

Griffin Elementary School



Science Fair Project Booklet Primary Grades K - 2

Student Name _____

Teacher _____

Grade Level _____

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Science Fair Projects

Primary Grades (K – 2)

INTRODUCTION:

Students in the elementary schools need to become science literate and proficient in order to compete and survive in a rapidly changing, highly technical world. Teaching students how to do science projects can develop processing skills and problem solving techniques. From learning how to set up an experiment in the primary grades to solving science problems in an organized manner in the intermediate grades, students learn skills that will help them in everyday life.

In order to prepare students for the future and to maintain high academic standards, it is strongly recommended that the procedures set forth in this booklet be followed. All students submitting science projects are requested to comply with the rules and regulations set forth. These rules and regulations correlate with National Standards.

As part of the science curriculum in the intermediate grades, teachers instruct students in the scientific process. Teachers will instruct students on every aspect of the scientific method and what is required for individual projects. All students in grades 3 – 5 are required to complete an individual science project. Students in grades K – 2 are encouraged to complete an individual project. Classroom teachers are also encouraged to submit a class project to the school's science fair for everyone to enjoy.

All individual projects will be displayed at Griffin Elementary Schools' Science Fair and **judged** by a minimum of two evaluators. The average score will be given for each project and awards will be presented to the top projects in each grade level.

Most of the information you need is contained in this packet. If you have questions, please contact your child's teacher. Thank you for your participation in this worthwhile educational opportunity.

RULES AND REGULATIONS

These rules and regulations, which are adapted from the State and National Science Fair Rules, must be followed to ensure everyone's safety, and to teach students how to properly do a science project. These rules and regulations apply to all grade levels. The Rules and Regulations will be posted on the school's website and will be available in limited supply in the school's main office for those families who do not have Internet access. Only those projects that comply with these standards will be selected for entry into the school and/or Zone Science Fair. It is the responsibility of the entrant's teacher, parent, and school's science contact person (Mrs. Senarens (karen.senarens@browardschools.com)) to ensure that all projects exhibited follow the rules and regulations set forth in this booklet.

WHO SELECTS PROJECTS TO BE DISPLAYED?

The teacher and the zone science committee will be responsible for evaluating projects to be displayed at the school's science fair. Science fair guidelines and judging criteria (attached) described in this booklet will be used to select projects.

WHAT TYPES OF PROJECTS CAN BE DISPLAYED?

Class projects, individual projects, may be displayed. However, for purposes of judging, only individual projects will be scored and eligible for awards. The attached rubric will be used to judge individual projects. Product comparison projects are permitted for school projects but will not be forwarded to the zone science fair.



WHAT ITEMS MAY NOT BE DISPLAYED?

Chemicals, rubber bands, noxious gases, glass containers, open flames, liquids, foods, explosives, animals, plants, sharp and/or pointed objects, and drugs may not be displayed. **Also, pictures of people's faces may not be displayed on the project.**

ANIMAL RELATED PROJECTS

The study of animals by elementary school students under qualified adult supervision is important for learning about the life sciences and for encouraging an interest in careers related to the life sciences. Animal projects must include a concern for the humane and proper treatment of all animals. Elementary School students may only do animal "observation" projects. An example of such a project might be, "Which Color Feeder Attracts Birds the Most?" Students may hang different colored bird feeders in the yard and observe which feeder birds are attracted to the most. Observing the sleeping, eating and playing habits of hamsters and other pets are other animal observation projects that students may do.



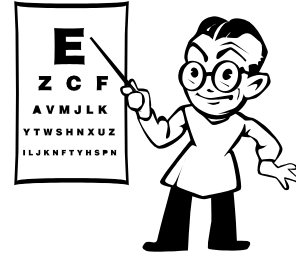
A **vertebrate animal verification form (attached)** must be completed prior to initiation of the project, approved by the teacher and the school's science fair coordinator and must be attached to the back of the show board. It is the responsibility of the parent and school to insure against inhumane treatment of animals. For example: Fish cannot be removed from water even for a short period of time. The temperature of the fish tank or container cannot be drastically increased or decreased. In other words, the water cannot be frozen, boiled, or changed in any way to cause stress to the fish. Please understand that any project that does not follow the

expectations listed above will not be accepted or displayed in the science fair.

