How to Start your Science Fair Project

Choose an Area of Science

Choose an area of life, earth or physical science that interests you. Do a little research to be sure that this topic really interests you. Then, from that area of science, such as life science, select a general topic such as "plants." Finally, narrow your general topic to a specific subtopic such as "plant growth." Below is a list of general topics you can consider for your science project:

acids and bases atoms computers energy
gravity learning muscles parasites rockets tides
airplanes birds crystals engines heart light medicines planets rocks trees
amphibians bones digestion flowers heat liquids migration plants seeds vertebrates
anatomy cells dinosaurs food chains insects machines molds pollution senses water
animal behavior circulatory systems diseases fossils invertebrates magnetism nutrition
reptiles shells weather
astronomy colors electricity geology jet propulsion mammals ocean life robots
sound yeast

Help choosing a topic:
Here are some websites that may be helpful. Please consult a parent while searching for and before choosing a science fair project. (Suggestion of the following websites DOES NOT constitute approval or endorsement of every project or idea on these sites! Approval must still be obtained from a parent and your classroom teacher!)

http://www.lasciencefair.org/ideas.htm
http://www.energyquest.ca.gov/projects/
http://www.ipl.org/div/projectguide/
http://www.billnye.com http://pbskids.org/zoom/activities/sci/
http://www.sciencebuddies.com/
http://www.cdli.ca/sciencefairs

Choosing a Question
Choose one question that will narrow the focus of your investigation. For example, using the subtopic "plant growth," one question could be, "How does sunlight affect plant growth?" Another question could be "Which plant food works the best?" Below is a small sample of science questions to be investigated:

Astronomy
Why does the earth have seasons? How are tides created?
Consumer Science
Which laundry detergent is best? How does a radio work?
Electricity
What is the best conductor? How does a switch operate?
Botany
Do large seeds grow large plants? Can plants grow in water alone?
Chemistry
How can you tell if a substance is an acid or a base? What is a chemical reaction?
Earth Science
How do crystals grow? What is the water cycle?
Physical Science
How does an airplane fly? How does an electromagnet work?
Anatomy
How does blood get from the heart to the toes? How do muscles and bones work together in movement?

Choose the Project Form

Decide which type of project would best show your audience the answer to your question. You can do an **experiment,** show a **collection,** do a **model** or a **demonstration,** or make an **invention.**

Research

You are now ready to begin planning your project by researching your question. You can get information from books, encyclopedias, the Internet, pamphlets, interviews, field trips or television. Look for information from several different sources. Become an expert on your topic!

Plan Ahead

Sometimes, science experiments don't work. If you plan and conduct your experiment well in advance of the science fair and your experiment does not work, you will have the opportunity to retry or change your experiment.

What if my experiment fails?

This happens sometimes but **don't worry**, you should still present your work. Present what you did in your poster. In the conclusion section of your presentation, suggest ways to investigate why your experiment did not work. Experimental failure is common for scientists, who usually repeat the experiment, and if it still does not work, they ask their question a different way or redesign the way experiment way conducted.

Displaying Your Project

A very important part of your Science Fair project is your display, since it is a way of teaching others what your project is about and what you have learned.

Your display, **which must be displayed on a three-sided display board**, should include the following sections:

1. Project Title: Your title should include the word that describes you project's category: experiment, collection, model or demonstration. Also, include your name, grade and teacher's name below the title. This information should be at the top and center of the center panel.

2. Scientific Questions or Hypothesis: if your project is an experiment

3. Procedure and Materials: text and photos, if needed

4. Results/Data: text, graphs, tables, photos, drawings

5. Conclusion: for experiments

6. *** Your approved proposal form, taped to the back of the poster board ******

7. Acknowledgement: please thank the people who helped you

8. Collection, Model or Demonstration or Materials Used in Experiment should be displayed in front of your display board. If it will not fit in front of your display board, please let your teacher know in advance that you will be bringing an oversized project and we will arrange for an area in which those projects can be displayed.

The Scientific Method

For Projects which Involve Experiments

Use the following five steps of the Scientific Method when conducting an experiment.

1. Identify the problem

Think about what area of science interests you. Narrow your focus down to a specific question.

2. Collect information

Research your topic. Take notes on information that you think will be important for your experiment.

3. Develop a hypothesis

A hypothesis is an educated guess. It takes into account the research you have done and also your opinion of what you think will happen. What do you think will happen when you perform your experiment? The hypothesis answers your question.

Example: Plant food 'B' will cause the lawn to grow faster.

4. Plan and Conduct An Experiment

First, make a plan for how you will do your experiment and a list of all the materials you will need. Conduct your experiment and observe what happens. In your experiment, make sure that you are only changing one variable at a time. This means that everything should be the same among the tested items (conditions remain constant). The only difference (variable) would be the procedure or item being tested in that part of the experiment. Keep a journal to record what you did and your observations – changes, growth or other results of your experiment. Photos or illustrations of the progress of your experiment are good ways to display what you did and what your results were.

Example: All lawns being tested should be treated the same (conditions remain constant): same type of grass soil, temperature, sunlight, water, feeding times, etc. The only difference (variable) would be the plant food fed to the lawns. Make a chart of the weekly lawn growth.

5. Draw a Conclusion

Analyze the results of your experiment.Draw a conclusion based on your results. Was your hypothesis correct? Why or why not? Your conclusion should tell what you learned by conducting an experiment. Remember, an experiment is not a failure if the hypothesis is proven wrong!!

Example: The lawn fed with plant food 'A' grew faster than those fed with any of the other plant foods tested. My hypothesis was not correct, even though plant food 'B' cost more and promised better growth. I learned that not all plant foods are the same and that advertising is not always true.