

A Note for Parents and Other Project Assistants:

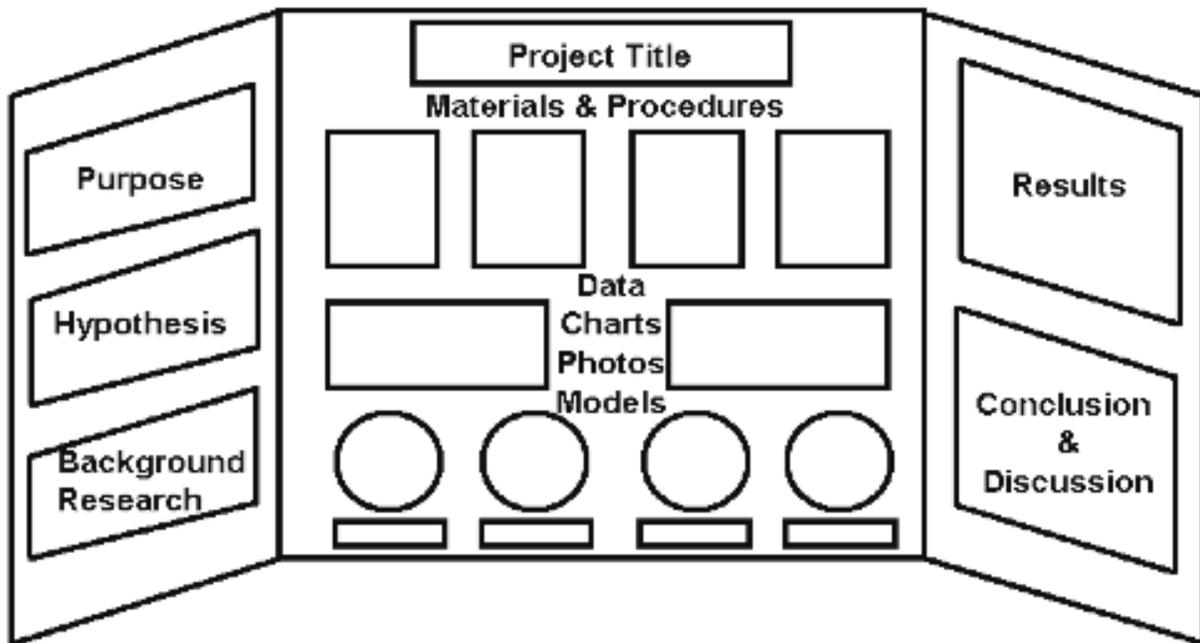
You can be a real help and truly enjoy working on a science or building project with your student. First, become familiar with the guidelines for the Fair. Count on slow but steady progress rather than cramming to get the project done. Don't get hung up on the details – the process is more valuable than the product. Be sure that the student is in charge of their project, be available to brainstorm and alleviate any student frustration. Let it end up looking like exactly what it is: the work of a young person learning about something that interests him or her. Most of all, enjoy the process and be proud of the work!

Science Fair Safety Rules:

- No open flames are permitted.
- No dangerous or combustible chemicals are permitted. (Rockets or other engines must not contain fuels.)
- Controlled substances (chemicals, drugs, etc.) are not permitted.
- All electrical safety rules should be obeyed.
- Expensive or very fragile items should not be displayed. If these kinds of items are important to a project, use photos or simulations.
- Students should avoid using live or preserved animals or parts of animals as part of the experiment or collection. An exception may be made for sealed insect collections. All projects must be cruelty-free.
- No active chemical reactions may be performed (example: vinegar and baking soda volcanoes). You may choose to do a volcano at home, record your project and present the results at the Fair, but it cannot be a hands-on activity at the event.

