Owen Science Fair

Science Fair Information

What is a Science Fair?

A science fair is an event where students show the science projects they have done. Science fairs provide opportunities for kids to creatively explore an area that interests them and to do science themselves! Thinking of a project, asking a question about an area or field of study, determining a way to test the answers to their questions, and creating a colorful display are all ways to get students excited about science and learning. Creating a science fair project usually encourages even more questions about science and closer attention to things around them.

During the fair, kids can explain their work to other kids and also to parent volunteers acting as judges. They can also look at all the other projects and ask other students about their work.

Where do I start?

Thinking of your science fair project can be fun and challenging. The first step, is to think of an area that interests you or that you are curious about. You will be spending some time working on your project so make sure that it is something YOU want to do.

Depending on grade level, we encourage slightly different types of projects. A Display Project is great for K up to 2nd graders. A display project would explain or show an area of science. Examples include:

- The Five Senses
- Planets of our Solar System
- Dinosaurs of the Jurassic
- Model of the Digestive System
- Vinegar and Baking Soda Volcano

However, what is really fun when doing a science fair project is to ask a question that leads to an experiment. This process of answering questions by creating an experiment that really narrows down cause and effect is called The Scientific Method. This is what science is all about!

Here are examples of how to change a display project into one that asks (and hopefully answers) a question:

- ✓ Which of the five senses is used most?
- ✓ How high is Venus in the night sky?
- ✓ Why did dinosaurs get so big in the Jurassic Period but then smaller during the Cretaceous?
- ✓ How long does it take for food to go through the digestive system?
- ✓ What is the limiting reactant in the vinegar and baking soda volcano?

Now some of those questions are a bit tough, but hopefully you can see the difference between a display project and one that explores a question.

It is perfectly fine and even encouraged for ALL Owen students (K-5) to ask a question for their science fair project! Even Kindergarteners are able to explore their world by asking questions about it!

Science Fair Project Guide

How do you get some answers? (The Scientific Method)

Ooooh, the **Scientific Method**. Does it sound a little scary? Well, it's not. It's just the way that scientists get from asking a **question to finding an**

answer. Here's a short outline of how it works. First, ask your question. Then make a guess—**hypothesis**. Take a look with experiments—**observations**. Write down observations—**data**. Make a picture of what you observed—**charts, graphs, tables, or photographs**. Decide what it means – **Conclusions**.

Pick your project

Ask a question! This is probably going to be the title of your science fair project. Do you need some help with getting ideas? Ask a question that leads to an experiment. Remember that an experiment compares things. It is important to ask the question in a way that you can compare or measure things to get an answer. For example, suppose you have asked the question, What will make radishes grow the biggest? Well, then you need to think for a minute about what "biggest" means. Did you mean the heaviest? The longest? The largest diameter around? Perhaps you really meant heaviest. Whew, I know how to measure that. I just put my radishes on a kitchen scale and weight them. You might need to work on your question and ask it a few different ways before you figure out the best way to ask it so that it leads to a measurable answer.

Research your topic

Next you need to research your topic. Find out as much as you can about your topic. Read books on it, find magazines or newspapers, talk to people you know, do online searches to help you find more information. If there is a TV documentary on Discovery Kids channel on your topic, watch it and pay attention to where they got their information.

Suppose your project is "Which paper towel really lasts longer." It would be a good idea to do some research on how paper towels are made. If you are a 5th grader, you could really get a lot of information about your topic. Perhaps write to the different paper towel companies and ask about their equipment or where their paper comes from. You could even try to make your own paper towels and test those against the national brands. If you are in Kindergarten and you are really interested in dinosaurs, you could do research by going to the Field Museum to see Sue and the Rockford Dinosaur museum to see Jane (T-Rex fossils). Talk to the guides at the museum to find out more

information. Take pictures of both to see how they are the same and how they are different.

State your hypothesis

Since you have done a bit of research, you probably have some ideas about how your experiment will turn out. Make a guess and write it down. State your hypothesis in a way you can measure or check.

Do your experiment

Now you need to check your hypothesis to see if it is correct or not. (A little sneaky hint here: being wrong is ok...sometimes it's easier to check it that way) Set up your experiment so that you are changing only one thing and the rest of it stays the same. The "thing" you change is called your variable because you are varying or changing it.

