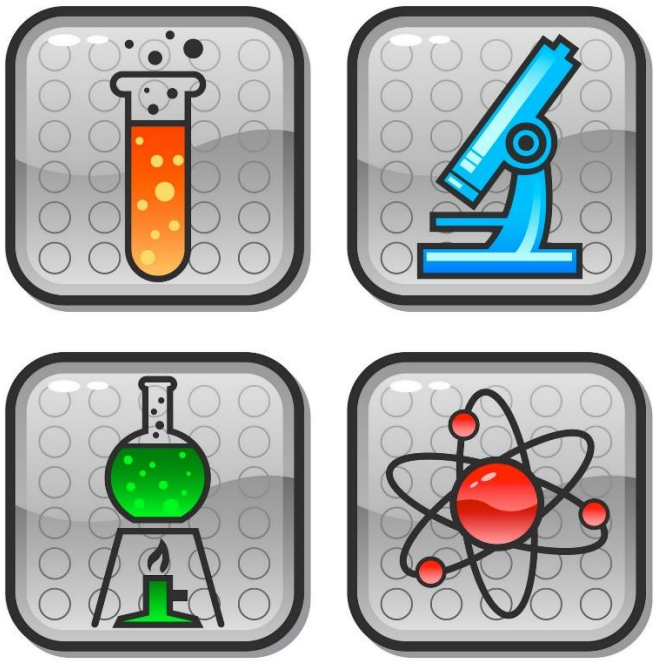
Elementary Science Fair Handbook



Paulding County School District

2017-2018

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School Level Science Fair Important Dates

- August – November 2017~ Follow the Elementary Science Fair Rubric and PCSD Handbook
    - The rubric is the one used by Cobb County for their school fairs and will also be used at the regional fair.
    - The handbook is a collection of ideas that can help with guiding students and running your school fair.
    - The regional fair is for K-5. You can choose the grade levels that you want to participate.

- December 2016- January 26, 2018 ~ Hold your school fair
    - This can be done prior to December if your students are ready, just as long as it is done before January 26h.
    - The top 6 projects from your schools will go on to the regional fair.
    - PCSD will provide ribbons for the top 6 projects at your school.
    - Please contact Sarah Graham, sgraham@paulding.k12.ga.us, when you know the date of your fair. I need this information no later than Sept. 6th

- February 10, 2018~ Cobb/Paulding Regional Science Fair
    - This will be held at Kennesaw Mountain High School, 8:15-2:30
    - Go to http://www.ccsdscience.com/k-5.html for details about the Cobb/Paulding Regional Science Fair. Additional guidelines can be found on this page. This is also where you will register your top 6 projects from your school (any grade level).
    - Elementary projects do not go on to the state level.

Paulding County Elementary
Science Fair Rubric

Total Score:

Title:

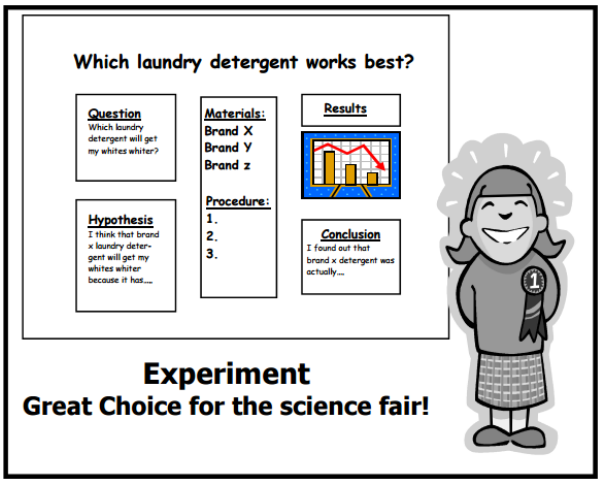
	No Evidence	Evident but Incomplete	Evident and Complete	Superior
1. Presented a testable question that could be answered with an experiment.	0	1	2	3
2. Proposed a hypothesis that gives a testable answer to the question.	0	1	2	3
3. Evidence of grade-level appropriate background research (*clarification statement: copying and pasting from a source should receive an "Evident but Incomplete" rating. Students should cite the research and summarize in their own words to receive "Evident and Complete" and have more than three sources for a "Superior" rating).	0	1	2	3
4. Procedures are described in sufficient detail to allow replication by another person.	0	1	2	3
5. Evidence of a thorough experiment with proper controls (i.e. photos, diagrams, data tables). At least three trials must have been completed to receive a "Superior" rating.	0	1	2	3
6. The correct equipment was used to collect the data.	0	1	2	3
7. The data presented is relevant to the testable question.	0	1	2	3
8. The data is displayed in an age-appropriate graph or table.	0	1	2	3
9. The data was used to evaluate the hypothesis and answer the question.	0	1	2	3
10. The student's conclusion was supported with experimental evidence. (No penalty for inconclusive evidence).	0	1	2	3
11. The project is presented in a manner that makes the purpose, procedure, and results clear.	0	1	2	3
12. The project includes age-appropriate visual components to provide a detailed description of a project.	0	1	2	3
13. Student displayed creativity in the question, approach, technique, and/or explanation.	0	1	2	3

