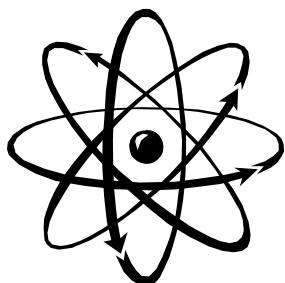
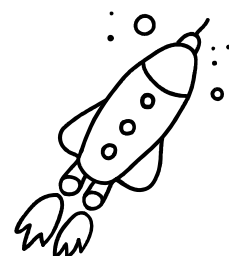


La Entrada School Science Fair

January 23-24, 2008



*"You never know where your
science project will lead you."*



Parent and Student Information Handbook

La Entrada Science Fair Schedule of Events

Wednesday, January 23	Set up exhibits	2:30 pm - 4:30 pm
	Judging of Projects	5:30 pm - 8:00 pm
Thursday, January 24	Interviews with participants	3:00 pm - 4:30 pm
	Exhibition and Awards Ceremony	6:30 pm - 7:30 pm

Introduction to the La Entrada Science Fair

There are many ways you can participate in the science fair. You might be interested in creating a science project that is eligible to go on to the San Mateo County Science, Math, & Technology Fair. Or you might want to just have fun with a cool demo or show off something interesting you learned this year. This is your science fair; you can participate in any way you choose! This is a low-key event for everyone to join in, and we will be awarding some fun and different kinds of prizes in all grade levels.

If you think you might be interested in developing a project that is eligible to go on to the County Fair, please read the section below and follow the guidelines recommended in this handbook for “competitive projects”. But if you aren’t interested in exhibiting your project beyond La Entrada, feel free to create away in any format you choose.

Each student participating in the La Entrada Science Fair will:

- Display his/her project at the fair
- Receive a certificate
- Participate in the evening awards ceremony.
- Receive extra credit in science.

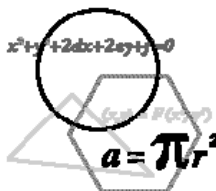


Competing Beyond La Entrada

The San Mateo County Science, Math, & Technology Fair accept projects from 5th graders but only judge projects produced by 6th, 7th, and 8th graders. Winners at the County Fair may be invited to go on to the Bay Area Science Fair or the California State Science Fair held in the spring on the USC campus in Los Angeles. Two years ago, two La Entrada students traveled to L.A. to compete in this exciting event. Look at the last page of the handbook for dates and info about these competitions.

If you would like to be considered for advancement to the County Fair (and possibly beyond), your project must be either a scientific experiment using the scientific method or a math or engineering project demonstrating a suitable level of original research. In addition you must follow some guidelines. Please read over these sections if you are interested, and pay special attention to comments for “competitive projects.”

If you think you might be interested in developing a project eligible to go on to the higher levels of competition, please discuss your project with your science teacher or contact Susan Schultz (650) 234-8355



Teams

You may find it more fun to work on your science project with a partner. The San Mateo County Science, Technology, & Math Fair do not accept teams of more than 2 people so we ask that you either work with just one partner or work alone on a science fair project.



Mentors

Many parents have questions about how much help is appropriate on a science fair project. **Mentors are allowed and encouraged, especially for more complex projects.** A mentor may be a parent, a teacher, an expert from the community, a family friend, or even an experienced older teenager. Mentors can help guide projects and offer suggestions. A mentor can be especially helpful in working with the student to develop an appropriate topic. **Mentors do not perform the work.** The student should have a thorough understanding of the project he/she is doing. The student should provide the creative input, implement the project, keep a journal, write up the results, develop the presentation and poster board, and be able to explain the project to anyone. Any help received should be acknowledged on the poster board.

The science project is a recreational, voluntary activity which should be accomplished after other school assignments are completed.



The following pages contain information helpful to anyone working on a science project for the fair. Some of the information, such as the pages on guidelines and the scientific method, are especially relevant for those who are interested in competing beyond La Entrada.

Good luck and have fun!

Selecting a Science Fair Project Topic

Selecting a topic for your science project can be the hardest part of the process, but it can also be the most fun. Your project should reflect a subject that interests you. **You don't have to limit yourself to the world of science to come up with fun and creative ideas for science projects.** Think about what you like to do – music, sports, chess, cooking. Any area of interest can provide a lifetime of exploration and an endless number of science project ideas!

