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GOING FOR THE GOLD: HOW TO PRODUCE A WINNING SCIENCE FAIR PROJECT

Written by Greg Hill, Science Fair Expert, EfstonScience

WHAT IS A SCIENCE FAIR PROJECT?

It is an experiment designed to find the answer to a question and is the topic of your Science Fair Project. For example, you might want to ask: "What is the effect of temperature on the growth rate of plants?"

HOW TO YOU SELECT YOUR QUESTION?

To make the project interesting to you, use a question that you would really like to know the answer to. (Limit yourself to one question)



**Think of
an Idea**

There are three good sources of ideas for your project:

- 1) Your own personal interests and activities.
- 2) Advertising claims.
- 3) Popular myths and urban legends.

Examples:

- If you have an interest in snowboarding, you might like to know, "What effect does waxing a snowboard have on its speed?"
- You may wonder, "Is it true that a certain brand of antacid neutralizes 20% more stomach acid than another brand?"
- You might have heard that drinking a cola after taking an aspirin will burn a hole in your stomach so ask, "What is the effect of drinking a cola and taking an aspirin?"

ANSWERING A QUESTION THROUGH EXPERIMENTATION IS THE CENTRAL ACTIVITY OF SCIENCE. REAL SCIENTISTS DO IT EVERY DAY. WORKING ON A SCIENCE FAIR PROJECT OF YOUR OWN DESIGN IS THE MOST SCIENTIFIC ACTIVITY YOU ARE LIKELY TO DO AS A STUDENT.

ARE THERE ANY KINDS OF PROJECTS YOU SHOULD AVOID?

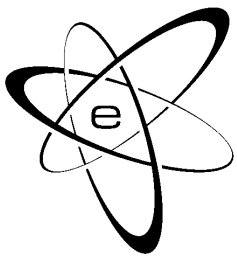
- Science Fair rules generally prohibit any experimentation involving live animals.
- Avoid the use of any hazardous materials. This is particularly true of most chemicals.
- Working models, demonstrations or summaries of information found in books, magazines or on the internet all have their value, but are not what Science Fair judges look for. Stick with an experiment. In a winning project, it is the idea, research, theory, methodology and results of a well thought out experiment that will earn you the blue ribbon.



**Plan Your
Experiment**

HOW DO YOU PLAN YOUR PROJECT?

1. **Research** your topic. Spend time in a library, with textbooks, on the internet or talking with people who are knowledgeable about your topic. Gather lots of information and learn what other people have found out about the subject.



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2. Make a **Hypothesis**. Based on what you know and have found out about your topic, predict what you think the answer to your question will be. What do you expect to happen? Write down your prediction and your reasons for these expectations.
3. Write down your **Procedure**. This is a detailed list of the steps and methodology you will follow, the measurements and observations you will make and the controls you will use. Identify each variable to be tested and include all safety precautions you will take. This step is what the judges are really looking for.



**Research
Your Topic**



**Collect and
Record Data**

What is a control? This is a sample used in your experiment to provide a comparison. For example, if you chose the example of the effect of waxing a snowboard, then your control would be an unwaxed snowboard.

What is a variable? This is a condition you will change in your experiment to observe and measure the effect of changing it. Stick to one or just a few variables. For example, the brand of snowboard wax or how much wax you put on are variables.

4. **Assemble your Materials.** Make a list of all the equipment and supplies you will need to carry out your experiment. Sketches and diagrams can be extremely helpful at this stage.

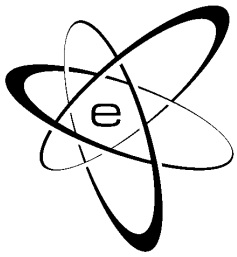
Many of the items on your list will be available at EfstonScience. This is the best time to bring your list to our store. Our staff can help you gather the items you require or suggest convenient sources for items we do not usually carry.

5. **Conduct the experiment.** Follow your procedure. Carefully record all observations and measurements. Take photographs and/or make sketches of important stages of the experiment. Are the results what you expected?



Experiment

6. **Repeat the experiment.** Repeat each test at least three times. This helps to rule out that your results are not due to one-time chance. Are the results the same? You may realize that you need to redesign or adjust your experiment so that it gives reliable results. Unexpected conditions may become evident that you had not anticipated, but will need to control.
7. **Analyze your results.** Use charts, graphs and tables to make your results clear. This will help you to interpret what your experiment has revealed.
8. **Draw a Conclusion.** Based on your original hypothesis and the results of your experiment, what is the answer to the question? If the answer is not what you expected, why? Does your experiment suggest further experiments that could be done to investigate this question more thoroughly? Write out your conclusion in a clear and concise manner.

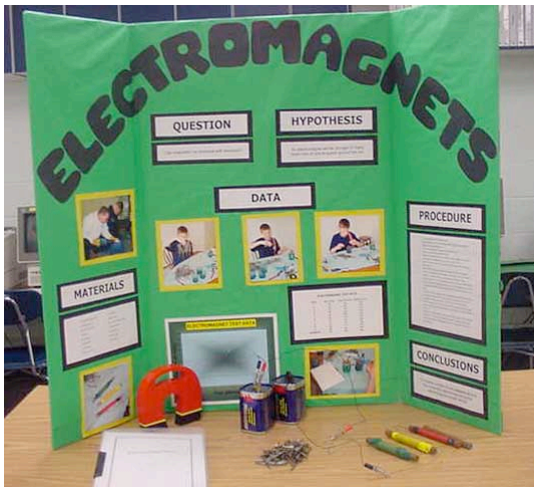


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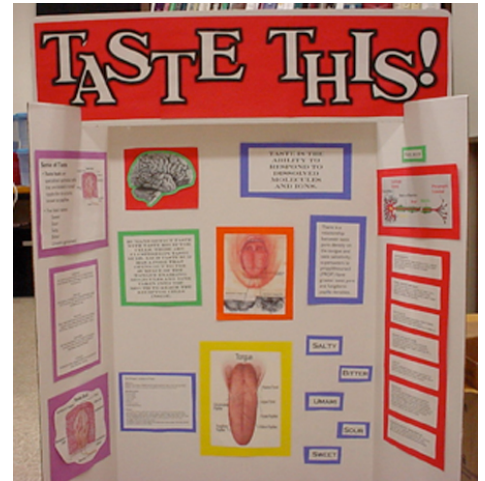
HOW DO YOU DISPLAY YOUR PROJECT?

Your science teacher should provide you with guidelines for constructing your display but the following are a few guidelines to keep in mind:



- ⇒ Use a Science Project display board.
- ⇒ Include a complete copy of your written Experiment Report. This should be typed and printed to be clearly read. It should clearly state your question and include a separate section for each stage of your project. The steps above are excellent headings for these sections. Include your photographs and drawings. Keep the display uncluttered but complete.
- ⇒ Prepare a summary of this report that you can recite from memory to the judges in a couple of minutes.
- ⇒ On the display board, put the title of your project in large, bold letters.

- ⇒ Use photos, drawings, tables, graphs and brief summaries of each section to illustrate your whole experiment.
- ⇒ Your display will be on a table. Place materials from your experiment on the table. Check with your teacher to find out what kinds of materials are permitted and which materials can be displayed only in a simulated form.



BE PREPARED!

You will be asked by the Science Fair judges to explain your objectives, methodology and results. Study your material and make sure you can clearly explain everything about your project and what you have learned.

Good luck and have fun!