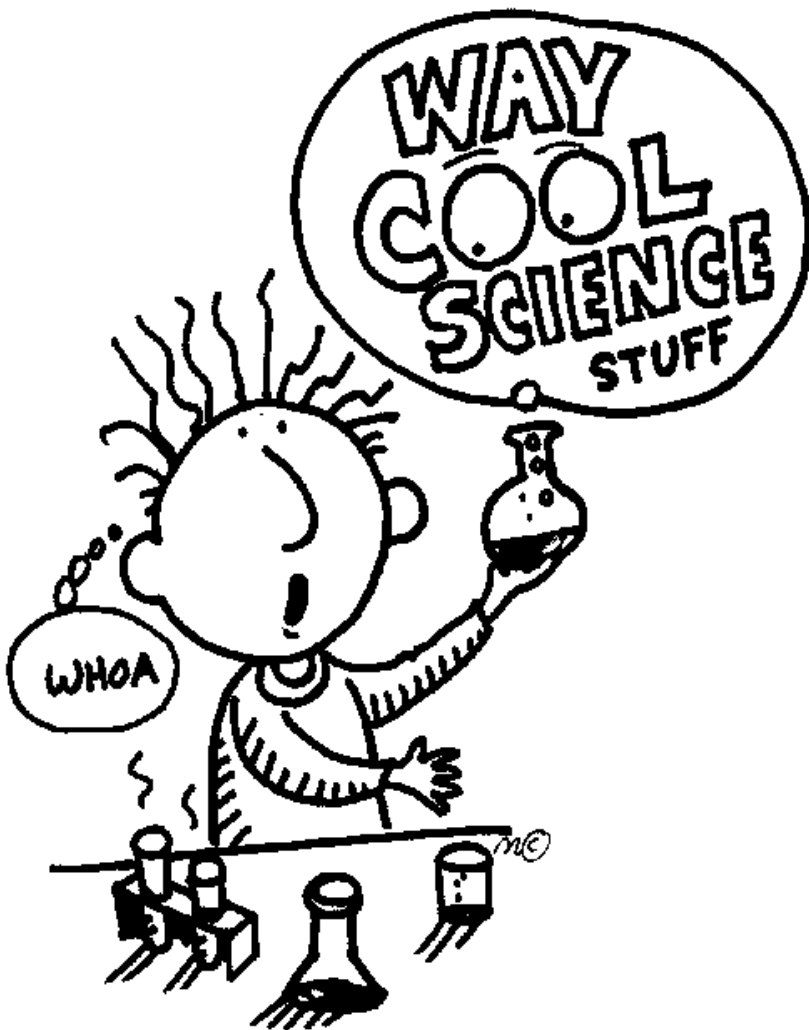


# 10<sup>th</sup> Annual Buena Vista Family Science Fair

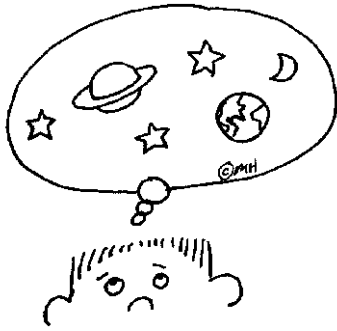
Wednesday, March 19, 2008 ~ 7:00 to 9:00PM

**(Deadline for entry is Friday, February 29<sup>th</sup>)**



**PLEASE  
take a few  
moments to read  
through the  
following  
important pages!**

If you have questions  
PLEASE contact Debórah Walker  
944-6423/dwalker@wcsd.k12.ca.us  
[science@buenavistapta.org](mailto:science@buenavistapta.org)



# 10<sup>th</sup> Annual Buena Vista Family Science Fair Wednesday, March 19<sup>th</sup>, 2008

*Brought to you by the BVPTA*

Thanks for participating in the Science Fair! The purpose of the Science Fair is to encourage students to develop a greater interest in science and technology and to develop skills in critical thinking, research, problem solving and the use of the Scientific Method. Students in Kindergarten through 5<sup>th</sup> Grade are welcome to participate and we encourage parents to assist their resident scientist(s). Projects can be a simple **collection** or **model**, a scientific **observation** or **demonstration**, or an **experiment**. This is a non-competitive fair and projects will not be judged but each student participant should be able to explain the project and what was learned. Small group projects are welcome. Here is everything you need to get started on your Science Fair project.

## In this packet are:

1. **Entry Form** – **must be returned to the office by Friday, February 29<sup>th</sup> – no entries will be accepted after this date!**
2. **Safety Rules** – please follow them.
3. **Student Checklist** – an outline to help organize your time.
4. **Display Guidelines** – you will receive a **free** display board when you turn in your Entry Form.
5. **Process Skills and the Scientific Method** – what you will be doing. Learning how to apply the Scientific Method is a critical part of the National and CA State Science Standards. An expanded explanation is included in this packet.
6. **Ideas for Projects/Resources** – lots and lots of them.