Student Name:_____ **Grade/Teacher:**_____

Additional Comments (Please use back if necessary):

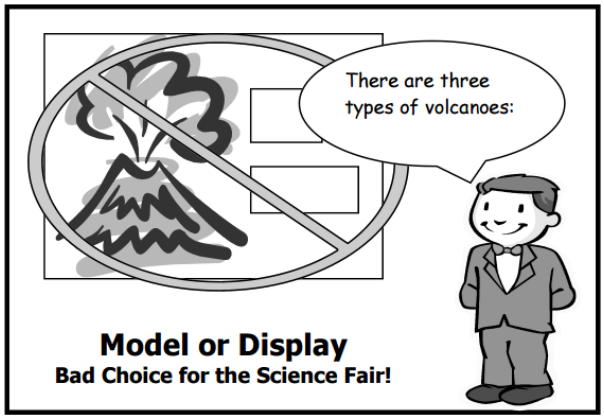
What Does a Science Fair Project Look Like?

Do This:



A project that includes a question to be answered or problem to be solved with an experiment. Testing is done and data is gathered and displayed. Data is used to help answer the question. Examples of this would be "The Effects of Detergent on the Growth of Plants" or "Which Paper Towel is Most Absorbent".

Don't Do This:



A model, display, or collection does not include a testable question, hypothesis, or experiment. It shows how something works, but it doesn't test anything. Examples of this would be a volcano, a model of the solar system, or types of rocks.**Models will not be allowed at the Cobb/Paulding Regional Fair

Experimenting is fun! You get to experience what real scientists do every day. A great way to organize your project is to use a scientific method (yes, there is more than one)!

**Make sure you review the requirements listed on the Cobb/Paulding Regional/District Science Fair Website: http://www.ccsdscience.com/k-5.html

How Do I Organize My Project?

Step 1	Find a Problem; Ask a "How does" Question; Start writing your ideas in a log book. You will use the log book to record your research, your experiment, your data, and your conclusion.
Step 2	Research information about your problem or question. Make sure you write down all of the sources you use as you research. Having more than three could earn you a Superior rating. Make sure you summarize the information you find in your own words. Don't copy straight from the source. Use your research journal to record all information about your project.
Step 3	Once you have your information, form a hypothesis. Your hypothesis is what you are predicting will happen based on what you discovered in your research.
Step 4	Design an experiment to test your hypothesis. Be sure to write the steps of your experiment clearly in you log book. Conduct an experiment to test your hypothesis. Repeat the experiment at least three times and record your results.
Step 5	Write about what you have learned from your experiment. After each trial, record your findings and ideas in your research journal. Examples of questions to ask yourself: Did it turn out the way I expected? Could I change a variable and get a different result? Did each trial have the same result?
Step 6	Using your data, write a conclusion. This will include you looking at your research question and hypothesis and comparing them to your data. Did you get the result you were expecting?
Step 7	Make sure you use data tables and/or graphs to display your data. These can be used on your display board. Use a tri-fold board to display your project. See the example on p. 5 of this handbook.

