



Austin Energy Regional Science Festival

HOW TO DO AN ELEMENTARY SCIENCE FAIR PROJECT

A Step by Step Guide

PURCHASE NOTEBOOK (optional)

It is a good idea to use a notebook as a journal or log book to write down everything you do before, during, and after your project. You can date every entry and note what you did and how much time you spent on each item. Don't forget to take pictures or create drawings throughout the process. Begin writing in your journal when you start brainstorming ideas and continue adding entries until after the Regional Fair concludes. This will give you a great overview of your science fair project.

STEP 1 - BRAINSTORMING GENERAL IDEAS

- What are your interests or likes? Sports, dance, computers, animals, food, gross stuff, building things... etc.
- What kind of science interests you?
 - Plants (Botany)
 - Animals (Zoology)
 - Human Body (Anatomy)
 - Electricity, Gravity, Force, Light (Physical Science)
 - Chemicals, Acids/Bases (Chemistry)
 - Memory, Illusions, Training (Psychology)
 - Volcanoes, Rocks, Weather (Earth Science)
 - Product Testing (Consumer Science)
 - Surveys (Statistics)
- Based on your interests, what things could you test, change or vary on purpose? What things could you measure or observe?
- Look at project idea books and/or web sites to see if there is something that sparks your interest and fits with your abilities.
- Check the [list of projects](#) that are not allowed to make sure you don't choose any of those types of projects.

STEP 2 - CHOOSE VARIABLES TO INVESTIGATE

- What part of the experiment will you change (Independent Variable)? For example, you could change the type of soil you are growing your plants in.
- What change will you measure or observe (Dependent Variable)? For example, you could measure the height of the plants (growth rate) or the number of leaves.
- What part of the experiment will you keep the same (Controlled Variables)? For example, you could use the same plants, amount of water, and sunlight when growing your plants.
- This will go in the "**Variables**" section on your project board.

STEP 3 - WRITE EXPERIMENTAL QUESTION/PROBLEM

- What question will the experiment answer? This should include the thing that will be changed (Independent Variable) and the thing that will be measured (Dependent Variable). For example, How will changing the type of soil affect the growth rate of a plant?
- This will be the "**Problem/Testable Question**" on your project board.

STEP 4 - BACKGROUND INFORMATION

- What additional information will help you determine the possible answer to your question?
- Begin background research by taking notes from books, websites or articles that talk about your subject. These will be your “**References.**” You must have at least 3 sources. You will know you have completed your research when you can discuss your topic in your own words for about 5 minutes.
- Make sure you have explained all important words that are part of your project. For example, if you are using a special tool to take your measurements, make sure you explain what it is and how it works.
- Once research is completed, begin organizing all the information into paragraphs. This will be the “**Background Information**” section on your project board.

STEP 5 - WRITE YOUR HYPOTHESIS

- If you are doing an experiment, formulate a “**Hypothesis.**” A hypothesis is a guess at what you think will happen when you test your experiment.
- Use the format: “*If (this is changed), then (this will happen), because (reason)*”.
For example, “If the space between soil particles is made smaller by adding humus, then the plants will grow taller because less space between particles will hold water in the soil long enough for the roots to absorb it.”
- If you are doing an engineering project, this will be your design goal.

STEP 6 - WRITE YOUR EXPERIMENTAL PLAN

- Make a list of the “**Materials**” that you will need to conduct your experiment. Include specific amounts with units of measurement.
- Write up your “**Procedure,**” or the steps that you will follow when doing your project. Be detailed so that someone reading your project board could do your project, using just your instructions.
- Make sure to include the safety precautions you will follow at the beginning of the procedure.
- If you are doing an experiment, remember that an experiment must consist of *at least 2* groups. One group is the “Control” and the other is the “Variable.” Both groups are identical, except for one specific element. The “Variable” is the specific element that is different; it is the very thing that you are trying to test. (An example experiment might be to test a stain remover to see if it removes stains any better than washing with no stain remover. The stained garments, your wash technique, and drying technique would be exactly the same for both groups, with one exception. In the Variable group, you would use a stain remover. In the Control Group, you would *not* use a stain remover.)
- Use a timeline to plan how long it will take you to complete your project and create a project board. If you will need live subjects (people, plants, or animals), be sure to allow enough time. (Remember, plants take a while to grow.)

STEP 7 - EXPERIMENT, BUILD, TEST, AND ANALYZE

- Do your experiment and don’t forget to take photos throughout the process.
- Record the “**Results**” which tells what happened. Remember that a good project will have results that you can clearly see or measure. If you can, use **photos**, a **chart**, and a **graph** to clearly show your results on your project board.
- After you complete your Results, form a “**Conclusion**” paragraph which answers the question in the “Problem/Testable Question” and talks about what happened in your experiment. State whether or not the results supported your hypothesis. It is okay if they didn’t. Be sure to include ways to improve your project in the future.

STEP 8 - CREATE YOUR PROJECT BOARD

- Use the written sections you created as well as photos of your project to make your project board. You can also use the [project board template](#) to help you with planning the board.
- Your project display should be on a sturdy tri-fold board available at local craft and office supply stores. Written material, drawings and pictures should be securely attached to the display board with glue or tape. Do not use staples. They will poke out the back of the board.
- Projects will be displayed on tables that are 36 inches high. **Size of display area may not exceed the following measurements: 15” deep, 48” wide, and 72” high.** Due to space limitations, displays that exceed these measurements cannot be accepted.
- **Electricity for your display will not be available but you can use household batteries with your project..**
- Pay close attention to the layout of the project board. The order of information should make sense and be visually interesting. Be sure to include all the required elements.
- Add a creative “**Title**”.
- Be sure to list the person who took the photos on the board and/or any websites where you got your graphics or photos under “**Photo and Display Credits**”.
- Make sure your project board does not have any items not allowed in the exhibit hall. ([Display Safety Rules](#))
- Be sure you understand and are able to talk about what you’ve learned from your project. Practice presenting your project to an adult.