Science Fair Information

Presented by: DMS 7th Grade Science Teachers

Courtesy of Science Buddies: Providing free science fair project ideas, answers, and tools for serious students. Visit us online at www.sciencebuddies.org.

April 7, 2008

Introduction

7th graders must complete a science fair project.

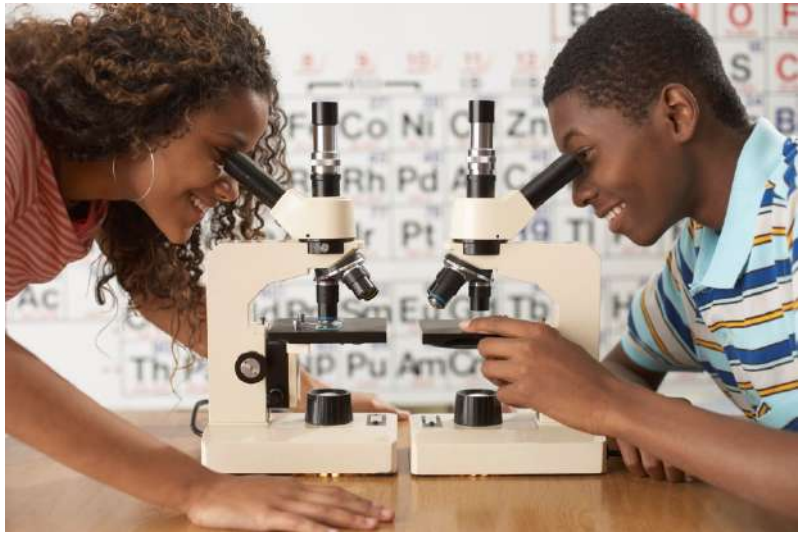
Over the weekend start thinking about what your topics are going to be.

What is a science fair?

- A journey of scientific inquiry
  - Students answer a scientific question by conducting an experiment.
  - The process ends with a showcase event that shows students that their work matters to the school community.

Student Benefits

- Inquiry and Experiential
  - This is their own learning adventure.
  - They might explore topics such as:
    - Timing ocean tides
    - How gears work
    - Chemistry of baking ingredients



Student Benefits, continued

- Integrates skills they've learned in other classes:
  - Math skills
  - Computer skills
  - Research skills
  - Writing and presentation skills

Student Benefits, continued

- Furthers students' interest in science
  - Serves as a basis for future science fairs, which present opportunities for scholarships, awards, and prestige
  - Promotes interest in a science career

Project Planning

- Our planning involves breaking the science project into small, manageable assignments that are spread out over time.
- We will provide students with detailed guides to explain exactly what needs to be done at each step of the project.

What do the students need to do?

Overview

- 6 Science Fair Project Steps
  1. Ask a question.
  2. Do background research.
  3. Construct a hypothesis.
  4. Test the hypothesis by doing an experiment.
  5. Analyze the data and draw a conclusion.
  6. Communicate the results.

Log Book

- Your will document your experiment, thoughts, ideas, actions, and conclusions in a Log book. This is like a journal.
- There are strict guidelines on keeping your log book.
- The book must have at least 30 logs.

Ask a question.

- This is the foundation.
- If you identify a question that is safe and can be answered through experimentation, the rest of the project will follow.

Ask a question, continued

How to Pick a Good Question

- The question should be interesting enough to read about and then work on for the next couple months.
- There should be at least three sources of written information on the subject.
- Make sure the experiment is safe to perform.
- Ensure there is enough time to do the experiment before the science fair. For example, most plants take weeks to grow. If you choose to do a project on plants, you will need to start early.

Visit www.sciencebuddies.org for more helpful tips.