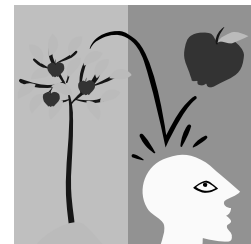


Considerations in selecting a project:

1. What are your interests? What questions do you have about the world around you? Brainstorm and make a list of anything that comes to mind.
2. How much time do you have? A science project can be a lot of work. Some projects (such as growing plants) must be done over an extended period of time.
3. Think about factors that might affect your schedule, such as the season, weather, etc.
4. Think about the resources you will need. How much help will you need? How much will the materials cost? There are limitations in the kinds of things you can work with. In general, it is difficult to do projects with animals or toxic material.
5. There are many good ideas available in websites and books. See the resource page for suggestions. But think creatively! It can be rewarding to try something different.

Here are a few general topic ideas just to get you thinking:

- Use a microscope to study soils, pond water, or other material.
- What's the best weight for a baseball bat?
- Study the effect of color on heat absorption.
- Study the conductivity of various substances.
- Does sound affect plant growth?
- Can you predict ocean waves?
- Count earthworms found in different types of soil.
- Test different designs for rocket nosecones.
- Does music make you smarter?
- How much does your blood pressure vary during the day?



Consider a math project:

- Study the occurrence of Fibonacci numbers in the world and in nature.
- Create your own cipher.
- Are the dice you buy true random number generators? Try rolling them a few hundred times and find out.

Like numbers themselves, the possibilities in science and math exploration are infinite!

The Scientific Method

If your project is a scientific experiment, and you would like your project to be considered for advancement to the County competition, you must follow the Scientific Method as described below. Even if you are not interested in the County competition, you may find this to be a helpful guide in planning your project.

1. Question

Define your problem in the form of a question. Ultimately your question will not be a yes/no question. (Example: How does age affect reaction time? **Not:** Does age reflect reaction time?)

2. Research

Research your topic using any resources you have access to – the library, books, magazines, the internet, relevant organizations, observations, and interviews with knowledgeable people in the field. Keep a bibliographic record as you proceed.

3. Hypothesis

Formulate your hypothesis. This is your educated guess about the solution to your question based on your research. The hypothesis should be worded to answer your question. (Example: Reaction time improves until the age of 18, and then declines.)

4. Experiment

Your experiment is the process by which you test your hypothesis. Your experiment should be a **controlled experiment**, in which all factors that might affect your results are kept the same except for the one factor that you are testing. The one factor that you change is called your **independent variable**. (Example: the age of the people whose reflexes are being tested.) The factor you measure or observe is your **dependent variable**. (Example: time of reaction) Many experiments also contain a **control group**. (Example: If you tested salt's effects on plant growth, your control group would be plants grown without salt.) You also need an adequate sample size; more samples tend to make more reliable data.

5. Data

You need to collect, organize, and analyze your data, the information you obtain from observation or measurement during your experiment. Carefully observe your experiment at predetermined intervals and keep your data neatly in a data chart. Record the date and time of all observations or tests, and note any other factors that may be influencing your results. Organize your data into tables and graphs that show the patterns in your data. Analyze your data carefully and conservatively using appropriate statistical measures.

6. Conclusion

Your conclusion grows out of your hypothesis and data. State whether your data does or does not support your hypothesis, then refer to specific patterns in your data to support your conclusion. Also discuss any outside factors that may have affected your results. **Finding your hypothesis to be incorrect is just as interesting and valid as finding support for your hypothesis.** And remember, in science it is better to understate your results rather than overstate them. It is very difficult to prove anything conclusively!

