



**Science Fair Information**

Dear parents/guardians,

All Richmond County fourth and fifth graders are required to submit a Science Fair Project. Freedom Park’s Science Fair will be held during the month of November. Students completed science fair projects (tri-boards, formal reports, and logbooks) are due to us by Monday, November 3rd. Science fair projects will count as 2 grades this year. One grade for turning in a project and one grade for the actual project. All components will be graded (tri-board, formal report, and logbook). **Projects will not be accepted after the morning of November 7th.**

Your child will need a composition journal to be used as a logbook and a typed formal report. The packet of information attached to this letter is provided to assist you in helping your child with their Science Fair project. Inside you will find information on selecting a topic, research questions, how to do research, forming hypotheses, and directions on testing those hypotheses. You will see information on how to collect data and the proper way to set up the project. We have also included a page with websites of science project ideas that we hope are helpful in getting you started. Please be sure that your project is an experiment and not a model (no volcanoes, slime, etc) and there should be no photos showing your child’s face. Take pictures of the actual experiment only. **Per Richmond County, please do not do any experiments on vertebrate animals or humans (this includes taste tests) or anything having to do with growing mold.**

 All information gathered should be written in your child’s composition journal (log book). This packet and/or any of the sheets inside do not need to be returned to us; it was created to help guide you in the right direction. Be sure to hold onto this packet and keep it in a safe place, as no replacement packets will be given out due to the budget (copies, paper…). If lost, feel free to use the Internet as another resource or guide, as well**. The final completed project will count as two grades in Science, so be sure all the needed components are there.** Please make sure that your little scientist is turning in their information by the required due date! Please allow your child to assume as much responsibility as possible for the project. They will need your assistance, but we do not want you to do it for them.

If you have any questions, do not hesitate to send us a Dojo.

Mrs. Nelson- 4th Grade

Mrs. Dos- 5th Grade

**Science Project Ideas**

The following websites are extremely helpful in finding Science Fair project ideas.

<http://www.all-science-fair-projects.com>

<http://www.factmonster.com>

This is the best site to use:

<http://www.sciencebuddies.org>

**1. Purpose – Ask a Testable Question**

**A Testable Question has 2 Parts:**

**Part 1:**  The part that is being tested. It is called the independent variable. This is the manipulated variable or the one that changes.

**Part 2:** The part that is being observed or measured. It is the dependent variable, or the responding (measured) variable.

The question describes the relationship between the two parts:

***How does the (independent variable) affect the (dependent variable)?***

**Example: How does the temperature affect the rate of seed germination?**

***What is the effect of the independent variable on the dependent variable?***

**Example: What is the effect of temperature on the rate of seed germination?**

**You MUST be able to measure your dependent variable.**

**2. Conduct Your Research and Create a Bibliography**

**Once you have chosen your topic, it is important to research the written materials on your subject. By finding out as much information about the subject, you will gain a better understanding of your problem. \*Follow these guidelines for conducting your research.**

1. Read books and articles on your subject. Make sure this information is up to date (not older than 5 – 10 years).

2. You must use at least 3 resources.

3. In your log book, you will include only your notes from your sources. Use will use these notes to write the research paper in your formal report after you complete the entire experiment.

***Bibliography***

**Make a list of all the books, magazines, internet articles, interviews, or other sources that were used. \*Write your bibliography using the following format:**

**Books:**

Author’s last name, first name. *Book title.* City of publication: Publishing Company, publication date.

**Example:**

Allen, Thomas B. *Vanishing Wildlife of North America.* Washington, D.C.: National

Geographic Society, 1974.

**3. Construct a Hypothesis**

**A Hypothesis includes a prediction about you believe, based on your research, will happen when your investigation is completed.**

**Follow these steps to complete a hypothesis:**

* **List observations or gained research knowledge you have about the variables.**
* **Write an *if…..then* statement describing what the effect of changing one variable on another variable. (This is a cause/effect relationship).**

**Example:**

**If (what will be changed with the independent variable), then (what will happen because of the change – dependent variable) because (use your observations or gained research knowledge to explain your belief).**

*If seeds are exposed to freezing temperatures for a short period of time, then the germination rate will increase because research indicates that certain seeds will germinate more quickly if they are put in a freezer before planting.*

**Materials** 

**Make a list of all materials that you use.**

**Example:**

16.7cm x 15.1cm Zip-Loc bags

60 uncooked butterbeans
(3) 27.9cm x 26.4cm paper towels
Permanent Marker
De-chlorinated tap water
Approximately 70 degrees Fahrenheit room
Approximately 38 degrees Fahrenheit refrigerator
Approximately 0 degrees Fahrenheit

**Procedure** 

**Write a set of directions for completing your experiment. Remember to write complete sentences and use punctuation.**

**Example:**

1. Label the plastic bags as follows: Room temperature (control) bean, 50 degree F. (refrigerator) bean, 30 degree F. (freezer) bean.

2. Fold paper towels to fit in bags. Place in bags.

3. Place 20 beans in each bag.

4. Put each bag in proper place as said on bag label.

5. Leave undisturbed for 5 days.

6. After the 5 days remove the bags. Wet the paper towel with 15mL of dechlorinated tap water but leave the towel and seeds in bag. Towel should be moist but not soaking.

7. Place bags in warm, sunny spot.

8. Check every day for 10 days for germination. Keep towels moist.

9. Record your findings. Repeat as necessary.

**4. Collect Data** 

**You will need to construct a table to collect your data. A table contains rows and columns.**

* Give your data table a title. The title should contain your independent variable (the one that changes) and the dependent variable (the responding) and be at the top of your table. **For example: *Germination Rate of Butterbean Seeds vs. Temperature***
* Make a row for each independent variable you are testing.
* Make a column for each dependent variable you are measuring.
* Include unit names for each measurement.
* Add an “Average” column or a “Total” column if applicable.

**Example:**

***Germination Rate of Butterbean Seeds vs. Temperature***

|  |  |  |  |
| --- | --- | --- | --- |
| **Days** | **Control – Room Temperature** | **Freezer** | **Refrigerator** |
| **1** | 0 | 0 | 0 |
| **2** | 2  | 0 | 1 |
| **3** | 6 | 2 | 4 |
| **4** |  |  |  |
| **5** |  |  |  |
| **6** |  |  |  |
| **7** |  |  |  |
| **8** |  |  |  |
| **9** |  |  |  |
| **10** |  |  |  |

**\*Keep recording daily for ten days.**

**You would need to conduct at least three trials. If after the three trials, you have the same results, then you can draw a conclusion.**

**Conclusion** 

**A Scientific Conclusion has these parts in order:**

* **State the prediction.**
* **Include evidence from your data collection. Do not include all your data. Include a high and low, if possible – include averages, or appropriate central measures.**
* **Include a statement that analyzes the data.**
* **Include a statement that tells if the prediction was correct or incorrect. Use the sentence starter: Therefore my prediction was….(correct or incorrect).**

**Example:**

The results of my experiment show that my hypothesis was incorrect. The seeds in the freezer germinated the fewest, while the ones at room temperature germinated the largest amount of seeds.