

# Patrick Elementary Science Fair Application

*Please return this form to your teacher on or  
before January 8, 2010.*

Student Name: \_\_\_\_\_

Teacher's Name: \_\_\_\_\_ Grade Level: \_\_\_\_\_

Project Title: \_\_\_\_\_

\_\_\_\_\_ (Student's Name) has reviewed the information  
in this packet and would like to participate in the Patrick ES Science Fair. We  
are aware that a science fair project is a big commitment that takes time to plan  
and conduct.

**Display boards must be placed in the Media Center between February 16,  
2010 and February 19, 2010.**

\_\_\_\_\_  
(Parent/Guardian Signature)

\_\_\_\_\_  
(Student Signature)

# Start to Finish Time Line

\*\*\*Use the Scientific Method\*\*\*

**Think:** *What am I interested in? December 18, 2009-January 4, 2010*

- Find a project that is interesting to you!
- Narrow the topic.
- Be specific. Be realistic.
- Refer to Science Fair books at your local library or visit online resources to get ideas about possible topics.

**Choose:** *Choose a project of interest.*

- The topic and experiment should be acceptable in the given time line.
- Put the topic in the form of a question.
- Make a Hypothesis. (what do you expect to happen)
- Make a schedule or checklist.
- Learn as much as you can from books, magazines, and online resources.
- Gather materials. Materials should be affordable.

**Record:** *Keep a notebook. January 5, 2010-January 31, 2010*

- Experiment. (be consistent and do each trial the same way)
- Collect data.
- Make notes of resources you use.
- Keep a record of what you do, when you do things, and what is happening.
- Take pictures.

**Communicate:** *Use a display board. February 1, 2010-February 15, 2010*

- Look at the results. (what really happened)
- Use graphs, charts and/or tables to explain.
- Draw a conclusion.
- Organize all project information and data.
- Place information and data on the display board.

February 16, 2010-February 19, 2010

**Bring** your project to school for display in the Media Center.

- Be prepared to present your science project on February 25, 2010 in the Media center. You should arrive at 6:30 PM and go to the Media Center.

# Project Ideas

## **K-2**

### Energy

- Does the color of an object affect how much heat it absorbs from sunlight?
- Does the color of a liquid contribute to its ability to absorb heat?
- Which type of dry cell battery lasts the longest?
- Demonstrate how to use common fruits and vegetables as batteries.
- Does solar tea taste different than steeped tea?
- How does temperature of an object compare in the sun and in the shade? How could we use this to help keep our houses cool in the summer?

## **3-5**

### Energy

- Which light bulb is the best value for the money?
- How much more heat do incandescent bulbs produce than compact fluorescents?
- How effective are windshield sun screens at reducing the interior temperature of a closed automobile?
- Which metals are the best conductors of heat?
- Which materials retain solar heat the best after the sunlight is gone?
- Does a dry cell battery last longer if it used continuously or if it is turned on and off periodically?
- Demonstrate how to use common fruits and vegetables as batteries. How does the voltage and current output vary with the acidity of the fruit/vegetable?
- What is the most effective insulating material? Build a model that can keep ice for 24 hours.

## **K-5**

### Chemistry

- What types of objects sink? What objects float? What affects this?
- Does changing the temperature of water affect the speed of an object's solubility?
- What percentage of an apple's (or any fruit or vegetable) weight is water?
- What affects the speed of a chemical reaction?
- What will cause cabbage juice to change color?

### Environment

- Which materials break down more quickly in soil?
- How clean is the air in different areas (around your car, in your backyard, etc...)?
- How does soil affect the pH of water?
- Do different diets affect earthworms and the soil they enrich?

## Biology

- Are all colors of the light spectrum used by plants to make food?
- How is yogurt made, and what are active cultures?
- What are the best conditions for bread mold to grow?

## Weather

- How do clouds form?
- How can you measure the speed and power of wind?
- How can temperature affect air?

## **Helpful Web Sites**

### Science Buddies

<http://www.sciencebuddies.org/mentoring/science-fairs.shtml>

### All Science Fair Projects

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

### Access Excellence

[www.accessexcellence.org/RC/scifair.html](http://www.accessexcellence.org/RC/scifair.html)

### Dr. Shawn's Super Science Fair Support Center

<http://www.scifair.org>

### Science Fair Central

<http://school.discovery.com/sciencefaircentral/scifairstudio/ideas.html>

### Exploratorium: The Learning Center

[http://www.exploratorium.edu/science\\_explorer/index.html](http://www.exploratorium.edu/science_explorer/index.html)

