

Science Fair or Doing what Scientists Do

PTA Presentation

This is an overview of the scientific method for parents. Teachers may have a specific approach to the scientific method that they want students to use for the science fair. Please follow the instructions your child received from their teacher.

Why Experiment?

Children are natural scientists who dive into a question and try to make sense of it all. When children pursue a question of their own choosing, they are invested in finding the answer. Experimentation uses a process to test and answer questions. This process is the scientific method.

Using the Scientific Method

Observation: The best questions are the ones students ask based on observations they have made of natural phenomenon. Children use their 5 senses to make observations. In that sense, we are all scientists, doing science all the time.

Question: Simple questions are best for the lower grades. Examples: Do plants grow in the dark? Which brand of bubblegum blows the biggest bubble? Does my dog prefer to eat Alpo or Wellness Dog food? The best questions asked are ones for which the answer is unknown. Help your child avoid questions where the answer is obvious before it has been tested.

Hypothesis: These questions are then turned into testable hypotheses. My dog will always choose Wellness over Alpo. Plants will not grow in the dark. Bubblicious will blow the biggest bubble. Make sure the hypothesis is measurable. When creating a hypothesis encourage your child to avoid using imprecise language. Example: Bubblicious is *the best* gum. My dog *likes* Wellness better than all dog foods. You can measure how many times your dog *chooses* Wellness over Alpo, but we cannot measure how much he likes it.

Test Hypothesis: To test your hypothesis, your child should come up with a control and a variable. A control is something that is deliberately kept constant. The variable is what the experimenter changes in an experiment. For example, to test what brand of dog food your dog will choose, the only thing that should change is the brand of dog food. The size and shape of the bowl, the amount of food, etc must stay constant. There has to be multiple trials of the experiment.

Results: The results are what happened in your experiment. You can represent results on a chart or graph, which is sometimes the easiest and most visual way to see what happened in the experiment.

Conclusion: Was your hypothesis proved or not? Why or why not? Did you have new questions after performing your experiment? What did you learn based on the results of your experiment?

What you can do to help children with their science fair projects?

- 1) Help them formulate a good question and a testable hypothesis.
- 2) Let them struggle. Things are bound to go wrong, that's okay, and often leads to a greater understanding of the problem.
- 3) Offer supervision. Many experiments can be unsafe. Make sure your child is using proper safety equipment, and being cautious. Some materials used for experiments, stove, fire, use of chemicals, may require adult supervision.
- 4) Listen and ask questions. One of the important and tough things your child has to do at the science fair is explain the experiment to a judge. Oral practice at home will build confidence for the oral presentation to a judge.
- 5) Have fun.

“The world looks so different after learning science.” Richard Feynman