HUMAN EXPERIMENTATION

Experiments with human subjects will be permitted provided that the human subjects are not subjected to any physiological or psychological stress. The **human subject verification form (attached)** must be completed prior to initiation of the project, approved by the teacher and the school's science fair coordinator and must be attached to the back of the show board.

A copy of the Human Experimentation Form is included in this booklet.



SURVEYS

Surveys are acceptable providing they follow these guidelines:

- a. No personal questions that involve invasion of privacy are acceptable.
- b. Permission slips signed by parents are required for those students who participate in surveys related to the tasting of foods and/or drinks. (See attachments).

PRIMARY SCIENCE EXPERIMENT PROCESS STEPS **(Required Items for Individual Project Display Boards)**

TITLE OF THE EXPERIMENT

A creative and eye-catching "title" is needed on the show board. This title should provide an understanding of what the experiment was about. Illustrating or decorating the title page is recommended.

EXAMPLE: TITLE – Mighty Air

STATEMENT OF THE PROBLEM

The statement of the problem tells what the project is going to solve. It may be stated in the form of a question.

EXAMPLE: If a balloon is filled with air, will it lift a book?

BACKGROUND INFORMATION

The student may use any method to present background information on their display board. Remember that background information takes a lot of research to gain an understanding about the topic. Use some of the following materials to gain this background information.

- Peer produced books
- Tapes, movies, video recordings, laser discs, or CD ROM, Internet
- Articles
- Activities

- Non-fiction books

The student may draw pictures and/or write about what he/she has learned using complete sentences to display this background information on the display board.

EXAMPLE: BACKGROUND INFORMATION ABOUT AIR

AIR – Air is a mixture of colorless, odorless, and tasteless gases. Air is all around us. Air has weight, takes up space, and moves. Air has no shape of its own. It takes the shape of its container. Air has force. Most living things need air to live. Plants need air to breathe. People also need air to breathe.

DISPLAY BOARD REQUIRED ITEMS

HYPOTHESIS

A hypothesis is an educated guess about what is going to happen during the project. It is often written in the form of a statement. Kindergarten students may illustrate the hypothesis and dictate to the parent or teacher what they think is going to happen. First and second grade students should be able to write/type their own hypothesis. Even if a child's hypothesis does not agree with the outcome of the experiment, it does not mean that the experiment or project was not successful (see Conclusions).

EXAMPLE: HYPOTHESIS

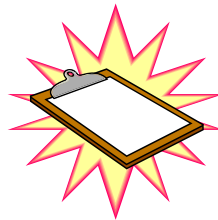
I believe that a balloon filled with air will lift a book.

LIST OF MATERIALS

The student should list every material that was used during the experiment. Students may write or type a list of materials that are used to do this experiment. Kindergarten students may cut/paste or draw the materials on the display board.

EXAMPLE: MATERIALS

Balloons
Heavy Book
Camera
Rubber Bands



PROCEDURE

A procedure is a step-by-step set of directions. It is like a recipe. The parent may design a sequencing activity for their child to use that will show the procedure used while doing the experiment.

EXAMPLE: PROCEDURE

1. Place the book on the table.
2. Place the balloon under the book with the mouthpiece overhanging.
3. Blow into the balloon. Observe what happened. Did the balloon lift the book?
4. Record the observation.
5. Deflate the balloon.
6. Add another book on top of the first book. Do the experiment again.

7. Repeat steps 4 and 5 two more times.

DATA COLLECTION

This can be a written or illustrated observation. The students may draw a picture showing what occurred and the teacher or parent may write what the student has observed. Simple photographs or bar graphs may also be used.

EXAMPLE:

DATA	
Did the balloon raise the book?	
Yes	No
1.	
2.	
3.	

CONCLUSION

The conclusion should be based upon the data collected. Even if a child's hypothesis may not agree with the outcome of the experiment, it does not mean that the project was not successful.

EXAMPLE: After careful analysis of the data, this scientist concludes that...
Therefore, the experiment supported (or did not support) the hypothesis.

BIBLIOGRAPHY

The bibliography is a list of all the books, pamphlets, magazines, websites, etc. that were used during the experiment to gain background information about the topic. Primary students will just write the author's name and title of the book, pamphlet, magazine, website, etc. in alphabetical order.