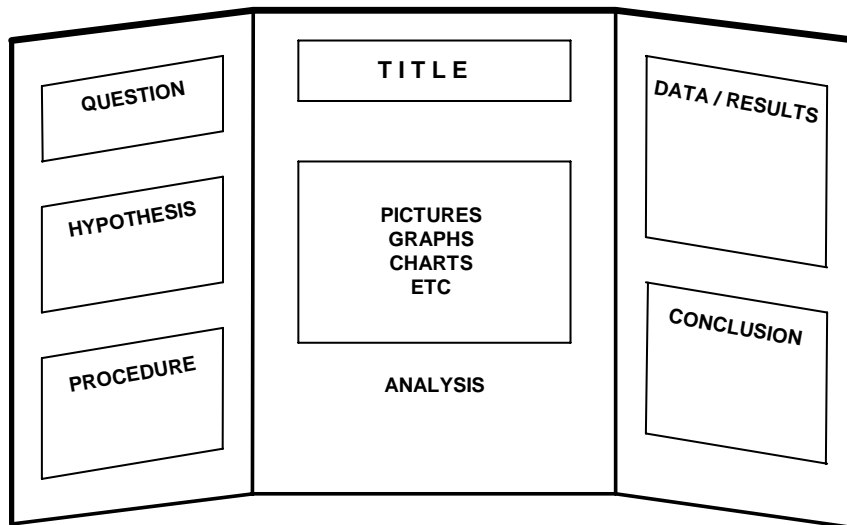


Project Presentation

A science project will typically consist of three parts described below: the display board, the equipment or other items for display on the table, and the journal. **You can be more creative with your display for a non-competitive project, but please stick to the size limitations.**

Example of a 3-Panel Display Board

(Note you might want to put the title in a header above the display board.)



Put equipment or other experimental items here.

Max dimensions: 108" H x 48" W x 30" D

Tips on Creating an Effective Display Board

- Before you begin you should plan out your board. Make your display easy to understand and attractive. Use a logical flow of ideas. The board should not look cluttered.
- The writing should be large enough to read easily. If you are doing a competitive project, the writing should be computer generated, not handwritten. Check your spelling and grammar!
- The title is important. It should be eye-catching and large enough to read from across the room. Feel free to use a header that goes on top of the display board.
- Use color effectively. Stick to one or two contrasting colors. Avoid fluorescent and clashing colors. If you are doing a competitive project, it is important to make your board look professional. Non-competitive projects can be displayed more creatively.
- Present your data in graphic form if possible. Talk to your science teacher about what types of graphs work best for your project – bar graphs, line graphs, pie charts, etc. Your graphs should be well labeled and easy to understand.
- Your name or picture cannot be displayed at the County competition.

Table Display

You may have equipment or a model from your experiment displayed on the table in front of the board. It is helpful to have something to use as you talk about your project to a judge or visitor. Your model should be well labeled and meaningful to your project. Be sure to check the guidelines on display items.

Science Project Journal

You should keep and display a journal if you are interested in participating in the County competition. A journal will help you organize your thoughts, ideas, and experimental results during the course of the project. You will refer to the journal when you prepare your display board and write your conclusions. The journal will help the judge assess your project and your efforts. A journal is optional for non-competitive projects.

Recommended Journal contents for competitive projects:

Research

Bibliography of all your resources. Please use an accepted bibliographic format.
Notes, printouts, and photocopies of your research.
Note from interviews. Record the time, date, and location of each interview.

Record of Data

Tables and/or charts of data from your experiment.



Log, Plans, and Procedures

Journal of your efforts and activities.
Plans and thoughts about your project.
Drawings and notes to show your developing ideas.
Conclusions. The final entry in the log should be your concluding thoughts on what went well, what you learned, what could have gone better, and what you would change it improve the experiment if you did it again.

Rough Drafts

Rough drafts of all the papers on your display board.
A sketch of the layout of your board.

Judging Criteria for Competitive Projects

Keep in mind the three major areas judges at the County will be considering when assessing your project in a competition:

1. Scientific skills, methods, and creativity.
2. Project content, complexity, and your understanding of the material.
3. Project appearance and clarity of communication.

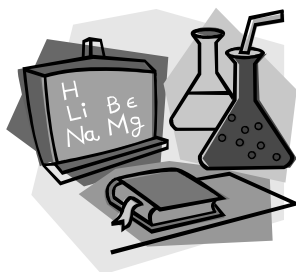
Remember that you want both the judge and the casual viewer to be able to readily understand your project!

Science Project Guidelines for County Competition

The guidelines below are adapted from the San Mateo County Science, Math, & Technology Fair. These guidelines are specifically designed for projects which are eligible to go onto the County fair. If your project is invited to participate in the County Fair, you will receive a complete packet of their guidelines. Display rules at the La Entrada Science Fair are less strict.