## Ways for parents to help with the Science Fair Project:

1. Read this packet of material with your child(ren).
2. Assist in finding a project that is interesting and challenging but is within his/her ability to carry out in the time available.
3. Discuss a plan for the project and explain procedures that need to be followed.
4. Assist in collecting supplies and materials needed.

5. Help with library and on-line resources.
6. Point out the importance of accurate observations and record keeping.
7. Supervise use of tools, chemicals, etc.
8. Give lots of encouragement along the way.
9. Discuss ways to display the project.
10. HAVE FUN!

### **Some DON'TS for parents (please!):**

1. DON'T select the project for your child.
2. DON'T do the project for him/her.
3. DON'T let your student wait until the last minute to do the project.
4. DON'T let your child think the project is a failure if it doesn't turn out as expected. This is part of the scientific process...and is often surprising!
5. DON'T take the project so seriously that it isn't fun.

While teachers will be available to advise students, the initiative and responsibility belong to the young scientist. Science Fair projects are not to be last-minute-hurry-up-and-finish assignments. We want it to be an enjoyable learning experience for all participants. Give yourself plenty of time to work on the project. **Remember, the deadline for submitting an entry form is February 29<sup>th</sup>** but you should be working on your project **long** before that date! You will receive an up-date the first week of March with details regarding set-up for the Science Fair, the evening schedule and take-down.

**Please pay special attention to the Display Guidelines.** Take care to include your name, grade and room number on the front of your display board. Avoid writing or drawing directly on the board – it's there to hold what you've written and/or drawn, photos and other "stuff". Mount these various things on poster board and then attach it to the display board.

This is a lot of information...so if you and/or your student have questions please feel free to contact the Science Fair Coordinator. Debórah Walker can be found at school during the day, at [science@buenavistapta.org](mailto:science@buenavistapta.org), or at 944-6423 in the evening.

### **Several web sites to check out:**

[www.sciencebuddies.com](http://www.sciencebuddies.com)

<http://school.discovery.com/sciencefaircentral/jvc/>

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

<http://www.ipl.org/youth/projectguide/>

# OFFICIAL ENTRY FORM

## 2008 Buena Vista Annual Family Science Fair

Due in the office by Friday, February 29<sup>th</sup>

Student  
Name(s) \_\_\_\_\_

Grade \_\_\_\_\_ Room # \_\_\_\_\_ Teacher \_\_\_\_\_

Category:

- \_\_\_\_\_ 1. Model
- \_\_\_\_\_ 2. Collection
- \_\_\_\_\_ 3. Observation
- \_\_\_\_\_ 4. Demonstration of a scientific principle
- \_\_\_\_\_ 5. Experiment using the Scientific Method. (You will receive special information to help you organize your experiment if you choose this category.)

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

Brief Description:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Special Needs:  
Access to an electrical outlet? \_\_\_\_\_ (You will need to provide your own extension cord.)

Other? (explain: extra table space, floor space, etc.)  
\_\_\_\_\_

Parent's Signature:  
\_\_\_\_\_

# Safety Rules

- All experiments using vertebrate animals or humans as subjects should cause no harm or undue stress to the subject. These projects should have written approval from the teacher and/or a veterinarian before beginning the experiment.
- **No LIVE vertebrate animals** should be exhibited at the fair (models, stuffed animals or photographs should be used instead). Exceptions may be granted with special permission.
- No human body parts should be displayed. Exceptions are teeth, hair and nails.
- Students should avoid doing experiments involving bacteria cultures.
- No controlled substances should be exhibited.
- No dangerous or combustible chemicals should be displayed at the fair. Rockets or engines must not contain fuel. All chemicals displayed should have the contents clearly marked on the container.
- **No open flames will be permitted.**
- Student experimenters should wear safety goggles (eye protection) and follow standard safety practices when working with fire, hot liquids or caustic chemicals. Parent approval and supervision may be required for these projects.
- All projects using household electricity must conform to standard wiring practices and safety.
- Expensive or fragile items should not be displayed. Valuable items essential to the project should be simulated or photographed.
- Collections (i.e. minerals, shells, feathers, etc.) can be protected with a covering or plastic wrap.
- Items to be displayed in front of backboard should be adequately secured (i.e. batteries, wire, switch and motor - secure to a piece of plywood and place in front of backboard).
- Carefully pack all materials when transporting to and from the fair.