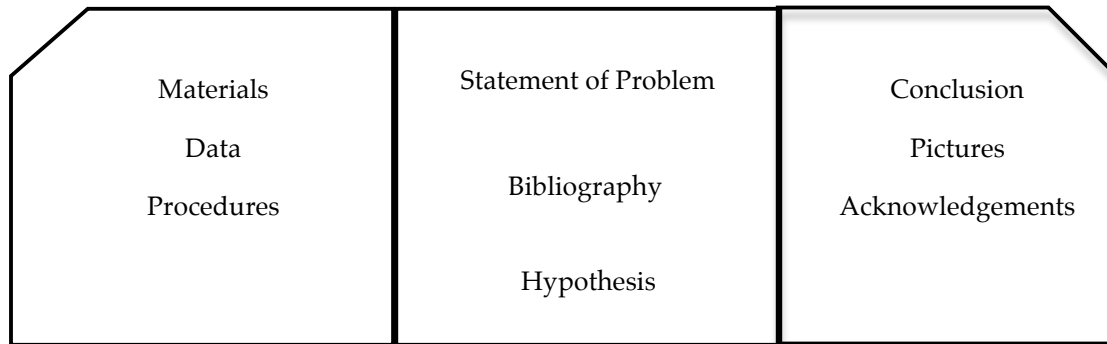
EXAMPLE: Jones, Debbie. Air is Everywhere

ACKNOWLEDGEMENTS

Primary students will write a thank you note to all the people who helped with the project. No proper names should be used.

EXAMPLE: I would like to thank the following people for helping me with my project:
My parents for buying the materials for me to help complete the project.
My brother and sister for helping me do the experiment.
My teacher for helping me learn the process skills necessary to complete the science fair project.

THE DISPLAY BOARD



No name should appear on the display board. Also, the layout of the required items on the display board are the decision of the individual scientist.

The display is an organized and creative way of showing the work that was done on the project. The display contains a summary of the process steps. The Title and Statement of the Problem may be displayed using precut letters or letters designed by the student. The Background Information will be a summary of the research. It may be mounted on colorful construction paper and attached to the board. Display a copy of the Hypothesis, Procedure, Materials, Data and Observation Charts, Conclusion, Recommendations, Acknowledgements, and Bibliography. These could be mounted on colorful construction paper. Include pictures (no faces of students or parents), pamphlets, letters, or anything else the student wishes to display pertaining to the project.

A display board is required for entry into the science fair. Each classroom will be provided one display board to exhibit a class project. A display board will be provided to individual students intending to complete an individual project. Display boards are also available in many supermarkets, school supply stores, and art stores. Poster board or any other material that is not strong enough for the project to be freestanding should not be used. Wood, pegboard and cardboard boxes are all acceptable materials from which a display board may be constructed.

Please note – Individual display boards must be no bigger than 48" wide and 36" high. They may be smaller than these measurements.

Finally, please remember that pictures of the child completing the project are not permitted on the show board. This is to ensure the project remains anonymous and is judged on content and presentation only.

Griffin Science Fair
Individual Project Scoring Rubric
Primary (Grades K – 2)

Project Number: _____ **Title:** _____

➤ Hypothesis: Is the hypothesis clearly stated? **Score (0 - 5)** _____

➤ Conclusion: Does it support or reject the hypothesis? **Score (0 – 5)** _____

1. **Creative Ability (Possible 20 points)** _____ **Score (0-20)** _____

- a. Are there elements of originality in the project?
- b. Is the student's approach and/or method utilized in solving the problem unique?
- c. Is the student's method of collecting data and/or use of equipment unique?
- d. Is there practical value of the project?

2. **Scientific Thought (Possible 30 points)** _____ **Score (0-30)** _____

- a. Has the student chosen a real problem to investigate?
- b. The scientific method was followed (observation, hypothesis, test and conclusion).
- c. Experiments were repeated often enough so that data is accurate.
- d. The student's data is displayed and logical conclusions are drawn from the collected data.

3. **Thoroughness (Possible 15 points)** _____ **Score (0-15)** _____

- a. There is evidence that thought, study, and effort went into this project.
- b. Does the overall project demonstrate orderliness and accuracy?
- c. Is the time the student spent appropriate for the project?
- d. Does the student provide thorough research?
- e. Is the project complete? Does it appear to have been done "last minute"?

4. **Skill (Possible 15 points)** _____ **Score (0-15)** _____

- a. Has the student demonstrated appropriate skills required for obtaining the data?
- b. Did the student carry out the project independently with minimal help from an adult?
- c. Are the arrangement and design of the exhibit clear and well presented?
- d. Does the written material show attention to grammar and spelling?
- e. Is the project appropriate for the child's grade level?

