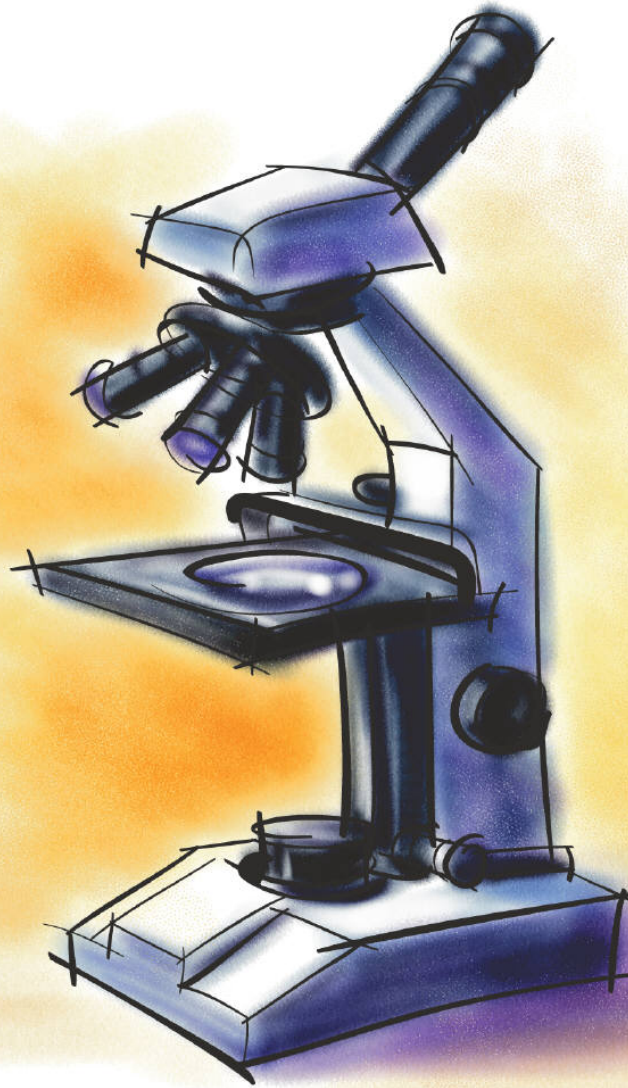




FLORIDA SCIENCE FAIR GUIDELINES

STUDENT HANDBOOK



Imagine Schools Chancellor Campus



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Florida Science Fair Guidelines

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STUDENT HANDBOOK
Student Documentation Form

Name _____ Homeroom Teacher _____

Category: Circle One

Chemistry
Biochemistry
Earth and Space
Medicine and Health

Environmental
Engineering
Behavioral and Social
Sciences

Botany
Physics
Microbiology

Purpose (the statement that explains why you are doing the experiment):

Problem (the question you will be investigating shouldn't be answered with a yes or no):

Hypothesis (State what you think will happen and the reason for your educated guess based on your research): _____

The items that have an effect on the experiment:

a. **Variable(s)** (Items that change during the experiment) _____

b. **Control(s)** (Items that remain the same during the experiment): _____

Equipment you will be using: _____

Length of time (approximately) the experiment will take to complete? _____

***Each experiment should be done at least 3 times in order to find out if the results are the same (valid).**

Parent Signature: _____

****Teacher Approval:** _____ **Date:** _____

Comments: _____

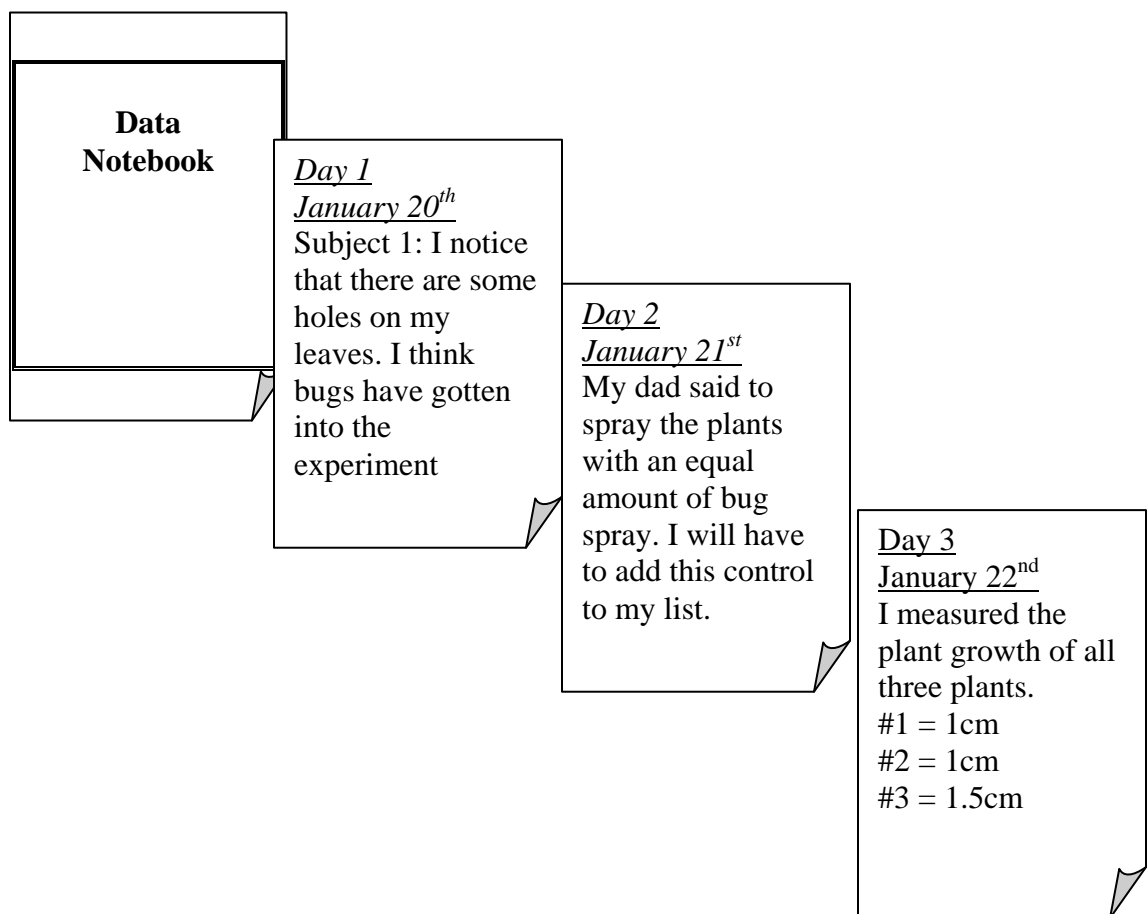


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I. DATA NOTEBOOK- Data based on observations and measurements

When you conduct an experiment, you make observations. You may record changes in your subjects, make notes about possible influences in your experiment that you didn't anticipate, or draw pictures of results along the way. All scientists are constantly recording relevant observations. A DATA NOTEBOOK is required for all experiments, no matter how lengthy or short the experiment might be. A data notebook is a journal that is set up to reflect **observations and measurements by the week, day, hour or minute**, depending on the type of experiment. You could organize it by putting a day's observation on each page. A student's data notebook should also contain any other notes he/she may have made from the research, such as article summaries, important phone numbers or even possible contacts. **Entries should be neat, dated, and orderly. It should be a complete and accurate record of the student's project from start to finish.** It shows all the time and effort that went into the project. Suggestions: ½ inch binder, composition book or journal, notebook, or folder.





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Written Report Guidelines

The actual written report will contain research from reference materials, a bibliography, AND all the sections that are ALSO on your display board.

A student chooses a topic, researches important background information on the topic, and writes a paper about this research. This part is sometimes called the “Background Information.” It is important that the student use the most current information he/she can obtain and that the paper is written in the STUDENT’S OWN WORDS. Research copied from the Internet will not be judged highly. Use only data-based sites for research on the computer. Websites such as Wikipedia are not recommended as they may not have accurate information because they can be edited. Please remember that search engines such as Yahoo are not valid websites.

The written report (packet put together in a binder or report folder with clear cover) is in addition to the information put on display and goes beyond the actual experimentation. It gives more detailed information about the science project and may include pictures, diagrams and added knowledge the student has gained through reading or talking with professionals in the area of research. This written report may also include any materials for which the student may have ordered, such as newspaper or magazine articles, and emails from other research scientists. THIS RESEARCH INFORMATION DOES NOT GO ON THE DISPLAY BOARD.

Why is the research to be done? In order to develop a “sound” hypothesis, you first need to do research on your topic. Only those students who KNOW something about their topic will become finalists. This makes the difference between projects done for a grade and projects that show students are truly interested in the topic.