Suppose you are doing "Raisin Elevators" for your project using raisins and carbonated soda pop and you want to compare different types of soda pop. To do the experiment in a scientific way, you will need to make sure that you have exactly the same amount of soda in each cup, that each cup is the same as the other cups, and that you put the same number of raisins in each cup. The only thing you change is the type of soda. Coke in one, Sprite in another, Sierra Mist, etc. In this experiment, your variable is the soda pop. Make sure everything else stays the same as much as possible.

Gather your results

Record the results of your experiment using charts, graphs, photographs, or measurements. Feel free to record your data in more than one way.

Draw your conclusions

What happened with your experiment? Did it turn out the way you thought it would or were you surprised? What did you learn? Write it down. It does not have to be long. Just think about it and state it in a clear way.

For example, suppose you did a project on soil erosion where you asked the question, "How do landslides happen?" Your hypothesis might have been: I think landslides occur on hills and mountains when prolonged rain follows a long

period of dry weather. For your experiment make 6 containers of soil or sand built into the same sand castle shape and then pour varying amounts of water on each. (Perhaps 1/4 cup of water on the first, then 1/2 cup, then 3/4 cup, up to 1 1/2 cups on the last one.) Suppose you saw that the soil could hold up with the smaller amounts but not the larger amounts, then your conclusion might be stated as: "My hypothesis was correct. I thought that long amounts of rain would cause landslides and when there was a lot of water it did cause the sand hill to slide."

Exhibit Guidelines

At the science fair, you will be allocated space at a table on which to place your exhibit. To make the science fair a safe and fun experience for the families that will be attending the fair, please follow these guidelines in creating an exhibit to bring to the fair:

- Include your project title, name, and class on a tri-fold display board. (See examples on next page.)
- Your display must fit within the allocated space of 36 inches wide and 15 inches deep. The display must be self-supporting.
- In addition to the display board, other materials such as papers and dioramas may be included.
- No electric power will be available at the fair.
- Demos performed at the fair need to be set up in a way that is safe and non damaging.
- Items brought to the fair must fall within school safety guidelines.
- Parents must supervise children at all times during the fair.

Scientific Process Checklist

- ✓ Problem
- ✓ Research
- ✓ Hypothesis
- ✓ Method (experiment plan)
- ✓ Data
- ✓ Results
- ✓ Conclusion
- ✓ Science Display Backboard
- ✓ Science Research Journal (optional)
- ✓ Interview by Judges