5. **Clarity (Possible 10 points)** _____ **Score (0-10)** _____

- a. Are the student's purpose, procedure and conclusion presented clearly and orderly?
- b. Are the student's written material clearly written and organized?
- c. Is the student's overall physical display neat, well constructed, and easy to read?

TOTAL: _____ **Possible 100** _____

Comments:

VERTEBRATE ANIMAL VERIFICATION FORM

THIS FORM MUST BE COMPLETED FOR ALL RESEARCH INVOLVING VERTEBRATE ANIMALS PRIOR TO THE INITIATION OF THE PROJECT. NO PROJECT MAY BE DONE WHICH MANIPULATES THE BASIC NEEDS OF ANIMALS SUCH AS FOOD, SHELTER, AND WATER, SO AS TO CAUSE STRESS.

Any project involving vertebrate animals must have the approval of the school’s science fair contact person, parental consent and supervision.

(Print or type)

Student: _____

School: _____

Date: _____

Brief Description: _____

I, _____

do state that I have complied with the Florida State Statues – Chapter 85-70, which prohibits projects involving experimentation, which results in physical or psychological stress in vertebrate animals.

APPROVED _____
(Science Contact Person)

(Teacher)

(Parent Signature)

This form should be approved by the teacher and the science fair coordinator and attached to the back of the child’s science fair show board.

CERTIFICATION – HUMAN SUBJECT

THIS FORM MUST BE COMPLETED FOR ALL RESEARCH INVOLVING HUMANS PRIOR TO THE INITIATION OF THE PROJECT. ANY PROJECT INVOLVING TASTING OR DRINKING OF FOODS MUST HAVE A SIGNED PERMISSION SLIP FROM THE PARENT OF THE STUDENTS PARTICIPATING INDICATING THAT THE PARTICIPANT IS NOT ALLERGIC TO THE FOODS BEING SURVEYED. SURVEYS THAT REQUIRE QUESTIONS THAT INVADE PERSONAL PRIVACY ARE NOT ACCPETABLE.

(Print or type)

Student: _____

School: _____

Date: _____

Title of Project: _____

Brief Description: _____

I, _____ state that no stress, physical or psychological
(Student Signature)

harm will occur to human subjects participating in my project.

APPROVED _____
(Science Contact Person)

(Teacher)

(Parent Signature)

This form should be approved by the teacher and the science fair coordinator and attached to the back of the child's science fair show board.

PRIMARY SCIENCE FAIR PROJECT IDEAS

ANIMAL STUDIES

- Do ants like cheese or sugar better?
- What foods do mealworms prefer?
- Does holding a mirror in front of a fish change what a fish does?
- What color of birdseed do birds like best?
- Do mint leaves repel ants?
- Which travels faster – a snail or a worm?
- On which surface can a snail move faster – dirt or cement?
- How far does a snail travel in one minute?
- How much can a caterpillar eat in one day?
- Which food do birds like best?
- Which foods do ants prefer most?

COMPARATIVE STUDIES

- What kind of juice cleans pennies best?
- Do all watches keep the same time?
- How does omitting an ingredient affect the taste of a cookie?
- Do suction cups stick equally well to different surfaces?
- Which cheese grows mold the fastest?
- Which is the warmest/coldest area in your house?
- Which colors show up best in the dark?
- Do clothes dry fastest indoors, outdoors, or with a fan?
- Does eating breakfast affect school performance?

CONSUMER TESTING

- What brand of raisin cereal has the most raisins?
- Which dish soap makes the most bubbles?
- Which paper towel is the strongest?
- With which type of battery do toys run the longest?
- Which laundry detergent works the best?
- Which potato chip is the greasiest?
- Which brand of bubble gum flavor lasts longest?
- Which cereal absorbs the most milk?
- Which crayon melts the fastest?
- Which breakfast cereal has the most iron?
- Which cereal will stay crispy the longest when placed in milk?
- Which soap cleans the best?
- Which candy melts the fastest?
- Which brand of glue works the best?
- Which size/shape Frisbee is best for long distance throwing?

HUMAN STUDIES

- Does anyone in my class have the same fingerprints?
- Which student in class has the greatest lung capacity?
- Is reaction time affected by gender?
- Does smell affect the taste of food?