DO NOT confuse the written report with your data notebook. Research is based on reference information. The data notebook is from your observations (watching your experiment).

Writing the Written Report

II. Written Report

The entire report should be typed (12-14 font), double-spaced, and placed in a 3-ring binder or folder with a clear plastic front, as it is the formal presentation of your science research project. The more thorough (2-3 pages) your research is, the more points you will earn. Try to use at least three sources (books, Internet sites, interviews).

Students are to use the rubric provided to keep track of their progress. The components are listed in the order they should appear in the written report.



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Written Report (Binder/Folder) Components

The components should be placed in a binder or folder with a report cover and must be in the same order as explained below: Those components on your display board indicated by an asterisk (*) should also be in your binder. Print two copies of each, one for your board and one for your written report binder.

I. Title Page: Students need to have a title that reflects their science project. This is not the problem. Type only the project title, and center it. Do not type your name or any other information on this paper. Students should include graphics, clip art, or pictures on the Title Page.

II. *Abstract: This can only be done when your experiment is complete. It gives a summary of the project in a brief, but thorough paragraph form. This is a one page, 250-word maximum summary of the entire project that includes the components below. Judges and the public should have a fairly accurate idea of the project after reading the abstract. It should summarize the purpose, procedure, results and conclusions of the student's investigation; therefore, it is one of the last items done. An abstract does not give details about the materials used unless it greatly influenced the procedure or had to be developed to do the investigation. An abstract should only include procedures done by the student. Work done by someone else (scientist) must not be included. Place a copy of the abstract **on the display board and in the written report binder**.

Abstract Components: (write in paragraph format)

1. Problem: the question telling what the student is trying to find out
2. Purpose: the statement that explains why the student is doing the experiment
3. Hypothesis: an explanation of what prompted the student's research, what the student hopes to achieve, and what the student thinks the outcome might be (before doing the experiment).
4. Procedures: a brief summary of how the experiment was performed and the key points
5. Results: a brief description of the important results that lead directly to the student's conclusion- do not give too many details or include tables or graphs of data.
6. Conclusions: a brief summary paragraph of why the experiment had those results and if your hypothesis was correct or incorrect.
7. Applications: a brief summary paragraph of how you think your results can be used by others and what you would do differently in future experiments on this topic.

III. Table of Contents: A list of where to find specific information in the student's written report. Include page numbers (placed behind the Abstract summary; **numbers begin on the page with the "Problem"**). See page 2 as the example.

IV. Experimental Design: Make this word the title page for this section which includes: your purpose, problem, research (background information) hypothesis, subjects, variables, materials and procedure, your charts and graphs, and any summary you want to put in written form. This must include the conclusion, application, recommendation and interview summaries (if applicable) **Each of the following items is on a separate page with its title.**



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1. ***Problem:** **the question** the research answers in question format- the scientific question to be solved. It should be an open-ended question that is answered with a statement, not a yes or no. Ex: “How does the color of light affect the growth of a plant?”
2. ***Purpose:** the reason why the student is conducting this research and doing this experiment.
3. **Research (Background Information):** a summary in paragraph format of all the information the student has gathered from reference materials. This is a report of all information related to the subject telling what was learned about the problem, using reference materials (books, magazines articles, personal communication, Internet, etc) before and during the experiment.
4. ***Hypothesis:** the ‘educated guess’ that is the answer to the problem. It is statement with a reason. The experiment is designed to test this hypothesis. The hypothesis does not change even if the results are different. Ex: “I believe that all plants need regular white light to grow. I base this hypothesis on the information I learned in my background research that showed me how plants convert light energy into food.” The format can be: I think...; It is my opinion that...; I believe...because or based upon...(the reason) or a cause and effect statement:
If _____(what you plan to test), then _____(what you think will happen).
5. **Subject(s):** Explain what organism, item or parameter the student is testing. Any matter, living or nonliving is the subject.
6. ***Variable(s):** the items that have an affect on the experiment. The variable or item that the student changes purposely that will yield different results.
7. ***Control(s):** the parameters you keep the same so that the experiment is valid. These are the items that do not change during the experiment that test the hypothesis.
8. ***Materials:** a **bulleted list** of any supplies necessary to complete your study of the problem and testing of your hypothesis. Be sure to include the quantity of any items listed.
9. ***Procedures:** step-by-step process used to carry out the experiment. The **experiment must be done at least three times** to increase the validity of the results. It should be detailed so that someone would be able to repeat the experiment. **Use numbers to list steps beginning with a verb** (like in a recipe). **Do not use pronouns** in listing the steps. **It is highly recommended to use the metric system.**

Example:

1. Measure 500mL of de-ionized water into three plastic cups.
2. Time the reaction with a stopwatch with 0.1 second accuracy.
3. Place each type of AA alkaline batteries into each plastic cup.
4. Record results.
5. Repeat steps # 1-4 two more times.



