

Regional Science and Engineering Fair Research File Format:

- A. **Research File.**
- B. **Logbook.**
- C. **Display Board.**

A) Research file should include the following:

Project Title: A project title must summarize the study and research carried out. It must be clear, simple and attractive. It should grab the attention of the reader. It should be visually effective and must create curiosity among the readers.

Table of Contents: This makes the reader know the sections and topics included in the paper. It is always recommended that the table of contents includes topics and its page numbers correctly. It is easy for both the readers and the students to make their study more comprehensive.

Abstract: It should be no longer than one page, containing a maximum of 250 words according to the Intel International Science and Engineering Fair (ISEF).

Introduction:

It is the section of the project that introduces the main topic and describes it. It has to state what knowledge led you to the hypothesis.

It must also include the way your research is being carried out and goals to be achieved. It is a statement of the purpose of the research with the background information that paved the way to the study. If there are citations provided, this section will have the maximum references. As it is written before the beginning of the project and collecting data, the heading section does not include the results.

Materials and Method (Or Procedure)

- It contains information about the experimentation carried out.
- This section enlists procedural steps, materials used, calculations, amounts and measurements.
- The methodology used to collect the data has to be described.
- If the experiment contains an apparatus or if you have designed it, a detailed diagram has to be shown with the labels.
- Same Step by step procedure has to be followed every time as the experiment is repeated to achieve consistent results.

Variable

- Independent Variable (only one) _
- Control Variable (must include at least four)

- Dependent Variable (what is measured)

Results:

The result part included data and analysis. The data has to be presented in the form of tables, graphs or charts. It's useful to graph experimental data. The independent variable goes on the x-axis and the dependent variable goes on the y-axis.

Discussion: The purpose of the discussion is to interpret and describe the significance of your findings in light of what was already known about the research problem being investigated and to explain any new understanding or insights that emerged as a result of your study of the problem. Develop your argument for and against your hypothesis. Explain whether the data you have obtained supports your hypothesis. Acknowledge any anomalous data or deviation from what you have expected. Explore the theoretical and/or practical implications of study or findings.

Conclusion: The Conclusions section sums up the key points of your discussion, the essential features of your project, or the significant outcomes of your experiment. Draw your conclusion based on the analysis of your data. You should conclude whether or not results support your hypothesis. This is the final outcome of your project or experiment. May prove or disprove your hypothesis.

Acknowledgement: As similar to most of the acknowledgements, you are required to thank everyone who has helped you in completing the group project. You need to acknowledge the contribution of every person involved in completing it including giving credits to the institutions or have assisted you in your project.

References or Bibliography: These are the list of citations used in your research paper. Your references should include any documentation that is not your own. Please adopt standard citation format of references (CSE or MLA).

Example from a journal article: Meise CJ, Johnson DL, Stehlik LL, Manderson J, Shaheen P. 2003. Growth rates of juvenile Winter Flounder under varying environmental conditions. *Trans Am Fish Soc* 132(2):225-345.

Example from a book chapter: McDaniel TK, Valdivia RH. 2005. New tools for virulence gene discovery. In: Cossart P, Boquet P, Normark S, Rappuoli R, editors. *Cellular microbiology*. 2nd ed. Washington (DC): ASM Press. p. 473-488

Example from an electronic article:

Hong P, Wong W. 2005. GeneNotes: a novel in

formation management software for biologists. *BMC Bioinformatics* [Internet]. [cited 2007 July 24]; 6:20. Available from:HYPERLINK

"<http://www.biomedcentral.com/1471-2105/6/20>

"<http://www.biomedcentral.com/1471-2105/6/2>What should be in your Log Book?