# Student Checklist



- Choose a topic that you are interested in doing (one that is not too hard nor too easy).
- Fill out the project entry form and turn it into the office by Friday, February 29<sup>th</sup>.
- **Begin work on your project as soon as possible. If you are growing plants or doing some other activity that requires weeks of time you need to count back from Wednesday, March 19<sup>th</sup> to allow for a successful project.**
- **For a suggested timeline, project ideas, and everything else “science fair” check out [www.sciencebuddies.org](http://www.sciencebuddies.org)**
  - ✓ Organize everything you plan to do.
  - ✓ Write out your procedure.
  - ✓ If you are doing an experiment, make a guess (hypothesis) about what you think will be the result.
  - ✓ Gather your materials.
  - ✓ Perform your experiment.
  - ✓ Record your observations.
  - ✓ What did you learn or find out by doing this experiment?
  - ✓ See if your original hypothesis was right.
- Begin work on your display.
  - ✓ Present the information you collected in easy to read graphs or tables.
  - ✓ If you did an experiment, reserve special areas of your display for your Problem, Hypothesis, Procedure, Results and Conclusion.
  - ✓ Please follow the display guidelines
- Bring your project to school between **2:00 and 6:00 PM Wednesday, March 19<sup>th</sup>**

## Process Skills and the Scientific Method

Science is both a body of knowledge (content) and a method of acquiring knowledge. It involves process skills such as observing, communicating, classifying and inferring. It also involves problem solving skills (i.e. using the inductive and deductive logic and one's rational powers to solve problems). By studying science and scientific methods, a student develops an attitude of inquiry as well as a body of scientific knowledge.

When students do science projects they are independently working at their own level, developing and refining their process skills and, at the same time, increasing their knowledge of science and their ability to think critically.

At the primary level (K-3), the process skills are mostly organizational in character.

1. **Observing:** By using the five senses, we can identify the characteristics of objects and their interactions.
2. **Communicating:** Objects are identified and events are described so that information can be passed on. This skill allows us to learn information "second hand" and at a much faster rate than otherwise possible.
3. **Comparing:** Objects and events are examined in terms of similarities and difference. By comparing the known to the unknown we gain knowledge about the unknown. All measurements (weight, capacity, quantity, relative position, temperature, voltage, etc.) are forms of comparing.
4. **Organizing:** By systematically compiling, classifying and ordering data we gain knowledge of principles and laws.

At the next level (4-6), the process skills are relational in character.

5. **Relating:** Includes experimenting and is a process by which we weave concrete and abstract ideas together to test or explain phenomena. Here, skills of inductive, deductive and hypothetical reasoning are developed. As we attempt to answer a question or solve a problem we use the **scientific method**. It consists of the following five steps:
  - e. **Identify the Problem:** Specifically state what the investigator is attempting to find out.
  - f. **Hypothesis:** The investigator considers what is previously known about the problem and proposes a solution.
  - g. **Experiment:** An experiment is designed to solve the problem or answer the question. A control and adequate sample sizes should be used whenever applicable. A control is an unaffected sample that is compared to the experimental samples. Since variables can influence

the results of an experiment, they should be controlled. You can only test one variable at a time to determine its relative effect.

- h. **Results:** Proper presentation of data allows one to easily see the relative effects of one or more variables. Results can be observable or measurable quantities and can be presented in tabular or graphical form.
- i. **Conclusion:** What was discovered by doing the experiment? Is there sufficient evidence from the results to answer the original question? Reevaluate the hypothesis. Was it correct?

## **Some Helpful Definitions and Resources**

**Model:** A model is a representation of an object or system. It can help us think about and understand something which can't be easily seen. Examples would be a model of the solar system or the chemical structure of sugar.

**Collection:** A collection is a group of items that have something in common. The processes of sorting and classifying objects are an important part of science. By arranging similar items together we discover traits they have in common and sharpen our observation skills. Examples are shell or rock collections.

**Observation:** Observations are what you can detect by using your senses. In an observation you watch something carefully and record all that you see happen over a period of time. An example would be observing crystal growth.

**Demonstration of a Scientific Principle:** Like a model, a demonstration helps illustrate an idea. The demonstration gives a visual representation of the idea or principle. Examples include demonstrating the flow of electricity through a circuit or how hot and cold air move differently.

**Experiment:** An experiment you make a comparison between two situations, keeping all things the same except one. The one thing you plan to be different in the experiment is called the **test variable**. You decide on what is going to be different before doing the experiment. An **outcome variable** is the thing you compare in an experiment. You don't know what you will find out until after you do the experiment. An example would be planting two peas in different types of soil. If each developing plant was given the same amount of water and sunlight, the only thing that differs (varies) is the soil type, it is the variable. The outcome variable maybe the size of the plants after 20 days growth.

**Hypothesis:** A hypothesis is a prediction about what you think will happen in the experiment, what you think the results will be.

### Resources

There are lots and lots of good books on science fair projects available in the local libraries. Our own Buena Vista library has a few and the Contra Costa Library system has many. Some books have very specific ideas and plan for projects of many kinds. Others have more general ideas which can give you a starting point. Some even have fun titles like *Science Experiments You Can Eat* by Vicki Cobb.

The Internet is also very useful. [www.sciencebuddies.org](http://www.sciencebuddies.org) is great and will also direct you to other links.