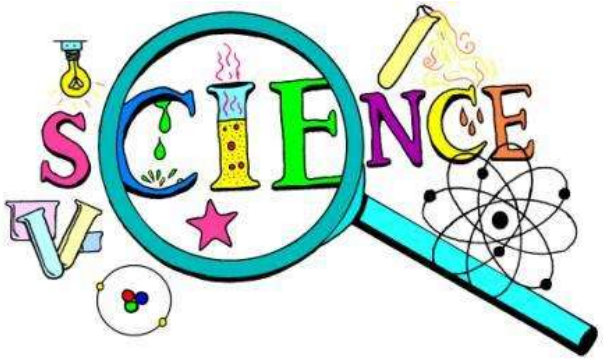


Patterson Elementary Science Fair

General Information, Helpful Hints, and Safety Guidelines

All Patterson Elementary students and their families are invited to participate in our annual Science Fair! (Participation is optional – all are welcome to attend and view the projects!) In preparation for the fair, each student can develop one project to present, with the help of parents. Students may work individually or in teams of up to three people. These guidelines should answer any questions you may have on this fun and educational process.

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 - 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 to parent volunteers acting as judges.

Where do I start?

Thinking of your science fair project can be fun and challenging. First, 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 are curious about. Depending on grade level, we encourage slightly different types of projects. A display project is great for K thru 2nd. A display project would explain or show an area of science, for example: dinosaurs of the Jurassic Period, planets of our solar system or a 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 narrows down cause and effect is called - The Scientific Method. This is what science is all about!

For older students, here are examples of how to change a display project into one that asks (and hopefully answers) a question: Why did dinosaurs get so big in the Jurassic Period but then smaller during the Cretaceous? How high is Venus in the night sky? 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 Patterson students (K-5) to ask a question for their science fair project!

Pick your project!

Ask a question that leads to an experiment. Remember that an experiment compares or measures things. 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. Then you could put your radishes on a kitchen scale and weigh them. You may 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 it. Read books, find magazines or newspapers, talk to people you know, do online searches to help you find more 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. Perhaps write to the different paper towel companies and ask about their equipment or where their pulp comes from. You could even try to make your own paper towels and test those against the national brands.

State your hypothesis!

Since you've 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. A tri-fold poster board is a great way to display this information for the night of the science fair.

Draw your conclusions!

What happened with your experiment? Did it turn out the way you thought it would or were your surprised? What did you learn? Write it down. It doesn't have to be long. Just think about it and state it in a clear way. For example, suppose you did a project titled, "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 sand castle shapes and then pour varying amounts of water on each. Suppose you saw that the soil could hold up with the smaller amounts but not the larger amounts, so 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."

Have Fun!

****This guideline sheet was originally written by the STEM parent group at White Eagle Elementary.***

Continue to next page for more detailed Helpful Hints!

Science Fair Project Helpful Hints

Patterson is hosting its annual Science Fair! This is a completely voluntary program intended to get the kids excited about Science. All grades are encouraged to participate. Attached are some guidelines and helpful tips. Science Fairs provide opportunities for kids to creatively explore an area that interests them, and to do science themselves!

Thinking of your science fair project can be fun and challenging. First, think of an area that interests you. Think of a problem you would like to solve in that area. Then, form a hypothesis – run your experiment – collect data – and form a conclusion.

Depending on grade level, we encourage slightly different types of projects. A display project is great for Kindergarten up to 2nd grade. A display project would explain or show an area of science. Students in higher grades are encouraged to ask and hopefully answer questions in their work. Here are a few examples of how to change a display project into one that asks (hopefully answers) a question. Students may work in groups up to 3 kids.