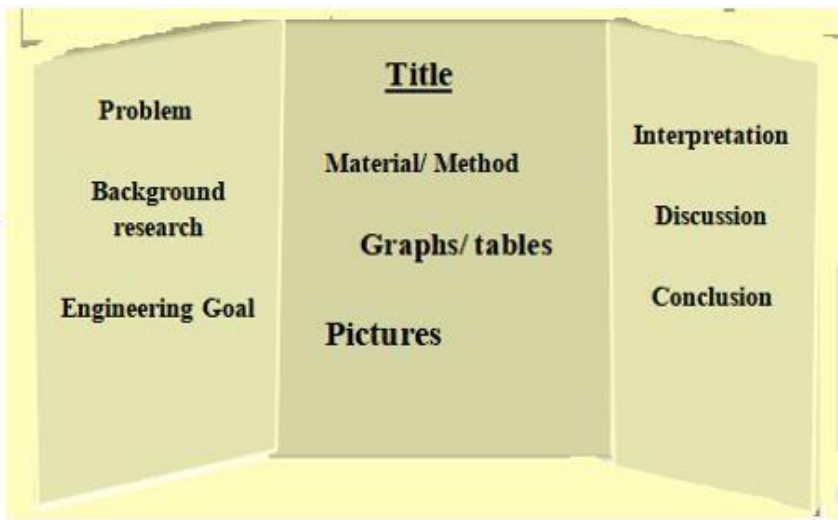
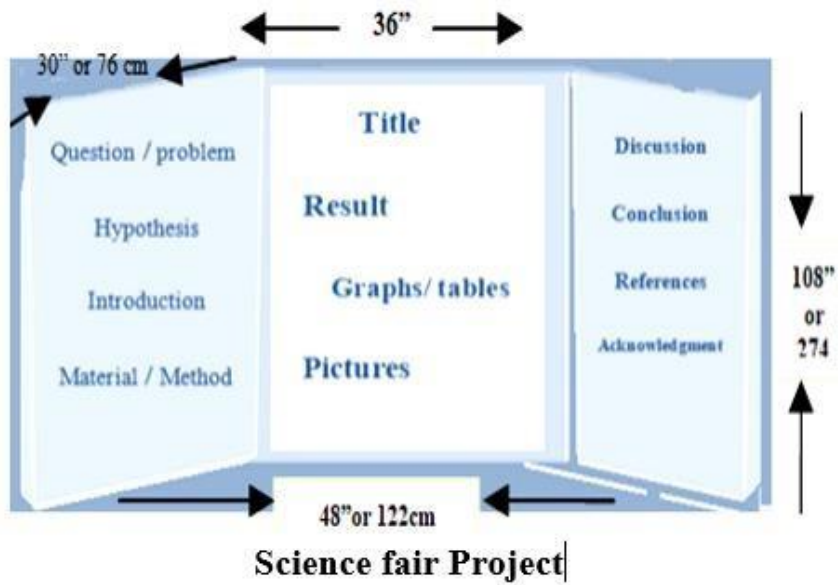
B) Logbook: It is a record of your experiment (like a journal) that is kept in a composition notebook. When you begin your experiment, you need to record the following in your logbook:

1. All of your research prior to choosing your project. (Include all books, websites and other sources that you researched)
2. Proposal (each section must be labeled). Make sure that all the corrections from the original proposal have been made before you copy into log book.
 - The Problem (in the form of a question)
 - Hypothesis – written as an if.... then statement.
 - Independent Variable
 - Control Variable
 - Dependent Variable
 - List of the all the Materials that you actually use in the experiment. (This may change slightly from your original proposal).
 - List and number the steps/procedures that you are following for your experiment.
 - Drawings or illustrations- Illustrate the experimental design and work in progress. Include sketches and diagrams of the setup of your experiment.
3. Data- You need to record everything that happens in your experiment neatly. Use a ruler to make neat data charts. Be sure to write observations neatly that can be read by others. Please date all entries when they occur. Include photos and drawing if it helps show what has occurred.
 - If you run into problems, record the problem and how you plan to solve the problem in your Log Book. Research possible solutions. If it doesn't solve the problem come up with a new plan and try that.
 - Include question and ideas for further experiments or questions for your teacher.
4. Explain in a few sentences the reasons why you choose this topic for your experiment. What about this subject interests you?

C) Display board;

Prepare a tri-fold display board showing the experiment and its results.

Display board Layout:



Engineering Project Display board