

MADERA SCIENCE FAIR

Grades K-3

Why do a science fair project?

The features of the Next Generation Science Standards include the use of a conceptual framework; clarification statements to explain the level of rigor expected and connect concepts with applications; concrete links between the standards and assessments; and the development of **inquiry and design processes** to facilitate students in both science and engineering practices.

Scientific practices in the NGSS are the behaviors that scientists engage in as they investigate and build models and theories about the natural world. The NGSS also include engineering practices, which are behaviors that engineers engage in as they apply science and mathematics to design solutions to problems. Scientific inquiry involves the formulation of a question that can be answered through investigation, while engineering design involves the formulation of a problem that can be solved through design.

Cross cutting concepts help provide students with a framework for connecting knowledge from the various disciplines. These concepts are: Patterns, Cause and Effect, Scale, Proportion and Quantity, Systems and System Models, Energy and Matter, Structure and Function, and Stability and Change. These concepts provide an organizational schema for interrelating knowledge from various scientific fields into a coherent and scientifically-based view of the world.

Engaging in opportunities such as the Madera Science Fair will allow students and families the chance to plan activities and delve deeply into these types of thinking.

What kind of project can I do?

Grades K-3 may enter a collection (rocks, feathers, magnets, etc.), science explanation display (written or pictorial display of how something works), scientific observation display (written or pictorial display of moon phases, wind speed and direction for a month), a science model (how the earth creates a shadow on the moon using Styrofoam balls and a flashlight).

Grades K-3 may also choose to enter a problem-solving experiment, with an independent variable (something that is changed in the experiment), and one or more dependent variables (things you will observe and measure). **Students choosing to do an experiment should refer to the 4th-6th grade instruction packet which provides helpful information and walks students through the process** (available at www.maderapta.com or as a hard copy in the school office). Individual, small group (2-4), or whole class projects may be entered. A student may enter more than one project.

Where can I get ideas for projects?

Books, the Internet, magazines, science museums, and videos are good resources. Remember that there are many different areas of science such as:

- Physical: gravity, magnetism, electricity, motion, color and light, chemistry
- Earth: temperature, weather, energy, pollution, soil
- Biological: plants, food, humans, and animal behavior.

Your project can easily come from your own toys, kitchen or backyard!

See online tutorial at: <http://www.jpl.nasa.gov/education/sciencefair/>

Who can help?

Families can assist students by offering guidance, helping gather materials, providing supervision, and proofreading the final draft. Students can also seek advice from their classroom teachers. The Science Fair Committee will be available to make presentations in classrooms that explain the Science Fair Process, share previous projects, answer questions, and go over the elements of an Inquiry Based Project.

How are projects judged?

Judges will review all projects, but will not assign place ribbons for grades K-3. Students will receive a "Young Scientist" ribbon and a certificate of participation.

Directions for collections, displays, and models:

- Student's name, grade, room number and teacher's name must be written on the **BACK** of the display.
 - Nothing on the front may identify the student, including photos.
 - The project should include as many of the following as possible (this will depend upon the student's ability and type of project):
 - ❑ Title
 - ❑ Background information and purpose
 - ❑ Project description (what, where, how the collection was gathered, description of parts of a model)
 - ❑ Knowledge and presentation shows effort and understanding on the student's part.
 - ❑ Description of what the student learned.
- Consideration will be given to neatness, legibility, correct grammar and spelling, general attractiveness, level of difficulty and effort.
- Science projects are typically mounted on a display board made of heavy cardboard or tag board. **They must be freestanding and must not exceed the following dimensions: 36 inches high, 48 inches wide, and 15 inches deep (standard size display board).** Display boards are available at most office supply stores. Models and displays can be placed in front of the board. Collections should be contained so that they can be easily moved. Projects mounted on a poster board must come with a display stand.
 - Props are discouraged, and should be replaced by photographs when possible.
 - Dangerous chemicals, open flames and explosives may not be exhibited. All projects must be durable and safe. Moveable parts must be firmly attached.
 - The main work on the project must clearly be understood and done by the student. A student should be able to share their understanding of the project in their own words.
 - Permission to use live animals (including humans) in a project must be obtained from your child's teacher or the Science Fair Committee. Project idea must be presented to obtain permission.
 - If your K-3 student would like to enter an experiment, please follow the guidelines as outlined in the 4th– 6th grade science fair packet. The packet is available in the school office or at www.maderapta.com.