

Science Fair Project

Determining the topic for your science project is always the most difficult part. It is best to pick a project that you are interested in or have some experience with. Stay away from projects that you already know the answer to.

After everyone has a topic, it is time to work on the actual project. I will help you through the steps as we go along giving you deadlines for items that need to be turned in and worked on. The project will have 2 components: (1) Written Paper, (2) Oral Presentation.

The science fair rubric will help you to know what is expected in the oral presentation. Below are the required sections on the written report and basic information about the oral presentation.

The Problem/Question/Research:

Your project should start with a strong problem statement. The problem is the scientific question to be solved. It is best expressed as an "open-ended" question and should not be a yes/no question. The problem is not the hypothesis, but is closely related. You may end up doing both at the same time and that is great. Below are some examples of problem statements:

1. I am interested in knowing if different fertilizers make plants grow faster.
2. I like bread, I wonder why some kinds of bread gets moldy faster than others.

The question should be clearly stated and any research you did to determine the problem should be included.

The Hypothesis:

The hypothesis is a testable statement that you make as an answer to a question. This statement is important because it will be used to guide the entire experiment. The hypothesis give you the relationship between the independent and dependant variables. Below are some examples of hypothesis to the above problems/questions.

1. I believe that fertilizers with higher nitrogen content will make plants grow faster.
2. I think that homemade bread will get moldy at a faster rate than store bought bread.

From these statements, we will then begin to formulate the Experiment.

Variables:

Clearly list the variables: Controlled, independent, and dependent variables for the project

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The Experiment:

This is the actual test that you are going to set up to test your hypothesis. Remember that you do not want more than 1 variable. All other factors remain the same. Remember they are your control. So in the two experiments above below are the possible experiments. The descriptions below are just short examples. Your description of the experiment should be detailed. I should be able to replicate the experiment by your description.

1. I have 3 plants exactly the same. Each is the same kind of plant, in the same size pot, with the same soil, and will receive the same amount of water. Those are all your control items. The variable will be that each plant will receive a fertilizer with ingredients that are all the same except the nitrogen content will be varied. One will have 2% Nitrogen, One will have 10% Nitrogen, and one will have 25% nitrogen. Then you will chart the plants growth over a period of time. You will determine which measurement you will use to quantify the growth. (you can even use weight pot with soil weighed the same when you started).

2. I have 4 loaves of bread two store bought and two homemade. I put the bread all in the same place and into the same kind of container. I then track the progress of mold and the rate at which each piece of bread molds.

Data

This section should contain the data you collected. Ideally you should have at minimum of 3 trials (the more the better) for each variable in your experiment. The data should be displayed a number of ways – for example a table and a graph.

Results/Conclusion and Due Dates

Once the experiment is complete you will need to write up your results and conclusion. These can be done together or separate. Results should include an analysis of the data and how that supported or didn't support your hypothesis. There should be at least one clear concise statement indicating if the hypothesis was supported, did not support, or was in-conclusive. Conclusions should include sources of error, ideas for improvement, things that went wrong, things that went right, an evaluation of your results as compared to your hypothesis, etc.

We will draw for the week your project is due. It will be due from week 27-30. I encourage you to not delay. If you finish your project early, finish the report and then work on the presentation when it gets closer to the date to give it.

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This will serve as a good review. By starting now, however you will ensure good results because you will have time to re-test if things do not proceed as planned. You may even need to reassess your experiment and redesign if it is an utter failure.

Oral Presentations:

Following are the elements that should be included in your oral presentation. You can present your results on a tri-fold board, powerpoint presentation, movie clips or whatever other creative medium you can think of. Look at the guidelines on the presentation rubric for more details.

Each oral presentation should have the following:

- The Problem Statement
- Any research you did
- The Hypothesis
- List of variables
- A description of the experiment
- Data
- The Results
- Going Further

Summary of what is due:

Written Report: Should include observation, hypothesis, experiment procedures, data (probably should be in a table or chart), results, and conclusions.

Oral Report: Can be in a variety of formats. Report should include all the information in the written report except for in a presentation format and pictures, slides, etc. to show what happened in the experiment. If you plan to use digital media (like powerpoint etc.) please coordinate with me to make sure I can read it etc.

We will work together to make this fun and informative. Please call if you have any questions.

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