

Forwood is Having a Science Fair

March 14, 2013

What is a Science Fair? A Science Fair is an event where you get a chance to teach other students, teachers, and parents about a specific topic in science by displaying a science project. A project can be a research experiment which you design and conduct just like a working scientist, a research report that summarizes the findings of other scientists, a collection that showcases the similarities and differences between a group of related objects (like insects or rocks) or an invention that solves a problem of interest to you. A good way to develop a science fair project is to make a list of topics that are interesting to you. Then brainstorm a couple of questions to which you'd like to know the answer for each topic. The hardest part will be to decide which question to answer!

Types of science fair projects:

Picking the type of project will depend on the question you ask. The following are descriptions of some science fair project options:

- 1. Research Experiment:** An experiment is a test that is designed to find an answer to a question. You turn your question into a testable hypothesis and then use the scientific method to design and conduct an experiment that hopefully answers your question. This is the process that scientists use when they want to learn something new or validate another scientist's work. A question doesn't need to be complicated to make a great science fair project.
- 2. Scientific Research Report:** It may be difficult to design an experiment to answer some questions within the scope of your science fair project (too much time, too much money, no access to the Hubble Space Telescope!). In this case, you may want to do a research report. This is a summary of other scientists' work presented in a way that furthers our understanding of a topic by presenting different pieces of information together in one place. For example, you may use multiple websites, books or

discussions with other scientists to find different pieces of information that you summarize in your science fair display. You may want to build a 3-D model with the different parts labeled with their name and function to help people understand how something works.

- 3. Collection:** A display of a well-organized collection can be a great science fair project. Examples of items that can be used in a collection are rocks, fossils, shells or insects. Show plenty of variety and label everything. Point out similarities and differences between the objects in your collection. You may also add pictures and maps of your discovery sites.
- 4. Invention:** If you see a problem and have an idea on how to fix it, then an invention project may be right for you. Inventors design new tools to help us accomplish tasks in our daily life. They test their inventions to make sure that they really did fix or improve the original problem. A good science fair project based on an invention will describe the original problem, demonstrate the invention and show how the invention fixed or improved the problem.

Steps to Prepare Your Science Fair Project

Most students choose to do a research experiment for their science fair project because you get to answer a question of interest to you and do hands-on science just like scientists do every day. Following the steps of the scientific method listed below will help you answer your question and provide the framework of the information you should include in your science fair display. All project types require steps 1 and 2, but if you choose to do a project other than a research experiment, the steps you follow after that may be slightly different.

1. Select a Topic

Choose a topic that interests you. Think of some questions.

2. Gather information

Your next step is to gather some background information on your topic from books, people, magazines, the internet and other sources. A good scientist always cites his or her sources.

3. Make a prediction

Scientists call this prediction a "hypothesis". This is your guess as to what the answer to your question will be. The more specific the hypothesis, the easier it will be to plan your experiment.

4. Plan Your Experiment

Experiments test your prediction or hypothesis. It is your job to try to think of things that are going to change the outcome of the experiment and then test some of these things one at a time. During the experiment you will observe whether these changes made any difference. Decide what materials you will need to perform your experiment. Outline the steps required. Decide what kind of measurements and observations you should collect. If you are planning an experiment with people or animals, consider using more than one individual. The more subjects that you use, the broader the conclusions that you can draw.

Remember to think about safety when planning your experiment. Make sure you go over your plan with an adult. Have an adult present if you are using something hot, sharp or electrical.

5. Run the Experiment and Record Data

Carry out the experiment and record the results. If possible, perform the experiment more than once to be sure the results are accurate.

It is important to gather all results even if they do not come out the way you thought they would. Finding the correct answer is more important than proving your hypothesis was true. Some of the greatest discoveries were made by accident!

6. Draw a Conclusion

Drawing a conclusion means to figure out what the results from your experiment tell you. Your conclusion is the answer to your question.

7. Present Your Results

Make a display to present your project. Make it fun! Organize it so others can understand the experiment you did, your results, observations and conclusion. Your display may be free standing, sit on a table, or hang on a wall.

All displays must have a title card which includes your name, grade and room number. The card should also include your topic and/or question.

Examples of Science Fair projects presented in past years at Forwood:

What treats do dogs prefer?

What would plants look like if rain was different colors?

How can I create static electricity?

Can chlorine turn your hair green?

What type of butterfly is most common in Delaware?

How long does it take an ice cube to melt at different temperature?

What kind of cereal lasts longer in milk?

How do airplanes fly?

What are the functions of the liver, pancreas and spleen?

How can you tell what a dinosaur ate?

How does acid rain affect plants?

How do simple circuits work?

How do you make plastic from milk?

These are just a few examples. Remember, you only need one idea and if you have one, you don't need to look any further. You can get ideas from your own experiences, books, magazines, the internet, even the monthly science club experiments that are sent home. Some resources on the internet include:

1. <http://school.discoveryeducation.com/sciencefaircentral/>
2. http://www.sciencebuddies.org/science-fair-projects/project_ideas.shtml

There may be books in the library that can help you. Just ask your teacher or the librarian!

Note to parents and students: There are a lot of great project ideas out there. Remember that your goal is to learn something, not just conduct the steps of an experiment that you read on the internet or in a book. For this reason, we will not allow any projects on baking soda/vinegar volcanoes or Mentos/soda geyser experiments. The chemical interaction that causes this reaction is more advanced than our elementary students can understand. The best projects are simple, easily testable questions that are personalized by the student.

Not sure you are on the right track? If you want to get some advice on the design of your experiment from a scientist, please email an outline of your experiment to Lisa Hoffman at lisaemelehoffman@gmail.com or drop off a paper copy with Mrs. Williams (room 404). Please remember to include your name, grade level and contact information (email or phone number). Mrs. Hoffman will either answer your questions directly or send to other scientists at DuPont for their review. Please remember the more details you give us, the more help we can provide on designing a good experiment. This is on a first come, first serve basis. We may not be able to respond to all requests if made at the last minute.

Timeline for Science Fair Projects

March 1 -- Select a topic/question and return the form stating your intent to do participate in the science fair (form attached to this packet)

-- Once you submit your topic and it is approved, get started on your project as soon as possible.

March 11 -- Return form with specifics of project and display requirements (this form will be sent out to students returning the first form)

March 12 -- Complete your experiment by this date, prepare your display. All displays must have a title card which includes your name, grade and room number. The card should also include your topic and/or question.

March 13 -- Students and parents bring Science Fair project to school in the morning the day before the fair.

March 14 -- **Science Fair** Projects will be displayed during the day and evening.

-- Participant assembly in the afternoon.

-- Families may attend the fair in the evening from 6:30 to 8:00 pm

Forwood Science Fair

Due date: March 1, 2013

To: Forwood Science Committee

Name _____
(First & Last)

Grade _____

Room Number: _____

Please fill out below:

I will be participating in the science fair. My topic/question is:

Please indicate what type of project you will conduct:

____ **Research Experiment**

____ **Scientific Research Report**

____ **Collection**

____ **Invention**