PLANT STUDIES

- Do roots of plants always grow downward?
- Can plants grow without soil?
- Will bananas turn brown faster on the counter or in the refrigerator?
- Does temperature affect the growth of plants?
- Can plants grow from the leaves?
- Do different kinds of apples have the same number of seeds?
- Do bigger seeds produce bigger plants?
- Does a plant grow bigger if watered with milk or water?
- Does a plant grow better in sunlight or artificial light?
- Which soil grows plants the fastest?
- Does light affect seed germination?
- Does salt or sugar affect seed germination?
- Does the depth a seed is planted affect its ability to sprout?
- What kind of soil is best for plant growth?
- What is the best kind of water for your plants?
- Which additive is the best for preserving cut flowers?
- Which beans grow the fastest?
- What are the effects of coffee or tea on germination?
- Can ground up vegetables be good fertilizers?

PHYSICAL SCIENCE

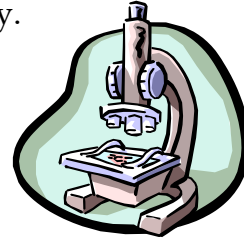
- Can the design of a paper airplane make it fly further?
- Do wheels reduce friction?
- Does a ball roll further on grass or on dirt?
- Do all objects fall to the ground at the same speed?
- What kind of things do magnets attract?
- How can you measure the strength of a magnet?
- How much salt does it take to float an egg?
- Does water with salt boil faster than plain water?
- Does an ice cube melt faster in air or water?
- Can you tell what something is just by touching it?
- Can you tell where sound comes from when you are blindfolded?
- Can things be identified by just their smell?
- Does the length of a vibrating object affect the sound it produces?
- What is the best way to make an electromagnet?
- Does temperature affect the strength of an electromagnet?
- Does the number of wraps of wire in an electromagnet affect its strength?

WATER

- Does a bath take less water than a shower?
- Does warm water freeze faster than cool water?
- Does the temperature of the water determine the time it will take a drop of food dye to color a glass of still water?
- Which materials absorb the most water?
- Which dissolves better in water – salt or baking soda?
- Which liquid freezes fastest?
- Which color makes water evaporate fastest?
- Does water type (tap water, bottled water, rain water) affect plant growth?
- Will an ice cube melt faster in fresh water or salt water?
- Does salt affect the freezing point of water?

Thank you in advance for making this year's science fair experience enjoyable and a memorable experience. Remember to allow plenty of time to complete the project (a minimum of 4 weeks) and make sure to present your results on an organized display.

The students, parents and staff are excited to see what topic you researched and how you went about proving or disproving your hypothesis. Enjoy the fun!
Now go and experiment!



Project Topic Websites

<http://school.discoveryeducation.com/sciencefaircentral/>

<http://www.sciencebuddies.org/>

http://resources.kaboose.com/kidslinks/science/science-fair/Science_Fair.html

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

<http://www.science-project.com/>

<http://scienceclub.org/scifair.html>

<http://members.ozemail.com.au/~macinnis@ozemail.com.au/scifun/projects.htm>

<http://www.sciencemadesimple.com/>

<http://www.kids-science-experiments.com>

<http://scienceprojectideasforkids.com/>

<http://www.stevespanglerscience.com/experiments/>

Suggested Project Time Line

<u>Item</u>	<u>Due Date</u>	<u>Complete</u>
Topic / Statement of the Problem	October 25	_____
Background Information and Bibliography	November 8	_____
Hypothesis	November 8	_____
Materials and Procedures	November 22	_____
Observations / Data / Conclusions	December 6	_____
Acknowledgements	December 6	_____
Completed Display Board	December 13	_____

Note: Teachers will be teaching and modeling each step of the scientific process in class. If you have any questions, please contact the teacher.

OFFICIAL ENTRY FORM:

This entry form must be completed and submitted with your display board on the due date. **DO NOT** attach this form to the display board. Students will **CLIP (DO NOT PASTE)** this form to their science fair project when submitting it to their teacher. The school will assign the Project Number and attach it to the project. Thank you.

***GRIFFIN ELEMENTARY SCHOOL
SCIENCE FAIR
PRIMARY ENTRY FORM***

Project Number: _____ (The Science Fair Coordinators will complete)

Project Title: _____

Student's Name: _____

Teacher's Name: _____

Grade Level: _____