

7th Annual Science Fair Information Packet For Roxborough Intermediate Students



Intermediate Science Fair Dates

December 10th: Registration Deadline

January 24th: Drop off Display Boards in the Library from
7:45– 8:30am (No Late Entries!)

January 25th & 27th: Judging during school hours

January 28th: Family Night 6:00pm

The goal of the Science Fair is to support students' interest in conducting scientific research and experiments, to give students an exposure to the scientific process at an early age, and to have fun with science!!!

Please review the information in this packet which includes important guidelines (including some changes from previous years) and helpful hints to have a successful Science Fair experience!

Thank you,
The Roxborough PTIC Science Fair Committee



"Brought to you by"
Roxborough PTIC



Parent Teacher Involvement Committee = "People To Inspire Children"

www.roxptic.org roxptic@comcast.net

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I. Why Participate in the Science Fair?

Science is an important subject in our kids' education. The Science Fair provides an opportunity for children to experience science in a fun, hands-on way. It also provides an opportunity to build self-esteem as every participant is recognized with a certificate and ribbon. There are even prizes!

"Children are naturally curious. Science education feeds that curiosity and provides students with valuable concepts, life skills, and career options. Science helps give kids a greater appreciation for the world, a healthy dose of skepticism, strong problem-solving skills, and research know-how." http://www.tryscience.org/parents/wsm_2.html

II. General Information

- ❖ The main purpose of the fair is to have fun!! Your experiment does not have to be complicated for you to have a great experience.
- ❖ The main thing you should learn from doing the Science Fair is the *Scientific Method* for doing an experiment.
- ❖ You can opt of judging if you choose.
- ❖ You need to do an experiment to get full points in judging. This means asking a question and testing to get an answer. This is different than just demonstrating how something works.
- ❖ The Science Fair will be in the Library of each building this year, so students are *not allowed to bring in equipment*. Photos on the display board are a great way to show what you did. Remember, you are being judged more on your understanding of the experiment rather than the experiment itself. Classes will tour the displays, but students can ask individual teachers to show their experiments in class if they wish.
- ❖ When you drop off your display board in the library before school, you must leave the building and return at the start of school to line up with your class as usual.

III. How do I Get Started and What is Required?

- ❖ Get an early start. You may start with one idea and end up going down another path. Or you may choose a topic that requires a good deal of time such as growing plants. The more time you have the better!
- ❖ Choose something you are interested in (hobbies, sports, etc.) and want to learn more about.
- ❖ Search the Internet, go to the Library or ask one of us if you need guidance!
Science Fair Committee Chairs:
 - Donna Hoffmann dmcann@aol.com
 - Maggie Hunt maggshunt@comcast.net
 - Gina Pochocki ginapochocki@comcast.net
- ❖ You are required to submit a completed registration contract, do an experiment using the scientific method, prepare a 3-sided display board using the display template as a

guide. If you want to be judged, you need to come to a scheduled judging time during school hours.

IV. What is the Scientific Method?

The scientific method is the procedure scientists use to do an experiment. There are five basic steps:

1. Ask a Question—After you have decided on a subject, you need to ask a question. This is the question you want to answer by doing your experiment. It is what you will use as your *title* on your display board and should be as specific as possible.

Example: Say I have decided that my experiment will involve plant growth. A question I could ask is “How do plants grow?” This is a very general question; a more specific question would be “What is more important in the growth of a plant, light or water?” With the second question I can create an experiment to test different levels.

2. Research—By doing research you will find information already known about your subject.

In my example, I would need to have some background knowledge about plant growth before I could set up my experiment—I would need to know that plants use water and light to grow.

Gaining knowledge will help you with the next step of formulating a hypothesis.

3. Form a Hypothesis—A hypothesis is an educated guess. Use your research to help you form a prediction about what will happen in your experiment.

In my example, I could state my hypothesis as, “I believe that water is more important than sunlight for a plant to grow.”

4. Conduct an Experiment—This is where you gather *materials* you will need, plan out a *procedure* (like a recipe—a step by step set of instructions), and make *observations*. An experiment is different than a demonstration—you must do something that is testable/ measurable.

In my example, I would need materials such as cups, soil, seeds, water and sunlight. My procedure could look like this:

1. Put 1 cup of soil in 2 cups.
2. Place seed under 2 inches of the soil.
3. Put one plant in dark closet.
4. Put one plant on window sill.
5. Water plant in closet every day.
6. Do not water plant in window.

I would also keep records (*data*) of how much water I gave each plant and how much if any the plants grew. I could record what they looked like and take pictures or make drawings. When making your observations it is important to just write what you see. Don't try to explain it—that's part of the

next step. Your experiment can also be repeated so you can make sure that your results are accurate.

5. Reach a conclusion—Here is where you compare your hypothesis to what actually happened. Remember, IT IS OKAY FOR YOUR HYPOTHESIS TO BE WRONG! Some of the most interesting scientific discoveries have been the result of something going wrong. It is more important that you understand what happened and come up with explanations and ways to change the experiment next time. (You will not lose any points in the judging process for your hypothesis being wrong.)