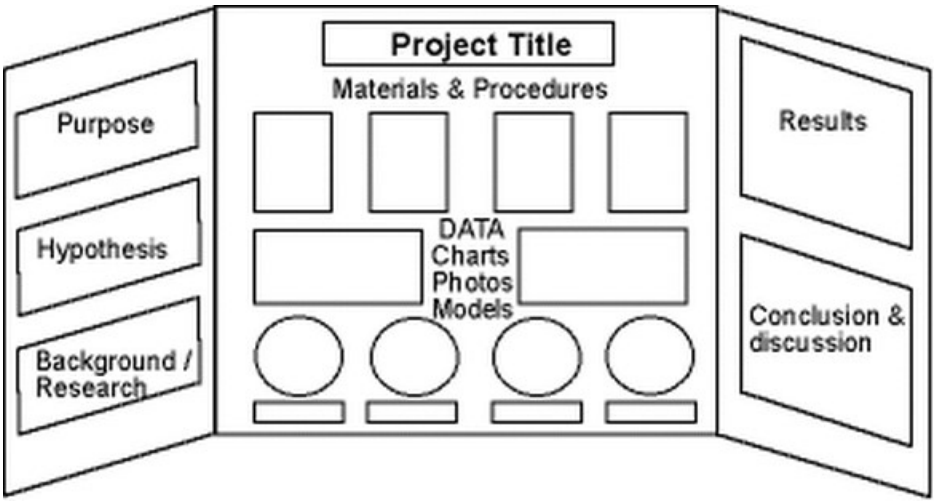
Kindergarten, 1st and 2nd Grades

- The Five Senses
- Planets of our Solar System
- Dinosaurs of the Jurassic Period
- Models of the Digestive System

3rd, 4th, and 5th Grades

- Which of the five senses is used the most?
- How high is Venus in the night sky?
- Why did dinosaurs get so big in the Jurassic Period and then smaller in the Cretaceous?
- How long does it take for food to travel through the digestive system?

Sample Science Fair Tri-Fold Display Board



Student Checklist

- ✓ Problem (Idea)
- ✓ Research
- ✓ Hypothesis
- ✓ Method (Experiment Plan)
- ✓ Data
- ✓ Results
- ✓ Conclusion
- ✓ Science Display Tri-Fold
- ✓ Interview by Judges

Science Fair Safety and Planning 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.

*Parents are responsible for insuring that proper safeguards are in place for any hazardous chemicals, electrical or mechanical equipment, open flames, cultures, or other hazards that may exist.

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 when creating an exhibit:

- Include your project title, name and class on a tri-fold display.
- Your display must fit within the allocated space of 36 in. wide and 15 in. deep. The display must be self-supporting.
- In addition to the display board, other materials such as papers and dioramas may be included.
- Items brought to the fair MUST fall within the school safety guidelines.

Presentation

Students should be prepared to briefly discuss their project with visitors and answer questions. In addition, judges will be offering additional feedback on their projects. Here are some questions 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 is your control and conclusion?

The Patterson Science Fair is **NOT COMPETITIVE**. Each student will be recognized!

All Students are encouraged to participate or just to come see the exhibits!

Science Fair Ideas

Check out these Science Fair ideas to help you get started!
Pick on from the list, or let an idea inspire you.

Kindergarten and 1st Grade

Food Pyramid
Sorting and Classification of Dinosaurs
Smell: Sniffing Jars
Plants and Water
Exploring Taste
Static Electricity with Balloons

2nd and 3rd Grade

Human Body
Space and Astronomy
Life Cycle of a Frog
String Phone (sound)
Egg Drop
Grow Salt Crystals
Paper Airplanes (test different papers)

4th and 5th Grade

Volcanos
Make a Kaleidoscope
Make a robot
Germs
Video Games (positive & negative effects)
How does a parachute work?
Rain Gauge
How Colors Affect Emotions

Science Fair References

*Check with the LMC for Science related books.

*Websites:

- http://www.ipl.org/div/projectguide/
- www.sciencebob.com
- www.sciencekids.co.nz/experiments.html
- http://sciencebuddies.com
- www.all-science-fair-projects.com
- http://super-science-fair-projects.com/elementary-science-fairprojects.html
- Books by Janice Van Cleave