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10. *Tables, charts, pictures, graphs, diagrams: the data represented in easy- to- see format and in the metric system. Students must include a minimum of one.
11. *Results: a breakdown, in summary form, of what happened in your experiment. Just give the facts not the interpretation (those are in your conclusion section). Example: Plant A grew 5 cm higher than Plant B after 2 weeks. **INCLUDE STATISTICS** (metric is preferred when possible).
12. *Conclusion: specifically summarizes what the student has discovered, how the results compare to the hypothesis, and why the hypothesis was correct or incorrect. Review how the data related to any information the student has learned while doing his/her background research.
13. *Application: a summary about how the project relates to real world problems or situations.
14. Recommendations: indicate any changes or improvements to the experimental design or give possible extensions to the research.
15. Interview Summaries: interviews, personnel, phone, email, and communications from any professional that have helped the student in any way.

V. Acknowledgements: The student gives credit to anyone who has helped him/her during the project. It is not a list of names, but a short paragraph stating the names of people who helped the student, and how they helped.

VI. Bibliography: properly formatted list of all sources and reference materials the student has used. (See itemized list of proper formats).

*** Starred items are also on the display board**



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Science Fair Project Bibliography

Follow the format below for the various types of resources:

Reference Material (Do not type source)	How to site information
Book	Author(s). <u>Title of Book</u> . Place of Publication: Publisher, Year of publication
Book with corporate author	American Medical Association. <u>Diabetes in Adults</u> . New York: Random, 1998.
Magazine or Newspaper	Johnson, Dennis. "Science is Cool." <u>Engineering</u> 15 Jan 1999: 44-45.
Article	
Article in Reference	"World War II." <u>Encarta</u> . CD-ROM. Seattle: Microsoft, 1999
Database on CD-ROM	
Government Publication	United States Department of Health and Human Services. <u>Healthy People 2010: Understanding and Improving Health</u> . Washington: GPO, 2000
Interview that the student conducted	Presley, Elvis. Personal Interview. 1 January 2004
Sound Recording	U2. <u>All That You Can't Leave Behind</u> . Interscope, 2000
Email	Author. "Title of Message (if any)" Email to the author. Date of message.
Article from a reference book	"Science". Encyclopedia Britannica. 1999 ed.
Web site	First, Hugo. All About Science Fair Projects. 17 December 1999. Awesome Guides. 15 November 2000 http://www.awesomeguides.com/student_science_fair-project_help.htm

Bibliography Support

This link www.noodletools.com, is a free site (you need to sign up to use the tools) that builds a bibliography. All students have to do is plug in the information.

- Create a log in account
- Select the type of citation (book, website, magazine, etc.)
- Fill in the information. Once you've completed filling in the *required areas, the citation will appear.
- Copy and paste it onto the Bibliography page (in alphabetical order) of your science fair written report.

Graph Support

Graphs, tables, or charts should be computer-generated. Students can use a line graph to show data over a period of time. They may also use a bar graph, a circle graph, a frequency table/chart, and/or a tally chart to present their data. There should be at least 1 graph, chart, or table showing the data collected. This is the link for the "Create A Graph" website <http://nces.ed.gov/nceskids/createagraph>. Students may also use Excel to create their graph.