In my experiment, say the plant in the window grew more than the one in the closet. My hypothesis would have been wrong and that's okay—maybe I didn't learn enough before I made my prediction, maybe there was a lot of moisture in the room, maybe I had a bad seed. What's important is that I think about what could have happened. Maybe next time I could use more than 2 cups.

A good tip is to keep a notebook with all of your information.

For more info about the scientific method, go to

<http://www.factmonster.com/cig/science-fair-projects/understanding-using-scientific-method.html>

V. How Does the Judging Work?

- ❖ A large part of the scoring comes from your display board and having things in the right place—Make sure to use the display template at the end of this document when putting your board together. You can type or handwrite your information, but just make sure that it's neat.
- ❖ If you want to be judged, you will also be interviewed by one or more judges. This experience is meant to give the student a chance to explain what they did and to show their *understanding of their experiment and the scientific method*. The interviews will be held during school hours and the students will be alone. Parents will have an opportunity to see everyone's board at the Family Night.
- ❖ The student is welcome to have a notebook or journal they have kept during the experiment to reference during the interview.
- ❖ It is important that the student do an experiment, not just a demonstration. An experiment involves trying different things to get different outcomes not just showing how something works. In my example above, a demonstration would have just shown how plants grow instead of testing the effects of water and sunlight.
- ❖ Be creative! Some of the best projects we have seen have come from questions the kids asked about something they wanted to understand. Don't be afraid to do something that hasn't been done before!
- ❖ Be excited about what you have learned; try to connect what you have learned in your experiment to other things and have explanations for what may have happened or not happened.

- ❖ Students are judged against their peers. The judges have different expectations for different grade levels so don't be afraid if you have a young child!
- ❖ The judges are members of our community; some have backgrounds in science, some in education, and some are just very enthusiastic about the science fair!
- ❖ The judges use their scores and the interview to come up with students that place. They talk to each other to come to a consensus. But remember, whether you place or not, you still get a ribbon and a certificate!

VI. What if I don't want to be judged?

- ❖ You are more than welcome to submit a display board and not be judged. You will be given a score on the written content on your board, you will not speak to any judged. You will not be eligible to place, but you will still receive a personalized certificate, ribbon, prize, rootbeer float party and be entered into our raffle.

VII. Places to Get Valuable Information

- ❖ The internet has many great sites to get help. Some examples are:
www.scifair.org/
www.ipl.org/div/projectguide/
www4.umdj.edu/camlbweb/scifair.html
<http://school.discoveryeducation.com/sciencefaircentral/?PID=fair>
http://www.sciencevideos.com/products/fair/science_fairs/science_fairs-1.html
- ❖ There are also a lot of great books with ideas and helpful information. The public library can help as well as the school libraries
- ❖ Also feel free to contact one of the committee chairs for information or if you need help in any way!
- ❖ Help your child practice interviewing so that they feel comfortable during the judging process—ask questions about what they did, have them explain their experiment and the scientific method.
- ❖ Have Fun! Science is about exploration and discovery—what could be more fun?!

VIII. What is My Role as a Parent?

- ❖ Remember when helping your child that the main goal of the science fair is to learn the scientific method and understand what they did in their experiment.
- ❖ Help your child choose something interesting to them—it doesn't *have* to be complicated—just make sure that your child really understands what they are doing.
- ❖ Assist your child in acquiring the right materials, getting the right resources, and managing their time.
- ❖ Let your child do as much as possible! They won't really understand their experiment if they just watch you do it! If they can't yet write, have them dictate to you instead of just writing it yourself. Encourage them to be the scientist and view yourself as their assistant (kids love that!).

- ❖ Make sure to let your child know that it is OKAY TO BE WRONG! Making mistakes is how we learn and make new discoveries sometimes.

IX. Roxborough Intermediate Student Checklist -To be used as a Guideline

- Subject Chosen
- Question Asked
 - Related to the subject
 - Is the title on the Display Board
 - Can be answered by experimentation
 - Is specific and states what is being tested
- Research
 - Include Resources on Display Board
 - Is directly related to the question
 - Keep a notebook if you like
- Hypothesis
 - Is an educated guess—a statement that can be tested.
 - Identifies what you are testing
 - Identifies the expected results
 - Is *not* something that you already know
- Procedure
 - Step by step set of directions numbered and sequenced so that someone could repeat the experiment exactly as you have done
 - Contains precise information about the sizes and amounts of materials used
- The Experiment
 - Is carried out using the procedure
 - Data is collected and recorded (In your notebook if you choose to have one—but still must be reported on display board)
- The Data/Results
 - Is organized
 - Shows numerical (quantitative) and observational (qualitative) data
 - Shows charts/tables/graphs constructed to clearly show data
- The Conclusion
 - Provides evidence from data to clearly accept or reject hypothesis
 - Identifies possible experimental errors and their effect on results
 - Poses new questions
 - Relates knowledge gained to other areas
- Display Board
 - Title (In form of a question)
 - Name
 - Grade
 - Teacher

- Hypothesis
- Conclusion
- Data, Charts, Graphs
- Photos, Drawings
- Procedure
- Materials
- Background Information/Resources
- Observations
- Interview Practiced
 - Understand experiment
 - Understand Scientific Method
 - Have explanations for what happened
 - Relate experiment to other areas