

Project Types and Descriptions

Project Type 1: Experimental Project

An experimental project can be done by anyone. The hardest part is thinking of a question that interests you. Once you've done that, using the scientific method to learn about it is fun and exciting.

Guidelines

Use the Scientific Method, described below, to perform your experiment. Base your conclusions on your data, and create a display board showing that you understand what happened. Include some ideas of your own in the project!

What is the Scientific Method?

The Scientific Method is simply an orderly way to find an answer to something. The basic steps are illustrated by the questions below.

1. **QUESTION:** What is the question I want to answer? It should be reasonable and measurable
2. **HYPOTHESIS:** What do I think the answer will be before I start? What you think will happen. You should form a hypothesis or guess about your questions before you begin your experiment.
3. **METHOD / MATERIALS:** How did I test my hypothesis? Write out your plan. You should plan to run your test a number of times. Next, change one part of your test and see what happens (while keeping everything else the same.)
4. **VARIABLES:** What will I change and measure? Variables can be anything you can change or measure. (Time, color, weight, height texture etc..)
Independent Variable: The variable you change
Dependent Variable: The variable affected by that change
Control Variables: The variables that stay the same
5. **RESULTS/DATA:** What happened as a result of what I did? The information gathered during the investigation. After collection, data can be put in chart or graph form.
6. **CONCLUSION:** What is the answer to my question based on my experiment? Does it match my hypothesis? Why or why not? The answer to your question based on your data.

An Example of an Experimental Project

1. *Question:* Will different surfaces affect how far a toy car rolls?
2. *Hypothesis:* I think a toy car will roll farther on a smooth surface than on a rough surface.
3. *Method:* I will set up an inclined ramp and put different surfaces on it. I will run three races on each surface and measure how far the car rolls from the end of the ramp. I will graph the results for each surface and find the average distance the car travels on each surface.
4. *Independent Variables:* the different types of surfaces. (Glass, sandpaper carpet etc..)
Dependant Variable: Distance the cars travel.
5. *Results/Data:* The car traveled the furthest distance on the glass surface and the shortest distance on the indoor/outdoor carpet.
6. *Conclusion:* The smooth surface provides the least amount of friction.