Ask a question, continued

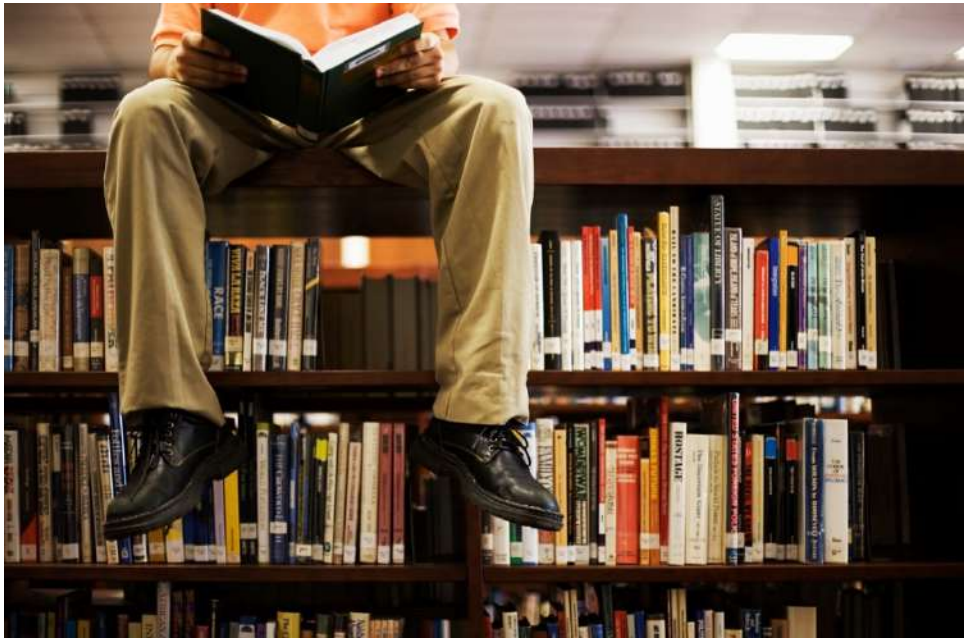
Here's a helpful resource to find a great project idea.

Visit the Science Buddies website at www.sciencebuddies.org to utilize these tools:

- The Topic Selection Wizard This brief online survey recommends project ideas that are best for you, based on your interests.
- Project Ideas Pick from a huge selection of project ideas, organized by difficulty level, and featuring safety guidelines, materials lists, and required time for each project.

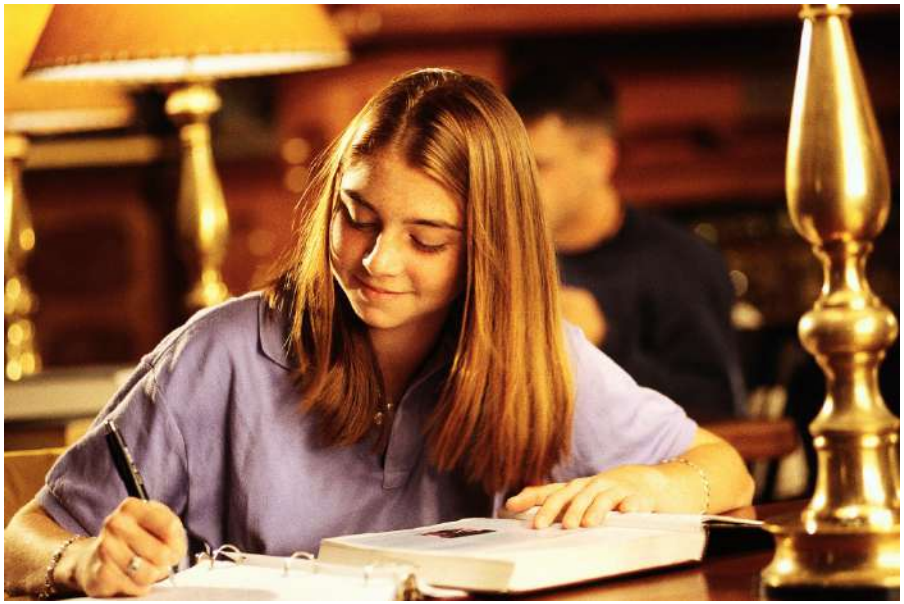
Do background research.