Please note: Projects involving human subjects, animals, bacteria, tissue, or any controlled substances require special paperwork that must be filled out before you begin your experiment. Please contact your science teacher if you are considering a project with these elements – even for projects involving surveys.

1. All work should be done by the student and must be an experiment using the scientific method unless entered in the Engineering or Math categories. Appropriate assistance may be provided by teachers, parents, or others.
2. No names or photos of participants or their schools should be visible on the project display; this includes project reports, data notebooks, etc.
3. Controlled substances, hazardous materials, or sources of open flames cannot be exhibited or used in any project. e.g., marijuana, fireworks, bullets, candles, carbon dioxide.
4. Liquids, live animals, mounted birds, mammals, stuffed specimens, hypodermic needles, and bacteria or molds will not be allowed in the displays. Substitute pictures or drawings for the display. Bones are acceptable if they are clean and free of decaying matter.
5. Plants, gravel, sand, and soil must be tightly enclosed and sealed.
6. Project displays must fit into the following dimensions: height: 108", width: 48", depth: 30", Project displays must be self-supporting.



Science Project Resources

Websites

Here's an important website for students interested in higher levels of competition:

California State Science Fair

www.usc.edu/CSSF

This website has a lot of useful information and a complete list including abstracts of every project that went to the state level (hundreds of projects). It's a helpful website for anyone looking for project ideas. Once you get on the website, click "Fair," then click "Projects organized by subject". For example, in the Environmental Sciences section there is a Junior division project (J0924) called "Burn Today, Grow Tomorrow", an interesting project about the effects of fire on soil. You can click on the abstract and see a brief description of what they did, how they did it, and what they found out.

The California State Science Fair website also has links to many other good websites. One of the links will take you to an online directory of every science fair on the web!

More helpful websites for science project ideas:

www.ipl.org/div/Kidspace/projectguide
www.scifair.org/
www.sciencebuddies.org
members.aol.com/ScienzFair/ideas.htm
www.super-science-fair-projects.com



Ideas for math projects:

<http://camel.math.ca/Education/mpsf/>

Library



The La Entrada library has many good books on science projects. Our librarian, Ms. Skjervheim, has a whole list of them and can help you find them. Here are just a few:

507.8	Adams, Richard	"Ideas for Science Projects"
507.8	Ardley, Neil.	"101 Great Science Experiments"
507	Iritz, Maxine	"More Blue Ribbon Science Fair Projects"
507	Iritz, Maxine	"Science fair: Developing a Successful and Fun Project"
507	Van Cleave, Janice	"Guide to the Best Science Fair Projects"
507.8	Vecchione, Glen.	"100 Award-Winning Science Fair Projects"

Beyond La Entrada: Advanced Competitive Science Fairs for 2008

Finalists in the La Entrada Science Fair may be invited to participate in this event:

San Mateo County Science Fair

Feb 3-8, Hiller Aviation Museum

Categories:

Behavioral/Social/Health Sciences
Biological Sciences
Earth Sciences
Engineering/Technology
Environmental Sciences/Ecology
Mathematics/Computers
Physical Sciences



Projects are accepted in these categories from 5th grade through high school. Awards are given at the following grade levels: 6th, 7th, 8th, High School. Team projects (two people max) are accepted.

Finalists at the San Mateo County Fair may be invited to participate in these two events:

Bay Area Science Fair

March 20-24, S.F. County Fair Building

home.pacbell.net/sfbasf

Categories:

Behavioral Sciences
Biological Sciences
Engineering/Computer Applications
Environmental Sciences
Mathematics/Computers
Physical Sciences



San Francisco Bay Area Science Fair

Projects are accepted in these categories from County Fairs in grades 7 - 12. Individual projects only.

California State Science Fair

May 19-20, California Science Center,
Los Angeles

www.usc.edu/CSSF

Participants in the Junior Division can compete in 19 categories. Please see the website for a complete listing. Projects are accepted from County and Regional fairs. Awards are given at the following levels: Junior Division (6th – 8th), Senior Division (9th – 12th). Team projects of up to 3 people are allowed.

