Okay, now get to work on your project! What's that? You still need help getting started?

Gould

Science Fair Planning Guide

Just follow these easy steps and you too can create a wonderful award-winning science project, thought up entirely by you!!!

Introducing:
The Most Fabulous, Scientific, All Helpful, Kid Friendly and Most Excellent Science Fair Project Planner Known to Kid Kind…

VERY IMPORTANT: Before you turn this page, recruit an adult to help you. They come in very handy, especially if you are nice to them and tell them you won't blow up anything…

From this point forward you are now… A SCIENTIST!
Types of Science Fair Projects:

There are two types of science projects: Models and Experiments. Here is the difference between the two:

**An Experiment:**
Lots of information is given, but it also has a project that shows the scientific method being used to test an answer to your question. Examples of experiments can be: “The Effects of Detergent on the Growth of Plants”, “Which Paper Towel is more Absorbent” or “What Structure can Withstand the Most Amount of Weight”. You can tell you have an experiment if you are testing something several times and changing a variable to see what will happen. We’ll talk about variables later….

**A Model, Display or Collection:**
Shows how something works in the real world, but doesn’t really test anything. Examples of display or collection projects can be: “The Solar System”, “Types of Dinosaurs”, “Types of Rocks”, “My gum collection…” Examples of models might be: “The solar system” or “How an Electric Motor Works”, “Tornado in a Bottle”

**So What Type of Project Should You Do?**

Even though you can learn a lot from building a model or display, we recommend that you do an…

**Why?**

Well, they are fun, they are more interesting and most of all, they take you through the **SCIENTIFIC METHOD**, which is the way real scientists investigate in real science labs. Besides that, the **scientific method** is what the judges are looking for!
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<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Observations...</td>
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</tr>
<tr>
<td>lead to Questions.</td>
<td></td>
</tr>
<tr>
<td>Questions form</td>
<td>Hypotheses.</td>
</tr>
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<td>tested through experimentation.</td>
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<tr>
<td>Analyze Data!</td>
<td></td>
</tr>
<tr>
<td>Draw Conclusions!</td>
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<td>Share Results!</td>
<td></td>
</tr>
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What is scientific method?
Steps to Science Fair Success:

✓ Select a topic
✓ Create a question based on the topic
✓ Research your topic
✓ Develop a hypothesis (educated guess) about what the results might be
✓ Plan an experiment to test your hypothesis
✓ Conduct your experiment and record your observations and data on a log
✓ Analyze your results and create graphs to show your data if possible
✓ Write your conclusion
✓ Write a brief summary of your project
✓ Create your Science Fair display
Choosing a Topic:

All great projects start with great questions but before you get started on a great question you need to pick a subject or topic that you like. There are three different categories of the Science Fair to choose from:

**Life science:** This category deals with all animal, plant and human body questions that you might have and want to do an experiment about. Life science also includes studying behaviors, so it’s a perfect category to try taste tests, opinion surveys, animal behavior training (or even training behavior in humans...like baby brothers or sisters...)

**Physical Science:** If you like trying to figure out how things work, then this is the category for you! It includes topics about matter and structure, as well as electricity, magnetism, sound, light or anything else that you might question, “How does it work and what if I do this to it, will it still work?”

**Earth and Space Sciences:** This category is really awesome because it covers all sorts of topics that deal with the Earth or objects in space. This includes studying weather, Geology (which is the study of everything that makes up the Earth, like rocks, fossils, volcanoes, etc..), and the study of all that is in space, including the stars, our sun and our planets. Unfortunately this topic is also where most kids mess up and do a collection or model project instead of an “Experiment,” so be careful!!!

Coming up with a Question:

Now that you have picked out a topic that you like and that you are interested in, it’s time to write a question or identify a problem within that topic. Here’s an idea of what we mean:

**The Effect Question:**
What is the effect of _____ on_____?

**The Affect Question:**
How does the _____ affect ____?

**The Variable Question:**
Which/What ______ (verb) _______?

Doing the Research:

So you’ve picked your category and you’ve chosen a topic. You even wrote a question! Now it is time to research your problem as much as possible. Becoming an expert at your topic is what real scientists do in real labs.

How do you become an expert?

YOU READ!
READ about your topic. READ encyclopedias. READ magazine articles and books from the library. READ articles from the internet. Take note of any new science words you learn and use them. It makes you sound more like a real scientist. Keep track of all the books and articles you read. You’ll need that list for later.

