

Middle Years Science Fair Outline

The Project: From Beginning to End

A successful science fair project will follow the suggested format below:

- 1. Finding a topic**
- 2. Researching the topic**
- 3. Developing a hypothesis**
- 4. Conducting the experiment**
- 5. Writing the report**
- 6. Constructing the exhibit**

1. Finding a topic:

This is probably the most difficult step for middle years students. Many ideas come from interesting problems encountered in everyday life. Ideas are also generated from schoolwork, a hobby, a club, or other activities. A good project may be original, or an extension of an existing problem. All projects should be useful and understandable.

An original project deals with a subject that has not been proven or seen before. A useful project solves a problem and adds to the collection of knowledge in the field of Science.

A project is understandable if it can be repeated in the future with similar results. Your question or problem should clearly outline the project.

2. Researching the topic:

To do a good project, the topic must be researched. Possible sources of information are libraries, teachers, T.V. shows, newspapers, the internet, and people who work in the area of Science in question. General information is available in encyclopedias. More specific information is more likely to be found in scientific journals and books. It is a good idea to use index cards to write down important information, keeping careful track of each source.

3. Developing a Hypothesis:

A science fair project should ask a question. This is your problem. Your hypothesis is an educated guess which attempts to answer the problem. Your study or experiment will test your hypothesis and will prove it correct or incorrect. Both are acceptable outcomes.

4. Conduct the experiment:

Using the Scientific Method, conduct your study or experiment to determine the accuracy of your hypothesis. All experiment and studies must include the following information:

- **Purpose:** Every experiment or study must have a stated purpose outlining what the scientist is attempting to prove. The purpose will include a *Problem* and a *Hypothesis*. The project title should reflect the purpose.
- **Materials:** This is an exact list of everything needed to conduct the experiment. Remember that your project needs to be replicable.
- **Procedure:** This is the method used to test the hypothesis. The procedure consists of step by step instruction of how to carry out your project. Your procedure should outline any variables (things which cause change in an experiment) and controls (things which are kept constant in an experiment).
- **Data/Observations:** Keep complete and accurate notes of your observations, both qualitative (sensed) and quantitative (measured). Record all the results or data, even the unexpected. Remember, there are never “wrong” results. The results or data can be organized in tables or in graphs. They should either provide support for or deny support for the hypothesis. Projects that “prove” the hypothesis wrong are totally acceptable.
- **Conclusion:** An analysis should be made on completion of the experiment which explains: a. how the hypothesis was arrived at; b. whether or not the hypothesis was supported by the results; c. sources of error; d. possible uses for the results discovered; e. ideas for future research.
- **Project Notebook:** As you work, keep a journal which describes your progress. A good notebook should be well organized and neat, but, since it is at your side As you work, it holds your rough work and will be hand written. All entries in your journal will be dated, and both successes and failures should be recorded.

5. Writing the report:

The report allows you to demonstrate your ability to write a concise summary of your project using a standard scientific style or reporting. It requires that you select only what is important and present it in the most compact way. the report should include the following:

- a title page with your name(s), grade, and school appearing in the top right corner
 - the project title should be centered on the title page
- a report summary should appear as the first page after the title page - this is a one paragraph summary of the entire project and nothing else should be written on this page
- each of the following sections:
 - a. Background, Problem, and Hypothesis (background is intended to explain why the project was done - keep it short)*
 - b. Procedure (including materials and methods used in the project)*
 - c. Results and Conclusions (a summary of results and an explanation of how it satisfies the purpose)*
 - d. Acknowledgments (recognition to all who provided significant assistance)*

The writing style of the report should be clear and concise with careful attention being paid to spelling, grammar, and mechanics. The report must be typed and printed on 8' X 11' paper. Furthermore, the report should be about 400 words in length, not including tables or graphs. No raw data should appear in the report - this should be recorded in the journal. Reports over 600 words will be penalized during marking. Reports must be displayed during the displaying and marking of the project.

6. Constructing the exhibit:

The exhibit should be visually attractive and exciting enough to attract the attention of visitors and judges. It is important that all parts be securely fastened. Written information should be large enough to be clear and should be typed in an easily read font.

Visual effects (charts, graphs, drawings, photographs, models, etc.) add a lot to a display.

Science Fair Evaluation

Since Science Fair will count for a large part of your Term II grade, it is important that you are made aware of the grading criteria and important dates in advance.

- 1. Outline (10%): topic, partner, background information, problem, and hypothesis**
- 2. Journal (20%)**
- 3. Report (20%)**
- 4. Exhibit (50%): visual display (20%), oral presentation(30%)**

Total 100%