

Hillsborough Regional
science, technology,
engineering &
mathematics fair



A Parent's Guide For Science Projects



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Dear Parents,

As part of the science curriculum, your child will be participating in a science project. Each K-2nd grade class should complete a class project and all 3rd- 5th grade students should complete a small group or individual project. This project can be a unique learning experience for your child. A good science project is based on a topic that your child can investigate with little support.

The project begins at school with the classroom teacher guiding the students through the topic development and the steps of the science experiment. Students work on their projects in class and develop a final product. Students will be guided through the steps of keeping a log of their science project. **The log is the key component of the science project. This is where students demonstrate their scientific thinking.**

This guide is to help you support your 3rd – 5th grade child through the components of the science fair project. Students may want to collect and record data at home if the project involves change over time or materials not available in the classroom. Parents may help with the design of the presentation.

The presentation criteria of the science fair project will be determined at the school level. Teachers may request that the project be presented on a board, a poster, construction paper or a Power Point. Only the students competing at the Hillsborough County Regional Science and Engineering Fair have specific criteria for the presentation of the science project board.

Your role as a parent is to support your child and help your child meet the due dates for each component of the project.

Shana Tirado
Elementary Science Supervisor
Hillsborough County Public Schools





COMPONENTS OF A SCIENCE PROJECT

This section is to help you understand the different parts of the science project as your child works on them at school.

I. LOG: This is the heart of the science project!

The first entry should be when your child begins thinking about their project topic and the last entry should be the day the project is complete. The log is like a diary or journal of your child's progress in their investigation. It should include dates, research notes, measurements, charts, observations, diagrams, test results and conclusions.

The log is the most important part of the science fair project; it should demonstrate the child's thinking.

It may be in the student's own handwriting, typed, or a combination of both. Spelling, grammar, and handwriting are NOT judged.

II. TOPIC: Should be connected to your child's interests.

III. QUESTION: A good science investigation question:

- Cannot be answered with one word such as; yes, no or purple.
- Tells you what you need to measure.
- Is something you can investigate yourself.
- Is answered with a fact, not an opinion.

IV. RESEARCH:

Before your child can begin their experiment, they need to know a little about the topic. They can go on-line or into an encyclopedia, book, magazine, other text or talk to an expert and learn something about the topic. The research will be used to formulate a hypothesis.

V. PURPOSE: Make a clear, concise statement as to what the experiment is about or what you hope to find out.

VI. HYPOTHESIS: This statement is made PRIOR to doing the experiment. It is an idea that can be tested and measured. A hypothesis should state what you think the results will be and why you think these results will occur. The hypothesis should be based on research.



VII. PROCEDURE: This consists of three parts

A. Materials – a complete list of everything used in the experiment. Include specific quantities in the list.

B. Variables - Scientists use an experiment to search for **cause and effect** relationships in nature. In other words, they design an experiment so that changes to one item cause something else to vary in a way that is predictable and measurable. These changing quantities are called **variables**.

The 3 Types of Variables (can be referred to by more than one name):

- Manipulated /Independent– **the one variable that is being changed**, on purpose, in the experiment.
- Responding / Dependent– the **measurable** result of what is being changed in the experiment.
- Held Constant /Controlled – all the things that are **kept the same** or controlled during the experiment.

C. Step-By-Step Directions – a listing of the steps used in the experiment. Number each step so that it can be followed in sequence, like a recipe. The experiment must be repeated or replicated for a total of **at least 5 trials** to validate the experiment.

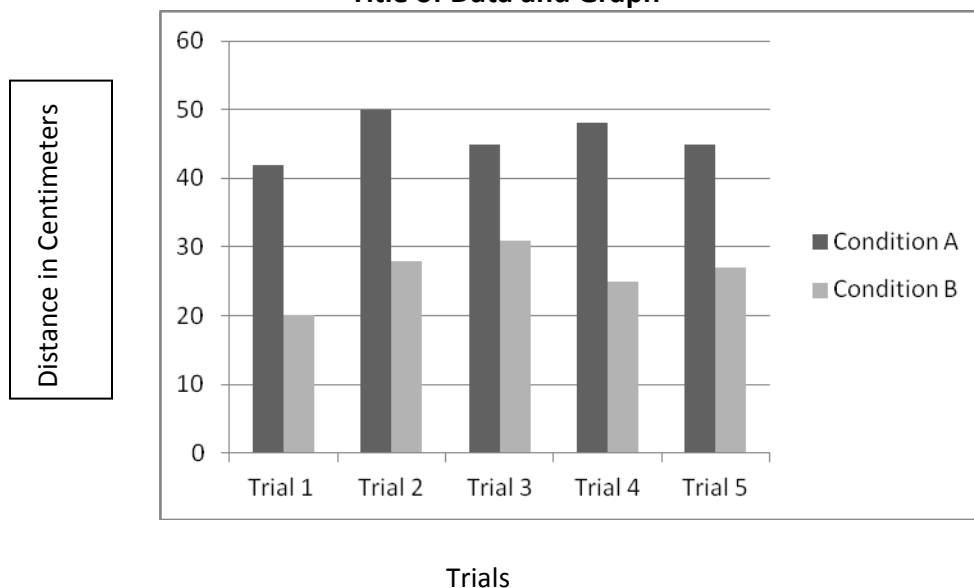


VIII. DATA COLLECTION AND GRAPHS: The measurable data collected in the experiment (responding/dependent variable) should be organized in a table that includes a title, the manipulated/ independent variable and the results of each trial. The graph may be a bar graph or a line graph depending on the type of data collected.

Title of Data and Graph

Manipulated Variable	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5
Condition A	42 cm	50 cm	45 cm	48 cm	45 cm
Condition B	20 cm	28 cm	31 cm	25 cm	27 cm

Title of Data and Graph



IX. CONCLUSIONS:

The conclusion should include:

1. Statement of support or non-support of the original hypothesis. Reflect on the hypothesis (if data did not support the original hypothesis).
2. Description of any problems or unusual events that occurred during the investigation.
3. What could be done differently to the experiment next time?
4. A detailed description analyzing, comparing or interpreting data.
5. Compare the results with your background information.
6. Explain why the experiment is important and how it connects to the real world.



X. DISPLAY:

- The science committee at each school site will determine how the projects may be presented for the school science fair.
- No student or school name can be on the front of the display.
- Photos are great, but there should not be school shirts in photos.
- Dead animals, plants or food may NOT be part of the display.
- Projects involving human blood, mold or fungus are prohibited.
- Glass items and plastic “baggies” are not to be displayed.
- Straight pins, tacks, or staples are not to be used to secure materials onto display boards.
- For the Hillsborough County Regional Science and Engineering Fair in February, the display must be self-supporting and be able to fit within an area 100 centimeters (39 inches) tall, by 122 centimeters (47 inches) wide, by 40 centimeters (15.5 inches) deep.

XI. Ineligible Projects

Projects involving human blood, body parts including hair, teeth, nails, or pathogenic agents (bacteria, mold, viruses, fungi, parasites) are PROHIBITED. Yeast is the only approved exception. Projects involving weapons (ANY type of gun, arrows, knives, darts, etc.) or explosives are also PROHIBITED!

XII. BACKGROUND PAPER This is **optional** and will be determined by the classroom teacher. The background paper includes related research and a bibliography. Related research may consist of general information about the topic, descriptions of related experiments conducted by others, or a brief overview of your topic with related materials that helped gain background to set up the procedure. The background paper may be typed or handwritten.