

Manatee Elementary 2013 Science Fair Guide

Students, this guide is designed to help you while working on your project at home. This guide along with your teacher's guidance and instruction and your hard work will help you successfully complete a science fair project.

Please take note of the following rules and restrictions:

1. Your log, summary, and any other research/data for your project have to be in a 3 ring binder. **NO LOOSE PAPERS** will be accepted!
2. Take pictures to show the parts of your project and experiment. Pictures may be glued on your board and/or put in your binder with your log and summary.
3. Objects and pieces of your experiment will **NOT** be permitted to be shown with your project or glued on the board (per county regulations).
4. You may paint/decorate your board, but please remember that no three-dimensional objects are allowed on the board.
5. **ALL measurements have to be in METRIC UNITS!**
6. Projects involving mold are not permitted.
7. **ALL parts of daily log MUST be written neatly in blue or black ink!**

Your grade depends on you following directions and meeting due dates. Please contact your fifth grade teacher if you have any questions throughout this process.

Have fun with your project!

QUESTION & TITLE

The purpose of this Science Fair Experiment is to try and find the answer to a question you have. For example: "Do plants grow better in the light or the dark?" You are telling what it is that you are trying to find out. This is NOT a research project ("Hearts: how do they work?") and this is NOT a time to make a model (This is how a volcano erupts)... think of it as solving a problem. Make sure it is something you can test and collect and measure data. Think about how you will test it!

My Experiment Question: _____

How do you plan to test this question?

-

The title of your project may be the same as your experiment question above. However, to have a more "catchy" title will grab the judges' attention to your display board and might keep their interest on your project longer.

My Catchy Science Fair Title: _____

Date Submitted _____

Teacher Initials _____

Points Earned _____ (out of 5)

DAILY LOG & OBSERVATIONS

Your Daily Log will be kept in your binder and each part of your project will be recorded as though it were a "science fair diary". **It MUST be written neatly in blue or black ink!** Your daily log should begin from the very 1st day of your project. It will include all of the information (question, title, materials, procedures, data tables, graphs, results, conclusion, and any pictures you want to include) from the beginning to the end of your project. Remember to date each entry. This part of the project should be several pages and include many details. It will be displayed in your three ring binder with the final project, so be neat!

Example:

10/20/07	Today I thought of my Science Fair question. It is..... My title is.....
10/21/07	I went to the library and found some books on my topic. I've been thinking about my project and I learned a couple of interesting things.....
10/26/07	I came up with my hypothesis for my experiment. It is.....
10/28/07	My materials I need to begin my project include three Marigolds plants, 1000mL of soil, and 1000mL of tap water,.....
11/2/07	My procedures are as follows: Step 1: Gather materials - 3 Marigold plants, 1000mL soil, Step 2: Measure each plant in mm and record in log.
11/5/07	Today I measured both the 3 plants growing on the window sill and the 3 plants growing in my closet. I noticed some interesting things....

**** YOU ARE RESPONSIBLE FOR DAILY ENTRIES****

NOTE: SOME PROJECTS CAN BE TESTED AND RETESTED SEVERAL TIMES IN ONE OR TWO DAYS. THE TERM "DAILY" LOG MAY NOT MEAN MANY DAYS. HOWEVER, YOUR

LOG SHOULD INCLUDE WHAT YOU DID TO RESEARCH AND ALL PARTS OF YOUR PROJECT IN DETAIL.

Hypothesis

Your hypothesis is an educated guess as to what will happen by the end of your investigation. This guess should be based on research and you should have background information to support your predicted answer. **Your hypothesis should be written in an "If.....then...." statement.**

Example: "If I do.....(tell what are going to do or test in your project) then I think (what you think will happen) because.....(tell a reason you think this will happen based on your research)."

If I plant three Marigold plants and water one with tap water, one with distilled water, and one with well water, **then** I think the one with well water will grow the tallest **because** of all the minerals in well water.