- Collect information.
  - Define what to look for.
  - Look in a variety of sources.
  - **Key Goal:** Obtain enough information to make a prediction of what will happen in the experiment.



Do background research, continued

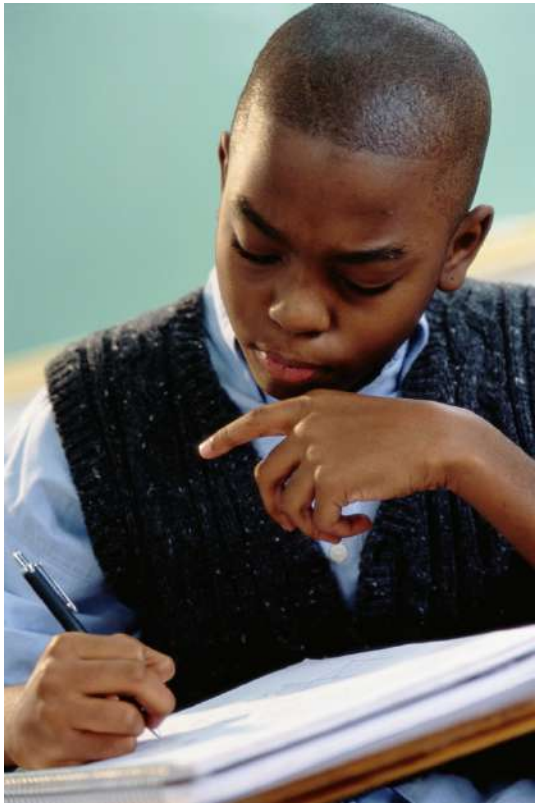
- Organize research.
  - With organized research that is based on questions, the writing will flow.
    - Use multiple sources, no copying.
    - Writing should be focused on the project.



Construct a hypothesis.

- **What is a hypothesis?**
  An educated guess about the answer to a question.

- **If/then:** If I do [this], then [this] will happen.
  - "If I increase the temperature of water in a cup, then the more sugar will dissolve."



Test the hypothesis by doing an experiment.

- Process
  - Part 1: Design an experimental procedure.
    - Steps and materials should be spelled out.
  - Part 2: Do an experiment.
    - Actual testing of hypothesis occurs, answering the question.

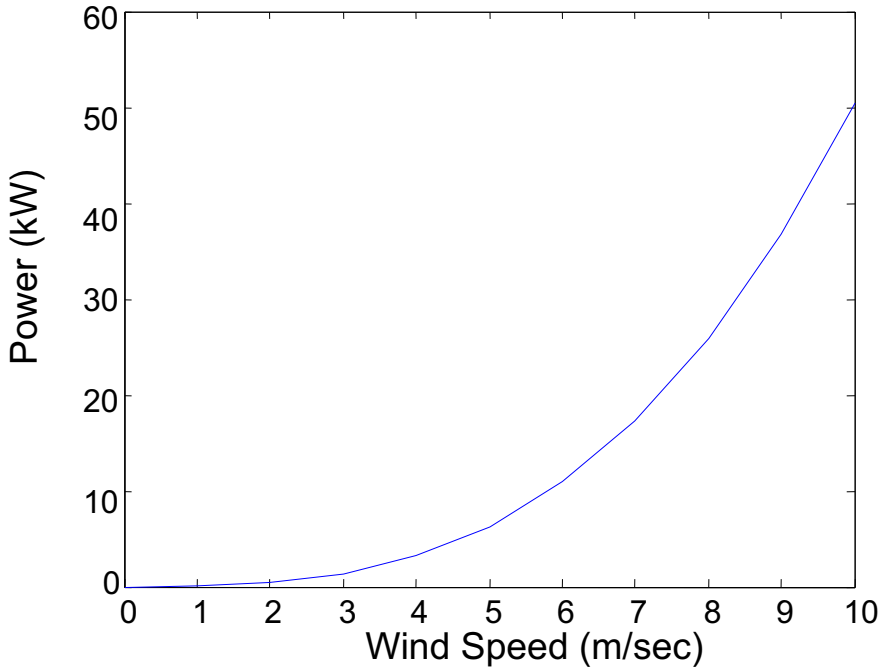
Do an experiment.