YOU DISCUSS!
Talk about it with your parents. Talk about it with your teachers. Talk about it with experts like Veterinarians, Doctors, Weathermen or others who work with the things you are studying.
Developing a Hypothesis:

Now it is the time to PREDICT what you think will happen if you test your problem. This type of “SMART GUESS” or PREDICTION is what real scientists call A HYPOTHESIS. Using this fancy word will amaze your friends and will have you thinking like a full-fledged scientist.

Hypothesis Examples:

1. If ___________ then ____________.
2. I predicted that ______ would occur when I ______.
3. I think that ____________________.
4. My hypothesis was that ____________.

Plan your Experiment:

Make a list of materials for your experiment.

Make clear and specific step-by-step procedures for your science experiment. Your procedure should allow someone else to repeat your experiment and get similar results. Make sure your experiments will answer your question.

Things to think about while planning your experiment:
- How much time will you need?
- Will you do repeated trials or use duplicate test subjects?
- What will you be observing and recording?
- What materials will you need?
- Where will you conduct your experiment?
- What are the exact steps to follow in running a test or trial?

Experimenting and Recording Data:

Do your experiment and collect the data! Data is the information you learn by doing your experiments.
Three ways to observe and record data:
1. Measuring (data chart)
2. Counting (tally sheet)
3. Describing (journal or diary) – be sure to date entries

Analyze your Results:

Look at your data. Is it complete? Are the entries dated and in order? Is everything labeled with titles and units? Is your log easy to understand? Demonstrate your results in a graph. A graph is a picture of your results. Types:

Bar Graph:

Line Graph:
**Writing your Conclusion:**

The conclusion is your chance to share your results. It is where you let everyone know if your original hypothesis was correct or incorrect. You need to be honest in reporting your results.

**Conclusion Guidelines:**

1. The conclusion needs to be in paragraph form and needs to be put on your science fair display board with your graph.

2. Your conclusion should only be based on your actual data.

3. It should include:
   a. Your Question
   b. Hypothesis
   c. Actual results (data)
   d. Do the results agree or disagree with your hypothesis?
   e. Do your results lead to any further questions?

**Writing your Summary:**

The summary is your chance to give a brief overview of your project. Write your summary once your research and experimentation are complete.

**Your summary should include:**

1. A statement of your science question
2. A statement of your hypothesis
3. A short outline of your experiment
4. Your actual end results
Helpful Internet Sites:

Discovery.com: Science Fair Central
http://school.discovery.com/sciencefaircentral/
"Creative investigations into the real world." This site provides a complete guide to science fair projects. Check out the 'Handbook' which features information from Janice VanCleave, a popular author who provides everything you need to know for success. You can even send her a question about your project.

Science Fair Idea Exchange
http://www.halcyon.com/sciclub/cgi-pvt/scifair/guestbook.html
This site has lists of science fair project ideas and a chance to share your ideas with others on the web!

Cyber-Fair
http://www.isd77.k12.mn.us/resources/cf/welcome.html
This site has one-sentence explanations of each part of a science fair. The site also has an explanation of what makes a good project and an explanation of how to come up with your own science fair project.

Try Science
http://tryscience.com
Science resource for home that gives you labs to try and 400 helpful links all related to science

The Yuckiest Site in the Internet
http://yucky.kids.discovery.com/
Brought to you by Discovery Kids, this site gives you lots of ideas on how to do the messiest yuckiest experiments.

Experimental Science Projects: An Introductory Level Guide
http://www.isd77.k12.mn.us/resources/cf/SciProjIntro.html
An excellent resource for students doing an experiment based project.

Gateway to Educational Materials: Science Fair Projects
The Gateway to Educational Materials, extensive and detailed step-by-step guide to doing a science fair project.

Science Fair Primer
http://users.rcn.com/tedrowan/primer.html
A site to help students get started and run a science fair project.

Science Fair Project Guidebook
http://www.energy.sc.gov/K-12/science_fair.htm
The State of South Carolina publishes a K-12 science fair guidebook. It can be viewed using Adobe Acrobat Reader.

Science Project Guidelines
http://www.thesciencefair.com/guidelines.html
The scientists at the Kennedy Space Center have participated in judging local school science fairs for many years and have some great suggestions for student research projects.

The Ultimate Science Fair Resource
http://www.scifair.org/
A variety of resources and advice.

What Makes A Good Science Fair Project
http://www.usc.edu/CSSF/Resources/Good_Project.html
A website from USC that gives a lot of good tips and ideas to think about regarding what makes a good science fair project. Advice for students as well as teachers and parents is included.

Mr. McLaren's Science Fair Survival Page
http://www.ri.net/schools/East_Greenwich/Cole/sciencefair.html
Tips from Archie R. Cole Junior High school on what makes a good project.