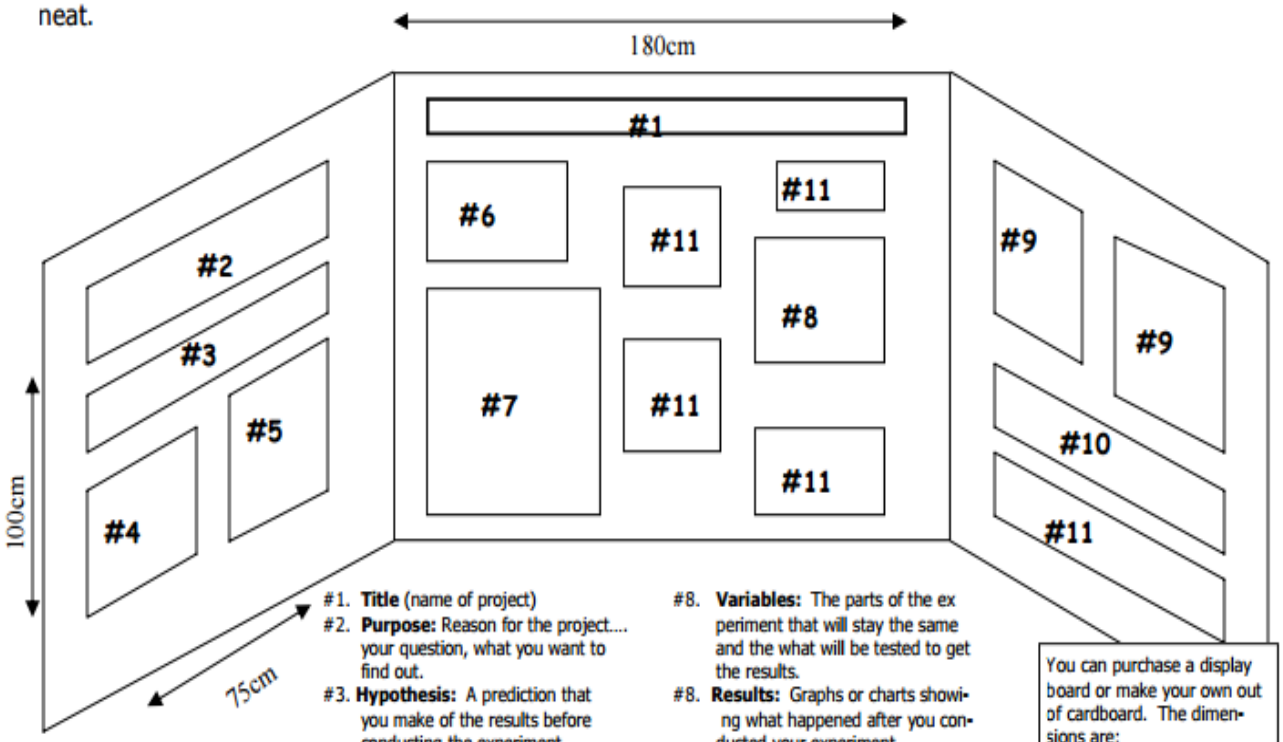
I Have My Topic, Now What?