- Expectations
  - It's ok if the first experiment goes wrong and you have to modify the procedure.
  - It's ok if the experiment disproves the hypothesis.
  - Safety, safety, safety!
  - It takes time!

Analyze the data and draw a conclusion.

Example of a graph that draws a conclusion:

How wind generator power changes with wind speed.



Writing the paper

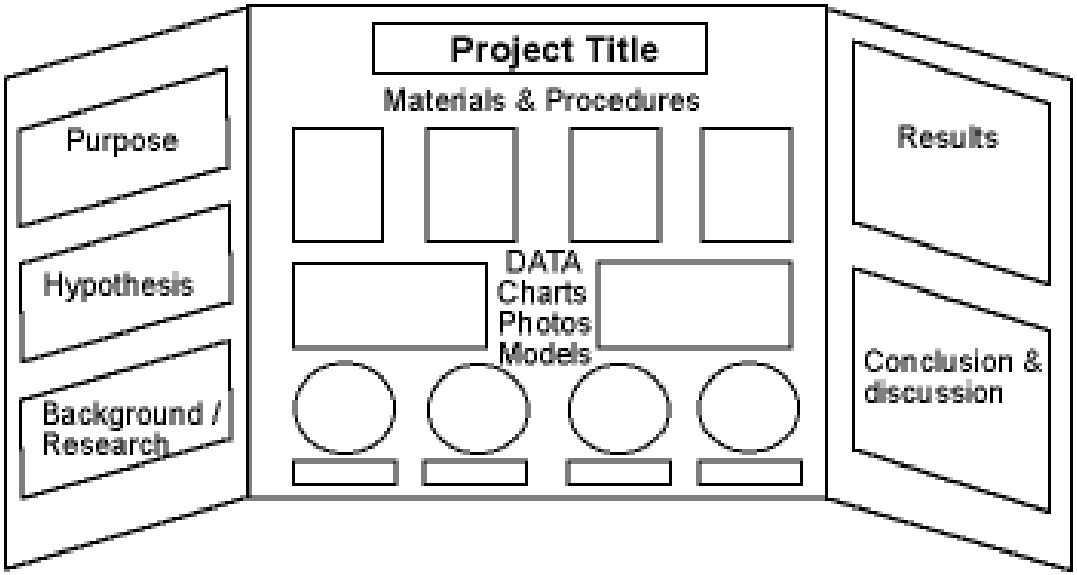
- The paper will contain all the parts of the experiment.
- The paper must be 3-5 pages not including the following:
  - Cover page
  - Abstract
  - Table of contents
  - Acknowledgements
  - Sources/bibliography

Research paper sections

- Cover Page
- Table of contents
- Abstract
- Background information (Introduction)
  - Question and Hypothesis
- Experiment and Data
  - Materials
  - Procedures
  - Data/Analysis
- Conclusions
- Acknowledgements
- bibliography

Communicate results.

You can find this diagram and a lot of helpful information about display boards at www.sciencebuddies.org.




"LOOKS FUNNY ... SAVES MONEY"
Float like a butterfly, sting like a bee.
Box Jellyfish

Have fun!


Airfoil Efficiency as Determined by Camber


intel
SCIENCE


Maternal Effects of Diet Restriction In Fruit Flies

The Final Product

- Backboard
- Paper
- Logbook
- Experiment (if applicable)