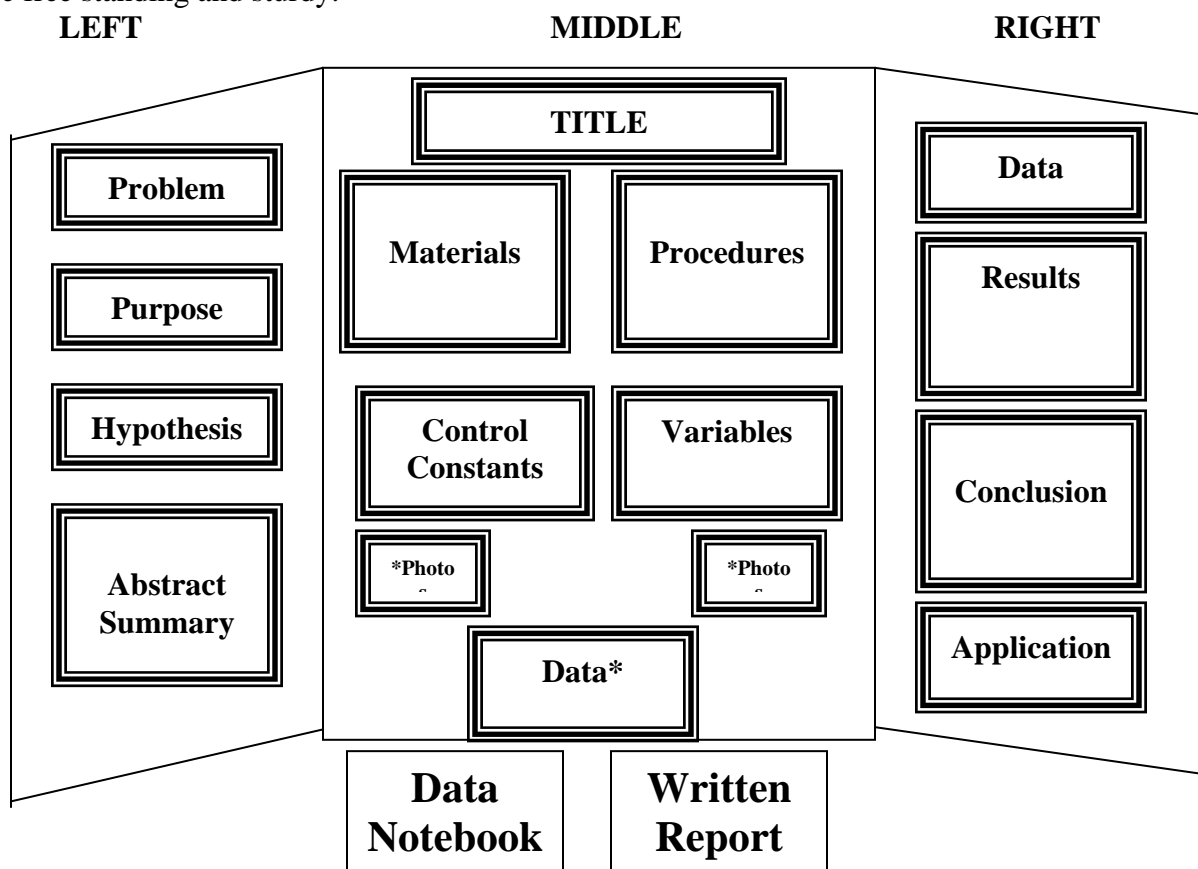


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Science Fair Display Board

Project Display Board: Size: Standard– After all the research, experimentation, time & effort spent on the preparation for the science fair project, the student’s presentation should show off his/her hard work. First impressions can make a difference. **Be creative. Boards are judged on: Creativity, Scientific Thought, Thoroughness, and Neatness.** All items must be typed and placed in the correct location and order.

All students will need to follow the project guideline below when assembling the display board. These display boards can be purchased in local stores or school and office supply stores. Board must be free standing and sturdy.



Data Notebook & Written Report are separate from the board and will be displayed in front of the board

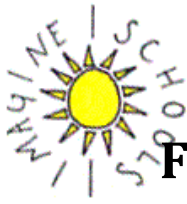
*Photos are optional. They may not contain student’s faces.

Display Board Checklist All items must be typed and placed in the correct order.

- ___ Problem
- ___ Purpose
- ___ Hypothesis
- ___ Abstract Summary

- ___ Title
- ___ Materials
- ___ Procedure
- ___ Controls/Constants
- ___ Variables
- ___ *Photos (optional)
- ___ Data (*overflow area)

- ___ Data (minimum of one)
- ___ Results
- ___ Conclusion
- ___ Application



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Student's Name: _____

Homeroom Teacher: _____

Parent/Guardian Acknowledgement Form

Dear Parents/Guardians,

Please sign this document as acknowledgement that:

1. You have received the Science Fair Handbook and printed it out.
2. You are aware of the time line (included in the handbook) that lists the items due dates.
3. This is an individual project that is to be done at home.
4. You are aware of the grading rubric and project rules.

Signature

Date

*This document is due on: _____