variables. (Do not use creative titles like “Colorful Candy” - this does not tell what was measured).
 - b. Variables – one for each axis: tells what was being measured (ex. Height of plants, pH of soil, amount of candy)
DRY MIX: Dependent or Responding variable on Y-axis, Manipulated or Independent variable on X-axis
 - c. Units: tells how the variables were measured (ex. Centimeters, pH, numbers)
 - d. Give a key for any abbreviations used.
5. Data recorded must be related to the purpose.

F. Write the Conclusion & Evaluation:

The conclusion is the evaluation of the results and a determination of whether or not the purpose was met and the hypothesis supported. It is based on the actual procedures. The conclusion describes the results of the experiment.

Conclusion

1. Restate purpose of lab. ‘The purpose of this experiment was to ... ‘
2. State results: “ The results of this experiment were ___” USE NUMBERS!!!!
3. Interpret results. ‘Based on these results, it can be concluded that ___ did/did not have an effect on ___. Specifically, _____” Answer the question that you initially asked. DEFEND your interpretation with the numbers.
4. Identify Sources of Error

The evaluation looks at the procedure and technique that the lab used and critically analyzes the procedure, not the results.

Evaluation –

- Evaluate weaknesses and limitations in your experimental procedure. ‘While the overall experiment was successful, one (or two or three) limitation of the design was ____.’”
- For each weakness listed, suggest changes for a future experiment that could correct this weakness. “To avoid having ____ problem, the procedure could be altered to ____”
- Suggest alternative avenues of research that are similar, but different. If when experimenting, you come up with more questions, this is where you write them.

G. Write the abstract: TBA.....Finalists Only

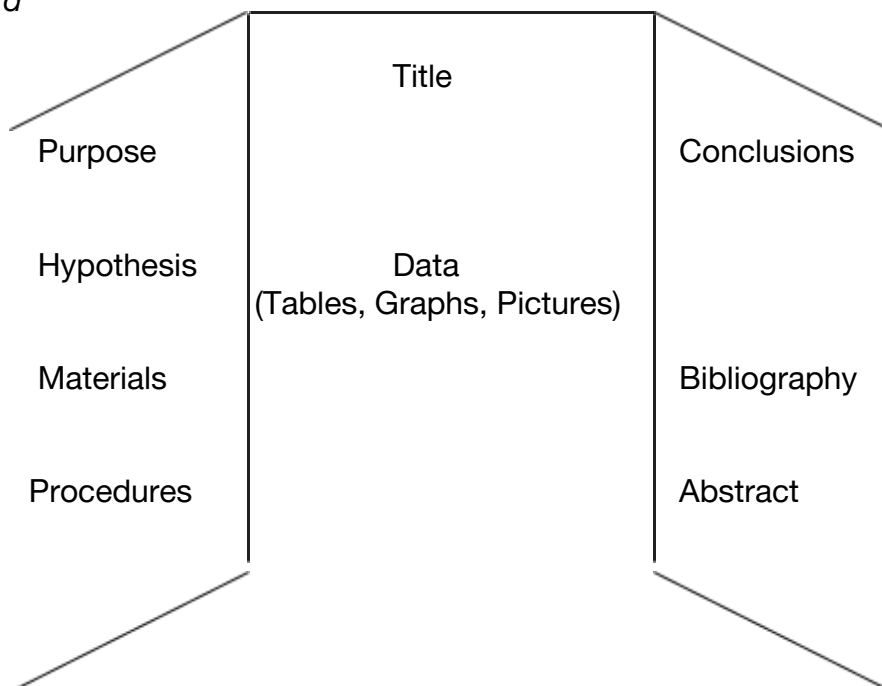
The abstract is a short summary of all parts of the project.

1. Official abstracts must be less than 250 words.
2. The abstract will be placed on an official form to be given later. *Exact format will be explained at that time. The form changes from year to year.*
3. The title is typed in all capitals, with the student’s name typed normal below the title. These are to be placed on the left side of the paper.
4. The first paragraph consists what the experiment tested, why, and how. The first sentence restates the purpose and the second sentence restates the hypothesis. A short one or two sentence summary of background research can be included. *Next, in no more than three sentences, explain the methods and procedures used in the experiment. These are summarized and not detailed like in the procedure section.*
5. The next two paragraphs consists of the results, conclusions, and evaluation.

H. Final Project:. ALL INFORMATION IS INCLUDED IN GOOGLE SLIDES (NOT LOGBOOK) FINALIST FOR SCIENCE FAIR WILL USE THE FOLLOWING INFORMATION.

1. Title – the title of the project should relate to the purpose.
2. All sections should be in order as listed in this manual.
3. The presentation should be neat.
4. The rubric attached to this booklet must be included. Double check yourself by using the rubric to determine if all parts have been included and adhered to.
5. Remember that the point of turning in each section early is so that the teacher can suggest corrections. ***BE SURE TO MAKE ALL THOSE CORRECTIONS BEFORE TURNING IN THE FINAL PROJECT. All pages will be tuned in through google classroom.***

Sample Board



Applied Discovery Project Scoring Rubric:

Applied Discovery Project Scoring Rubric				
	3	2	1	0
	Correctly Done	Present w/minor issues	Present w/major issues	Not Present
Topic/Purpose				
Hypothesis				
Materials				
Procedures				
Data Table				
Graph				
Logbook				
Abstract				
	Eye Catching, Neat, Professional	Neat, Professional	Okay quality, with room for improvement	Sloppy/Not Done
Display				
Conclusion/Evaluation Scored according to writing rubric				
			Conclusion Score:	/10
			Total Project Score:	/37