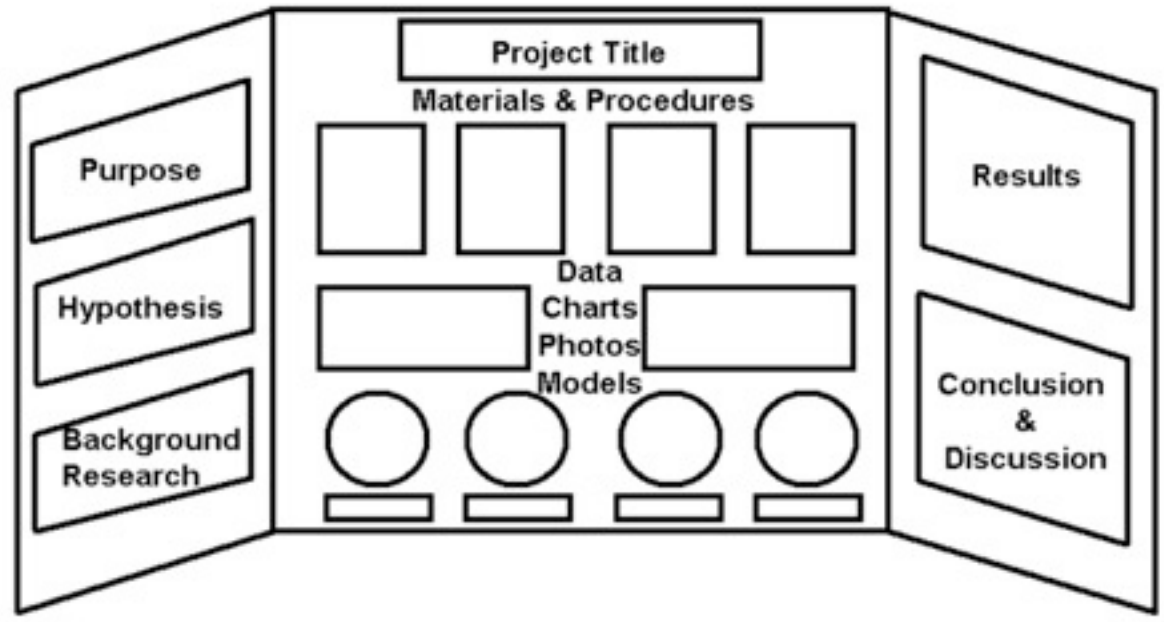
Experiment Safety Guidelines

Before starting your science project, take some time to think about possible safety issues associated with your project. Projects should be the work of **individual** students and be monitored by a parent. In addition, many experiments have safety risks which must be identified and addressed by parents before the experiment.

Please follow these guidelines in picking your project:

- Parents must carefully monitor any experiments that are performed as part of a project.
- Parents are responsible for ensuring that proper safeguards are in place for any hazardous chemicals, electrical or mechanical equipment, open flames, cultures, or other hazards that may exist.

Sample Science Fair Display Boards



Judging

Students should be prepared to briefly discuss their project with judges and answer questions about it. For the Owen Elementary Science Fair, students will **NOT** be competing against each other and all participants will receive awards and special recognition. For students in 4th and 5th grades, the judges will be offering additional feedback on their projects with a view toward helping the students prepare for the competitive middle school science fairs.

Here are some things the judges may ask you:

- ✓ What is the title of your project?
- ✓ Tell me about your project.
- ✓ What did you think would happen?
- ✓ Did you repeat the experiment?
- ✓ What was your control?
- ✓ What is your conclusion?

Science Fair Project Ideas

- Do different brands of popcorn leave different amounts of unpopped kernels?
- What percentage of an orange is water?
- How to make a potato battery
- Does temperature affect the rate at which seeds sprout?
- Does salt or sugar affect the growth of alfalfa seeds?
- Does a pineapple grow best in sand, soil, or water?
- How to generate enough static electricity to create sparks
- How to build your own telegraph machine
- What makes a parachute work?
- How does an elevator work?

Science Fair References

Websites suggestions:

http://www.ipl.org/div/kidspace/projectguide

http://www.lewiscenter.org/users/mhuffine/subprojects/Department/ss.php

http://school.discovery.com/sciencefaircentral/scifairstudio/handbook/display.html

http://sciencebuddies.com

http://super-science-fair-projects.com/elementary-science-fair-projects.html

http://www.all-science-fair-projects.com

Visit the Owen Elementary Website, click on "Library Media Center", and "search" to see what books Owen has to support your question. Talk to Mrs. McHale in the LMC for science books.

Book Suggestions:

- **Janice VanCleave's A+ Science Fair Projects in Physics : winning experiments for science fairs and extra credit** by Janice VanCleave (Aurora Library)
- **Janice VanCleave's Guide to the Best Science Fair Projects** by Janice VanCleave (Owen LMC, Naperville Public Library, Aurora Library)
- **Janice VanCleave's Guide to More of the Best Science Fair Projects** by Janice VanCleave (Owen LMC, Aurora Library)
- **Janice VanCleave's A+ projects in Earth science : winning experiments for science fairs and extra credit** by Janice VanCleave (Owen LMC, Naperville Public Library, Aurora Library)
- **Janice VanCleave's electricity : mind-boggling experiments you can turn into science fair projects** by Janice VanCleave (Owen LMC)
- **Science Fair Projects for Elementary Schools** by Patricia Hachten Wee
- **The complete handbook of science fair projects** by Julianne Blair Bochinski (Naperville Public Library, Aurora Library)
- **Science projects about electricity and magnets** by Robert Gardner (Aurora Library)
- **Forces and motion science fair projects : using water balloons, pulleys, and other stuff** by Robert Gardner (Naperville Public Library)
- **The Science Chef : 100 fun food experiments and recipes for kids.** by D'Amico, Joan (Owen LMC)
- **Janice VanCleave's plants : mind-boggling experiments you can turn into science fair projects** by Janice VanCleave. (Owen LMC)
- **Last-Minute Science Fair Projects** by Sudipta Bardhan-Quallen (Aurora Library, Naperville Library)