You would not just say, "I think that plants grow better in the light." You would need to explain why you think so. Did you read a book about plants? Search the internet for some background information on plants? You need to give a reason for how you came up with that hypothesis.

****Remember:** your hypothesis does not change once it is made!

BACKGROUND INFORMATION -RESEARCH

BIBLIOGRAPHY

*Info may be written, on notebook paper and placed in your log section of your binder. This part is a very important part of the project. Please be sure to do research about your topic and **handwrite** what you learned. Copying and pasting from another source is not permitted.*

***Fifth and sixth graders make sure you write down all of the book's information (title, author, date/city published, etc) to include in your bibliography.*

I suggest using www.easybib.com You can enter sources as you use them and save it as you go. Print at the end and it formats it automatically for you.

See the end of this document for further information on creating a bibliography if you will be writing it yourself.

LIST OF NEEDED MATERIALS

A detailed list of ALL materials that you will need or use during this project must be given. Be very specific about what you used in your investigation!

ALL supplies and measuring tools MUST be listed in METRIC UNITS!

A good list ☺

500 mL of potting soil
5 clay pots
a ruler (in mm)

A poor list ☹

Dirt
Pots
Water

PROCEDURE/ STEPS FOLLOWED

This experiment is like a recipe. How did you do your investigation? What did you do first, next, after that? Make it clear enough so that the judges will know exactly what you did. List everything you did in numbered steps. Put down the amounts, time involved, and measurements (**IN METRIC UNITS!**) you used... include even the smallest details. It is important that you complete your experiment with only one variable (ie. same seeds, water, and soil... just changed the type of light/dark) and with repeated trials (grow 3 cotton seeds in the light and 3 in the dark) to make sure your results are valid and accurate and for back up in case one try doesn't work.

☞ **Independent Variable** The variable you are "messing with".

☞ **Dependent Variable** The variable that you will record and measure. The changes "depend" on the independent variable.

⇒ Control Variable All aspects of this variable must remain constant.

"How Does Aspirin Affect the Growth Rate of Roses?"
Independent Dependent Control

"What is the Effect of Coke on the Decay of Teeth?"
Independent Dependent Control

DATA

Set up a table in your Daily Log to record your data as you collect it during your project. This may eventually be turned into a graph, if appropriate (see example below).

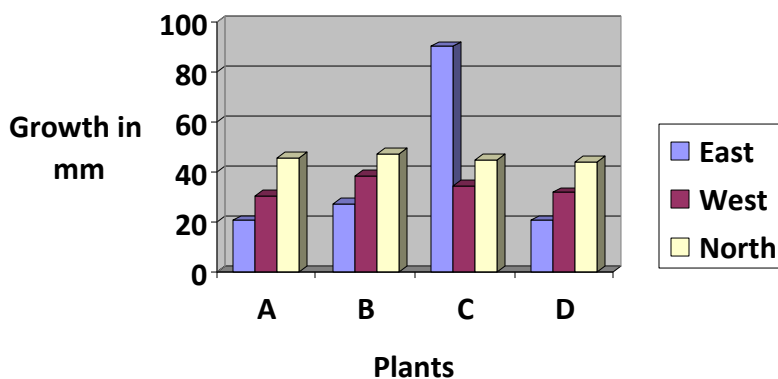


DATA INTERPRETATION



Example:

Directional Plants



In your Daily Log, you have collected information that was measurable with rulers, stop watches, counted totals, or some other means. This information now must be put into a form which others

can easily understand it. You need to create a line, circle, or bar graphs and/or tables. Remember to give it labels and make it clear and neat and place it in your log inside your binder.

I have used the following website with my own kids during our elementary science fair years, if you want an easy way to create them and aren't sure how to do it with Microsoft Excel. There are many others available online if you want to search for them.

<http://nces.ed.gov/nceskids/createagraph/default.aspx>

WRITTEN RESULTS

- ◆ Your data that you collected has been put into a format that is easily understood.

