**Griffin Middle School**

**Science Fair Project**

**2019-2020**

This year our students will design and complete a science fair project. These projects will be completed individually by the students, with the support of ***all of their*** ***teachers*** and the STEAM club sponsors. The project will include a logbook, lab report, and a tri-board display.

**The projects will be judged in classrooms the week of December 3rd & 4th. Winners will then compete in the school science fair to be hosted December 9th. Top projects will compete in the Cobb-Paulding Science Fair hosted at Smitha Middle School, Saturday, February 8.**

**Important Due Dates:**

* PLEASE PURCHASE A COMPOSITION NOTEBOOK AS SOON AS POSSIBLE!
* Topic/question to be approved by teacher **– September 16th and 17th**
* Hypothesis/background info(research) – **October 3rd and 4th**
* Materials/procedures/variables **– October 7th and 11th**
* Experiment Complete – **November 6 and November 7th**
* Completed written report **– November 18th and 22nd**
* Class Competition (Entire Project) **– December 3rd and 4th**

**Pieces of the project:**

There are several pieces to this project, but we have plenty of time and it can easily be chunked to make it manageable for teachers as well and the students. There are 3 critical pieces to the project.

1. **Log book (ie composition notebook)** that students will use to compile their information. This will be the most important tool as it will house all parts and pieces of the project. Students will use it to take notes, ask questions as well as complete graphic organizers.
2. **The written lab report** is where students will put the pieces of their project together to communicate all aspects in written format. The reports is a formal expression of what has already been completed in the log book.
3. **The display** is where students give brief description and aesthetically pleasing presentation of the main ideas of the project from original question to conclusion.

This document describes a general guideline for the project, report template as well as the display template.

**Project steps and support team:**

1. **Statement of problem: (see appendix for additional information)**
	* See Asking Scientific Questions for a Long-Term Project.
2. **Research (read) on the topic**. This will allow you to form a hypothesis and plan an investigation.
* Check with your **ELA**, **reading,** and / or **science** teachers:

? Are you reading information that will support you in the development of a hypothesis and/or planning an investigation?

? Does one of your teachers have a suggestion for something you should read?

1. **Procedure:** Plan an investigation that allows you to test the hypothesis.

What is your control group?

What is the independent variable?

What is the dependent variable?

* Check with your **science** teachers:

? Have you considered all possible sources of data? (Reading/Math)

? Are your data sources reliable? (Reading/ELA)

? Will you have collected enough data? (Reading/ELA/Science)

1. **Experiment:** Carry out your investigation.

Record your data and observations in your logbook.

* Check with your **math** and **science** teachers:

? Have you accurately collected all possible sources of data?

? Are your results reliable? Are there outliers that need to be considered?

? Have you collected enough data? (How many trials did you have?)

1. **Record observations (formal):** Make graphs, tables, diagrams, etc. from your results.
* Check with your **math** and **science** teachers:

? Have you accurately presented all sources of data, including outliers?

? Have you communicated the results in an organized manner?

? Have you included analysis of the data to include captions that make initial connections between your hypothesis and the outcomes?

1. **Written Report:** Construct an explanation from your data. This conclusion should either refute or support your initial hypothesis.
* Check with your **ELA**, **reading**, and **science** teachers:

? Are you connecting information that will support you in the development of an explanation that either refutes or supports your hypothesis?

? Does one of your teachers have a suggestion for something else you should include?

1. **Present:** Summarize, organize, and present your process and results on a tri board.

**Written Lab Report:** Each section on a separate sheet of paper**.**

**Template**

**Title:**

\* a brief, concise, yet descriptive title (this may be the last thing you decide based on your research)

**Statement of the Problem:**

\* There should be a testable question that can be answered with an experiment and how this problem impacts society.

**Hypothesis:**

\* Write a possible solution for the problem based on what you have read.
\* Make sure this possible solution is a complete sentence and testable.

 Ways to write the hypothesis:

* If I \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The hypothesis of my experiment is that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ will cause \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* I hypothesize that if I \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ will result.

\* Tell your controls, independent variable, and dependent variable.

**Materials:**

\* Make a list of ALL items and amounts of the materials used in the lab.

**Evidence:**

\* There should be evidence of grade-level appropriate background research. There must be a MINIMUM of 3 resources, cited using APA style. We can’t emphasize this enough…. **Make sure to cite the research and summarize in your own words.** Be sure to include more than three sources.

**Procedure:**

\* Write in complete sentences with lots of detail what you did in the lab.

\* Your procedure should be written so that others can repeat the experiment.

 **Example:**

 **OK**

 Using a 250 mL beaker, measure 1 liter of water.

 **NOT OK**

 Add water to the container.

\*Make sure to run at least three trials and show evidence of a thorough experiment.

**Observations/Results (Data):**

\* This is a paragraph written telling results.

\* This section should include any data tables (labeled appropriately), graphs, charts, observations, photos, or additional notes you make during the lab.

\* When you applied your independent variable, what happened to the dependent variable?

\* The data should be relevant to the testable question and used to evaluate the hypothesis.

**Conclusions:**

\* This is written as a paragraph to accept or reject your hypothesis.
\* EXPLAIN why your hypothesis was right or wrong using your data including experimental evidence.
\* Include a summary of the data - averages, highest, lowest, etc. to help the reader understand your results.

\* This is your opinions and conclusions based on your results – what you learned from the results.

**Display**

**Display: note display mirrors the written lab report**

The projects will be displayed on. If you are selected to compete in our school science fair, please make plans to attend. Students will be standing at their projects and presenting them as people come. This should be lots of fun!

**THINGS TO DISPLAY:**

**Log Book**

* The logbook shows the ongoing record of your practices.

**The Written Report**

* The written report should be set in front of the display board. Also, parts of the report will be on the display board.

**Objects/Equipment Used**

* This is anything used in the experiment that will help people understand your project. It may be the experiment itself.

**Backboard**

* This tells the story of your whole experiment. This should include the title, problem (question), hypothesis, procedure, variables, results, conclusion, charts or graphs, and pictures.
* THIS SHOULD BE NEAT AND PLEASING TO THE EYE! Make sure that it is presented in a manner to makes the purpose, procedure, and results clear.

**YOU ARE THE EXPERT ON YOUR PROJECT. YOU SHOULD BE ABLE TO ANSWER ANY QUESTIONS ASKED.**

TITLE

* Graphs
* Tables
* pictures

**Problem**

**Hypothesis**

**Procedure**

**Results**

**Conclusion**

**Variables**

**Materials**

**Display of Equipment/Objects**

**Written Lab Report**

**Log Book**