- Coming up with a good question: Three Types
  - The "Effect" Question:
    - What is the effect of _____ on _____?
    - Examples: What is the effect of sunlight on the growth of plants? What is the effect of brands of soda on a piece of meat? What is the effect of oil on a ramp?
  - The "How Does Affect" Question:
    - How does the _____ affect _____?
    - Examples: How does the color of light affect the growth of plants? How does the color of a material affect the absorption of heat?
  - The "Which/What and Verb" Question:
    - Which/What _____ (verb) _____?
    - Examples: Which paper towel is most absorbent? What detergent makes the most bubbles? Which potato chip tastes the best?
- Doing Research and Forming a Hypothesis:
  - How do you become an expert about your topic?
    - Read encyclopedias, magazine articles, and books. Read articles from the internet. Take notes as you read and use as much science terminology as needed to make your point. Keep track of the books and articles you read because you will need to cite your sources. Your research journal is the place to write your notes and keep track of your sources.
    - Talk about your topic with your parents and your teachers. Ask them questions.
  - How do you write a hypothesis?
    - A hypothesis is just a prediction about what you think is going to happen when you do your experiment. Your hypothesis should be based upon the research you have done.
    - Example:
      - Problem: Which paper towel is more absorbent?
      - Hypothesis: I think Brand Y will be more absorbent because it is more popular, thicker, and expensive.

- Testing Your Hypothesis by Doing an Experiment:
    - Important note: You will not be able to perform your experiment at the science fair, so it is important to take pictures as you go through the steps of your experiment. You can display these on your presentation board, in your research journal, or both.
    - First, gather up your materials. You will need to have an adult help you with this. Draw or take a picture of your materials.
    - Second, write a procedure. This will be a list of the steps you will do to perform your experiment. Be very clear when you write these procedures and include them in your research journal. The steps should be clear and simple enough that anyone could follow the steps and perform your experiment.
    - Identify your variables. Variables are the things you are changing in an experiment. You will only change one variable at a time. Variables should include:
        - Controlled variables: These variables stay the same. An example would be if you are testing how water affects plant growth, your plants would need to have the same type of dirt, the same type of location, the same amount of sunlight.
        - Independent variable: This is the one variable you would change. In our water and plant example, water would be your independent variable. One plant would have water, the other would not, or not as much. You decide.
        - Make sure you include all of this information in your research journal, including pictures.
    - Perform your experiment at least three times and collect the data. You will want to show that your results are consistent. Make sure you are taking or drawing pictures and recording information in your research journal each time you perform your experiment. Use your data to create a graph or table. This is an important part of your project board.
    - Write a conclusion. This is where you tell what happened as a result of your experiment. Was your hypothesis right or wrong? Would you change anything about the experiment? Did your experiment lead you to another question to test? Really, what you are doing here is telling about what you learned. Include this in your research journal.
    - Write about how this experiment can be used in a real life situation. Why would the information you found out be useful? Include this in your research journal.

What Should My Project Board Look Like?

This is an example of a neat looking Science Fair Display Board. It is just an example. Depending on your information and the amount pictures, tables and graphs, you may have a different layout. Just make sure it is neat.



#1. **Title** (name of project)
#2. **Purpose:** Reason for the project.... your question, what you want to find out.
#3. **Hypothesis:** A prediction that you make of the results before conducting the experiment.
#4. **A report** of your research on the subject.
#5. **Books and Resources:** A list of the books you read and websites you used. Also list your inter views.
#6. **Materials:** a list of the supplies needed for the experiment.
#7 **Procedure:** The steps or directions that you used to conduct the experiment.
#8. **Variables:** The parts of the ex periment that will stay the same and the what will be tested to get the results.
#8. **Results:** Graphs or charts showing what happened after you conducted your experiment.
#9. **Conclusion:** Telling what happened.. Did it work, were you right about the hypothesis? What did you learn?
#10. **Application:** Explain how your experiment relates to the real world.
#11. **Pictures,** pictures and more pictures...

You can purchase a display board or make your own out of cardboard. The dimensions are:

Height: 100 CM

Length: 180 CM

Depth: 75 CM

It has to be able to stand on its own

Display Beauty Secrets:

- Use a computer to type out your information, but if you can't, write out your information in your best writing. Printing the titles is usually best. If you are using a computer, make sure the fonts are readable and only use one or two type faces.
- Use spray adhesive or glue stick to paste up your papers. It is less messy

Resource used for this handbook:
http://www.utelementary.org/ourpages/auto/2013/1/9/54511288/ScienceFairGuide%202013.pdf