Use specific terms and details in a paragraph to explain what your graph means.

Are there patterns? Trends over time? One group stronger? Faster? More?

Results include both **data** and **observations**.

- ◆ Look at measurements recorded in the Daily Log and on your graph.
- ◆ Think about the data and observations and decide what those results mean.
- ◆ Try to use mathematical calculations such as mean, median, mode, and range

CONCLUSION

The conclusion can be written in two paragraphs.

- ❶ Did the data support the hypothesis? If not, why do you think it did not?
What would be done differently the next time?
- ❶ Do not worry about **negative results**, or results that come out differently than expected. Just explain why you think you got those results. If the results turned out as expected, **explain why** you think it turned out this way.

ONE PAGE SUMMARY

The summary needs to be typed and put in your three-ring binder with your daily log. The **summary** is a wrap-up of the entire project. It should be very comprehensive and complete. It can be written in 5 paragraphs.

Paragraph 1: *Tell what the question was and why you chose this topic.*

"My problem is _____. I decided on this project because _____. I started asking questions and found out that _____."

Paragraph 2: *Tell the hypothesis and explain why you thought this would happen.* "My hypothesis was _____. I thought this would be true because _____."

Paragraph 3: *Tell how you tested the hypothesis. Do not tell the step-by-step procedures, just explain the experiment. Tell how many times you repeated the tests. Mention the variables you controlled to make sure the testing was fair. Describe the difference between the control group and experimental group.*

"I tested my hypothesis by _____. To make sure the experiment was fair, I _____."

Paragraph 4: *Tell about your results. Include some of the most important data such as totals and averages of measurements. You should also mention one or two of your most important or unusual observations.*

"While doing my science project, I observed that _____. Also _____. Another interesting thing that happened was _____."

Paragraph 5: *Tell about your conclusions. Say whether or not the data supported the evidence. Tell about the most important thing you learned. Tell how people in general (or scientists) might apply this information to everyday life. If you could do this project over again, what would you do different?.*

"My data (did or did not) support my hypothesis. The most important thing I learned was _____. My results show _____. This information can be used by _____. If I were to do this project over again, I would _____."

BIBLIOGRAPHY -ONLY REQUIRED FOR FIFTH AND SIXTH GRADERS

- This is an alphabetical listing of all books, articles, people, interviews, websites, etc. used as resources during the investigation. Take note of the formats for each specific source below (ALL punctuation is an important part of the bibliography!)

Book by single author

Day, R. A. (1994). [How to write and publish a scientific paper](#). (Fourth Edition). Phoenix, AZ: The Oryx Press.

Book by more than one author

Cothron, J. H., Giese, R. N., & Rezba, R. J. (1993). [Students and research](#). (Second Edition). Dubuque, IA: Kendall/Hunt Publishing.

Computer Program

Dombeck, R. A. (1991). [Theoretical prediction of interference loading on aircraft stores](#). (Computer program). Ponom, CA: General Dynamics, Electro Dynamics Division.

Encyclopedia

Photosynthesis and plants. (1987). [Encyclopedia Americana](#) (Volume 22). New York: Americana Corporation.

Interview

Borski, S. A. M. (1985, October, 23). Arlington Heights, IL: Northwest Community Hospital. (Interview).

Journal/Magazine/Newspaper

Bonkalski, J. (1991, February). My view of the land fill. [Better Homes and Gardens](#). pp. 52-53.

Journal/Magazine/Newspaper - no author

Study finds free care used more. (1989, May). [APA Monitor](#). p. 14.

For an Internet Source with an author:

Author's last name, first name. "Title of Work". address (day month year).
Ogawa, Roann. "Great Lakes Science Center". <http://www.glsc.nbs.gov/science/communication/index.htm>
(25 Sept. 1997)

For an Internet Source without an author:

"Electricity and Magnetism". <http://www.essex1.com/people/speer/elect.html>
(11 July 1996)