Waggoner Science Fair Guidelines

Check for current timeline on the website.

General Guidelines

1. **K - 2nd** grade participants may complete an experiment, or, if they'd prefer they could do a poster on a scientific topic. **Judging and interviews are optiona**l in grades K-2.

2. Each **3rd - 5th grade** participant will meet with one interviewer to discuss the project. Interviewers will ask questions about the project and what discoveries they made. **3-5th graders must use the scientific method to do their project** (and to be judged).

3. No classroom time will be devoted to projects.

4. Projects should not cost a lot of money, but students who need some financial assistance will be able to get a display board and/or a small grant from the PTO if they talk with their classroom teacher.

5. High-voltage electricity, such as 110 volt current, may not be used. Instead, rely on low-voltage, battery-powered circuits. Do not use dangerous chemicals, highly flammable materials, or other dangerous objects. Do not use any glass in the display.

6. Participants will be invited to a **PIZZA PARTY** – the afternoon of the Science Fair from 2:00 – 2:30.

Your Science Fair Display should include:

1. Make a three panel board from foam board or heavy cardboard or buy a science fair display board. If you wish, you can cover the boards with paper, paint or cloth.

2. Print or type material clearly for your backboard. Your name and grade should be clearly printed somewhere.

3. On your backboard be sure you have your:

    Question
    Hypothesis
    Materials
    Procedure
    Variables
    Data
    Results
    Discovery
    Further Investigation

4. Logbook (optional): If all of your information is displayed on the board, a logbook is not necessary.

5. Experiment hardware: Bring any items that are easy to carry and will fit into a 36” wide by 15” deep space. We highly recommend that you **include photographs** of the materials you used. Do not display anything valuable.

How to Do Your Science Fair Experiment and Presentation

What is the testable question you're trying to answer?

For example, let's say your experiment is to see which material is best for making a paper airplane. Your question is this: Which will fly farther: a paper airplane made of printer paper or one made of construction paper?

State your hypothesis

Remember that a hypothesis is a prediction of what you think will happen, or a reasonable explanation of an observation or set of observations. It may not be right, but there must be a scientific basis for it.

For example, you decide that you think the printer paper airplane will fly further because it is lighter weight. That is your hypothesis and it has a reasonable basis.

Design your experiment.

Write down all the equipment you will need. Keep a detailed list of all materials.

In the paper airplane example, you'd need a few sheets of printer paper and a few sheets of construction paper, a way to measure the distance between the person flying the plane and where the plane lands, a large enough space to allow the plane to fly as far as it can go, and a page in your logbook to write down your results (or a place to capture on your poster board).

An experiment must deal with different kinds of variables.

- ***Controlled variables*** are things that must be the same each time you do the experiment. In the paper airplane example, the things that you must control are the size of the paper and the type of airplane that you make. These things must be the same each time! You will always measure the distance the airplane travels in the same way.

- There must be one and only one ***manipulated or changed variable***; it is the thing you are trying to test. In the paper airplane example, the manipulated variable is the type of paper that you use.

- ***Responding variables*** are also known as *results.* In the paper airplane example, you will write down the distances that the airplanes fly. It is best to do the experiment (fly the planes) multiple times to correct for any possible

differences in conditions, e.g. a gust of wind if you're flying your airplanes outside.

Perform your experiment

Run your experiment and record your data

Fly each paper airplane at least two times. The more times you repeat, the more accurate your results will be. Record the results in your logbook. Take photographs if possible to chronicle your work. If your experiment doesn't work, try to figure out why and see if you can get it to work on a second try. For example, if you chose to make your paper airplanes out of styro-foam and it didn't fly, you would need to try the experiment again using another material.

Data: If necessary, perform experiment multiple times; show what was discovered using data, observations, graphs and/or charts (log book optional)

Results: Write about what you noticed in your data, explain what happened when your variable changed or point out patterns

Discovery

This is a statement about what you discovered with your experiment. It can agree or disagree with your hypothesis. Example discoveries are:

My hypothesis was correct? Why/why not?

EX: The printer paper flew farther because it was lighter.

My hypothesis was incorrect. The construction paper flew farther because it was sturdier and able to be held up by the air for a longer period.

Remember: There is no right answer in science!

If the experiment is designed and executed well, the results are true. It is up to you, the student scientist, to interpret those results. Whether your hypothesis was correct or incorrect doesn't matter as long as the experiment was done well.

Use your mind to take it one step further

Now that you've completed what you set out to do and have observed how your experiment went, is there anything more about your subject that you'd like to know more about? If you were required to do another experiment on this topic, what would it be?

EX: Maybe you'd like to test some other types of paper for your paper airplanes or test other plane designs. Maybe you'd like to see which type of paper would carry cargo further. Write a short sentence on where you would take this next.