Suggested Science Project Checklist:

- Choose a topic or project that interests you.
- Ask yourself: "What is the question I want to answer or topic I want to research?"
- Research. Read. Visit a museum. Ask people who may help you find answers or information.
- Make a plan, by asking: "What materials do I need?" "What will I do?"
- Organize and keep records:
 1. List the idea and steps you will take.
 2. Collect information by taking notes or collecting examples (data) on everything you do and see (observations).
 3. If you can, show the results in charts, graphs, or illustrations, based on your notes (your data).
 4. Look over your observations and results. Write down an answer to your question, a conclusion to your topic, or a summary of your work.
 5. Make a display board. You can create this during your data collection and observation.



Sample Science Fair Display Boards



Exhibit and Display Guidelines

At the Fair you will be given a space at a table (or area for large building projects) to display your exhibit.

- A tri-fold display board is ideal for many project types (please see above). These are sold at office supply stores.
- Include your project title, name, class, and grade on a display board. For builders, please create a sign that lists this information to be sure that your work is recognized.
- Please make clear if your project is HANDS ON or HANDS OFF.

The Scientific Method

The scientific method is an organized way of thinking about problems or questions. It has evolved over hundreds of years and is meant to be a systematic approach to problem solving or inquiry. There are five parts to this method:

1. **Stating the problem:** A question comes to mind. It is often based on observation in nature, or everyday life. For example, why does something appear to happen as it does, or what if this were different?
2. **Hypothesis:** This is an explanation for the established problem. A student establishes an explanation to be tested.
3. **Observation and Experimentation:** Observation has led to the original problem and the student's hypothesis, or explanation, for it. Now an experiment – or inquiry – must be conducted to test the fit of the hypothesis.
4. **Interpretation of data:** During the experiment, measurements and data are collected. The student must evaluate and interpret these results.
5. **Conclusions:** Finally, the interpretation – or summary – of results compared to the original problem and hypothesis will lead to establishing conclusions.

Project Types and Descriptions

Collection Project

Collection projects help students to learn observation and classification skills. Each student will reach a conclusion about their collection and then be able to generalize the information. The display could include the actual collection, photographs, graphs and charts, or anything that shows what a student learned about analyzing the collection.

Guidelines:

- Sort your collection.
- Tell when and for how long you collected it.
- Tell how or where you collected it.

- Tell how many things are in your collection, make categories, chart the results, or make a graph of the types of items.
- Tell what you figured out from sorting and examining your collection.

Demonstration or Building Project

Demonstration projects give students the opportunity to engage in creative research by building a model or structure and presenting it. Learning by doing is a great way to engage in learning about the human body, solar system, physics, architecture, or design.

Guidelines:

- Pick something you are interested in exploring.
- Show what you learned by displaying your work.
- Think about how you would answer questions that people might ask.

Conceptual Project

A conceptual project helps students learn the steps of research inquiry. The central question can be any wondering that a student has about a topic. In turn, they may read, visit a museum, conduct interviews, watch information videos, or create documentation of evidence to reach a conclusion to their wondering. This is a great way to encourage analytical thinking and the research process in a fundamental way. The display could include any documentation of the original question and the process of research, including text, photographs, graphs and charts, or anything that shows what a student learned about topic that fascinates them.

Guidelines:

- State what you are wondering about. (PROBLEM)
- Suggest your own answer, without doing any research first. (HYPOTHESIS)
- Find information about your wonder. (MATERIALS)
- Show evidence about your wonder if you can. (GRAPH, CHART, or DATA)
- Show what you found out about your wonder. (CONCLUSION)
- Show where you got your information. (REFERENCES)
- Give credit to those that helped. (COLLABORATORS)

Experimental Project

Find something that interests you, and use the scientific method.

Guidelines:

- What is the question I want to address? (HYPOTHESIS)
- What materials did I use? (MATERIALS)
- What did I do? (METHOD)
- What did I change? (VARIABLES)
- What thing did I keep the same? (CONTROLS)
- What changed as a result of what I did? (RESULTS)
- What is the answer to my question? (CONCLUSION)
- What books or information did I use? (REFERENCES)
- Who helped with my project? (COLLABORATORS)