### The Thinking Fountain

<http://www.sci.mus.mn.us/sln/tf/nav/thinkingfountain.html>

### Experimental Science Projects: An Introductory Level Guide

<http://www.isd77.k12.mn.us/resources/cf/SciProjIntro.html>

### Cyber-Fair

<http://www.isd77.k12.mn.us/resources/cf/ideas.html>

### The Internet Public Library - A Science Fair Project Resource Guide:

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

### Science Fairs Home Page

<http://www.cdli.ca/sciencefairs/>

Science Made Simple

<http://www.sciencemadesimple.com/projects.html>

Sciencefair.org

<http://www.scifair.org/>

Neuroscience for Kids: Successful Science Fair Projects

<http://faculty.washington.edu/chudler/fair.html>

Super Science Fair Projects

<http://www.super-science-fair-projects.com>

The Science Project Encyclopedia

<http://www.cpet.ufl.edu/sciproj/sci002.htm>

Science Fair Prep

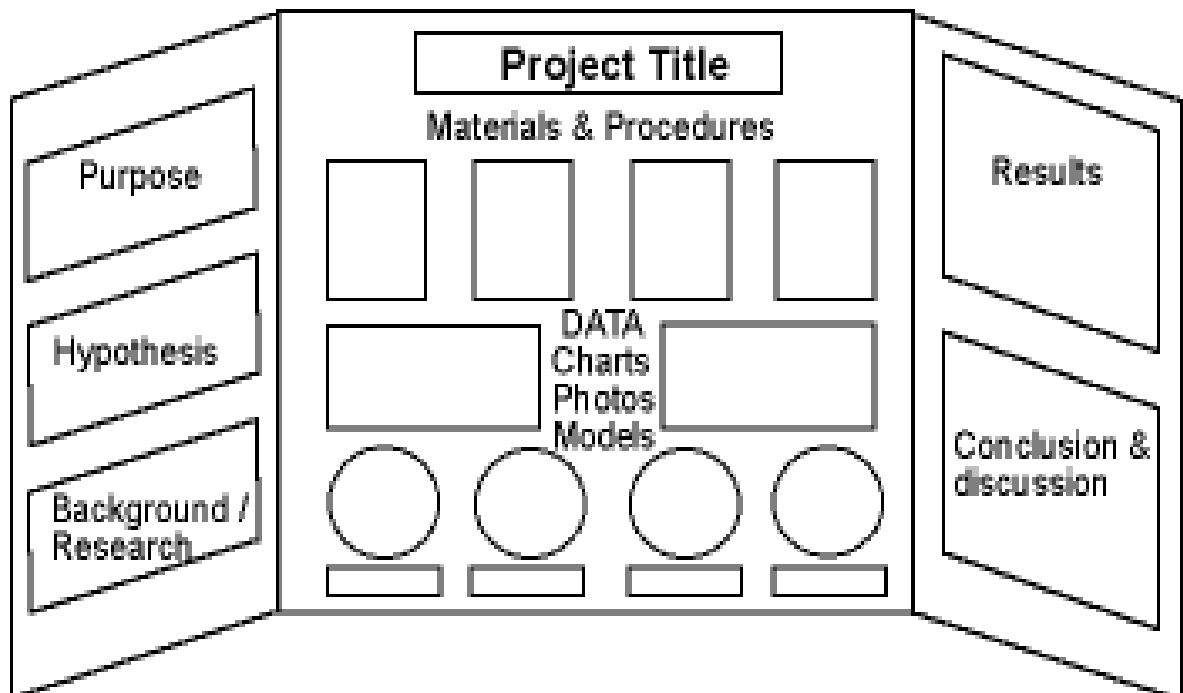
<http://www.cyberbee.com/science/prep.html>

All Science Fair Projects

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

## **Sample Display Board**

Boards will be on sale in the science lab. Limited supplies!



# Scientific Method

**Purpose/Question:** *Select or state a problem. Put the topic in the form of a question. Or, "state the purpose" of the project.*

- Ask a question (NOT a yes or no question) about something you observe: How, What, When, Who, Which, Why, or Where?
- Choose something you can measure, preferably using numbers. Use the Metric System.
- Example: "How much force does it take for a lever to lift a weight?"
- Be specific. Instead of "In what conditions do plants grow best?" try "Do bean plants grow better in direct sunlight, indirect sunlight, or shade?"
- Background Research: Put together a plan for answering your question. Use the library, the internet and people with more experience than yourself like a scientist, mentors, parents, and teachers.
- Identify key words and main concepts. Design and describe a method for investigating the question.

**Hypothesis:** *Construct an educated guess or what you think will happen. You might state a prediction like this: "If I do this, then that should happen."*

Form a statement about the predicted results of your experiment. It is what you think will happen, based on the research you've done and your knowledge. A hypothesis doesn't include *why* you think you'll get certain results, just what you think the results will be. The more you know about your problem, the better equipped you will be to come up with a logical hypothesis. Your hypothesis should be clearly and simply stated, and it should be in statement form—not a question. Because it's understood that a hypothesis is an educated guess, you don't need to say that you are guessing. What happens if you find out your hypothesis is wrong after the experiment? Nothing!

**Procedure:** *Test your hypothesis by conducting an experiment.*

Discover if your hypothesis is true or false. Keep detailed notes about everything you observe and do in a **journal**. Take **pictures or make sketches**. Repeat your experiment several times to make sure results are valid. It is important for your experiment to be a fair test. A "fair test" occurs when you change only one factor (variable) and keep all other conditions the same (constants). The experiment that you conduct will be to test your hypothesis. Your experiment will be designed around your hypothesis, and will either prove or disprove it. It will be important to conduct your experiment with your hypothesis in mind. However, it's imperative that you don't engineer your experiment to prove that your hypothesis is correct.

**Results:** *Analyze the information you have collected.*

Organize your notes. **Construct charts, tables, and/or graphs** with data.

**Conclusion:** *Communicate your results to others on a display board.*

- Project should be organized on the display board neatly.
- Restate the hypothesis and whether it is true or false.