

# BENNETT ELEMENTARY SCHOOL

# SCIENCE FAIR

OPEN TO ALL BENNETT STUDENTS (GRADES K - 5)

Projects Due: Morning, Wednesday, February 19, 2020  
Family Viewing: Evening, Wednesday, February 19, 2020  
Classroom Viewing: Morning, Thursday, February 20, 2020

## Minimum Project Requirements:

- K—1: Each participating student and his/her parents investigate a science topic together. A simple experiment may be done as part of the investigation. Together, each participating student and his/her parents make a display showing what they learned.
- 2 — 3: Each participating student investigates a science topic with parental assistance (*meaning parental involvement is appropriate; however, students should do as much of the work as is both possible and practical*). It is preferred that an experiment be done as part of the investigation, though an experiment is not required. With parental assistance, each participating student makes a display showing what he/she did and learned.
- 4—5: Each participating student investigates a science topic. An experiment must be done as part of the investigation. Each participating student must follow directions for completing his/her investigation as described by his/her fourth-grade or fifth-grade classroom science teacher. Each participating student makes a display showing what he/she did and learned. A bibliography of two or more resources that tells from where each participating student found information that helped him/her design the experiment and make a hypothesis **MUST** be included as part of an abstract or display board. The participating student **MAY** submit a written research paper that summarizes the research done for the project or on a topic related to his/her investigation. (*Parental involvement, for fourth and fifth grade investigations should be minimal. Fourth and fifth grade students must plan and complete their own investigations, displays, and reports. A parent may only supervise and critique his/her child's work for safety; age appropriateness; validity and accuracy of process, results, and conclusions; and timely completion.*)

## Registration Deadline:

To participate in the Bennett Elementary School Science Fair, students must complete and submit a **PROJECT REGISTRATION FORM** by February 12. A copy of the registration form for **FOURTH-GRADE AND FIFTH-GRADE STUDENTS** is printed on the back of this packet.

**IMPORTANT NOTE:** Projects that involve humans and/or vertebrate animals will **NOT** be permitted unless a "Human/Vertebrate Animal Protocol Form" is completed and approved. Please contact Mrs. J. Rimkus to secure "Human/Vertebrate Animal Protocol Form," if needed.

For Questions contact Mrs. J. Rimkus by e-mail at rimkusjl@pwcs.edu

## **Steps of the Scientific Inquiry Process**

### **Observe the world around you and ask a question.**

Your question should be about something suitable for your age.

Your question should require an experiment to find the answer.

You should be able to get the materials necessary to conduct the experiment.

### **Research your topic.**

Learn more about your topic by looking in books, finding information on the Internet, asking an expert, by doing informal experimentation, and other methods.

Be sure to record information about each resource that you will need for a bibliography.

### **Hypothesize an answer to your question.**

Use an " ..... If ..... then ..... because " statement.

Your hypothesis should be based on your research.

Your hypothesis should tell what you think the answer to your question will be.

### **Design an experiment that will let you discover the answer to your question.**

List the procedures you will follow for your experiment.

List the materials you will need to do for your experiment.

Identify variables (independent, dependent, and controlled)

Identify the experimental control. (If you do not have an E.C., you have to explain why.)

Determine how you will keep records of what happens when you do the experiment.

Be sure to use metric measurements when doing a science experiment.

### **Do the experiment.**

Follow your procedures.

Keep a record of observations and results.

Be sure the experiment is repeated three or more times.

### **Organize your record of observations and results.**

Draw pictures or study photographs that show what happened.

Put the results into a chart or graph so they can be studied more easily.

Write a summary of what you observed in your experiment.

### **Reflect on the results of your experiment.**

Study your organized record of results.

Use the results to answer your question.

Write the answer to your question and tell why your results support your answer.

Do additional research to find additional information that substantiates your answer.

Identify what changes you could make to your experiment to get better results.

Identify any new questions for further experimentation that you could do in the future.

# DO NOT ATTACH THE ABSTRACT TO YOUR SCIENCE DISPLAY BOARD!!

## Sample Abstract and Bibliography

### How Sight Affects Your Taste

The purpose of this experiment is to determine if sight has an effect on the taste preference. It is hypothesized that sight will affect the ability to taste.

Thirty volunteers that liked the taste of ketchup and were not colorblind were asked to taste three different colored ketchups made by the same company and have the same ingredients except added food colorings. Each taste tester volunteer was blindfolded and asked to taste the three different colored ketchups (red, green, and purple), using French fries as the taste food. Each tester was asked which sauce they liked best, and if they could tell any difference in the taste of the ketchups. The blindfold was removed and the tester was asked which sauce they would least like to eat.

Most volunteer taste testers could not taste any difference between the sauces when they were blindfolded. Most volunteers chose the green colored ketchup as the one they liked best when blindfolded.

It was concluded that most people tested could not tell the difference between the sauces while blindfolded, but when the blindfold was removed, all tasters chose either the purple or the green ketchup as the one they would least like to eat. The results support the conclusion that sight has an effect on taste preference. Due to our visual perception and recognition we have been raised to believe that ketchup should be red and that red ketchup will taste better than other colors of ketchup.

Information from this study may be used by food companies when developing new products.

### BIBLIOGRAPHY:

“Heinz explores new colors for ketchup.” <http://news.heinz.com/press-release/general/heinz-research-marketing-discovery-heats-up>. June 9, 2007.

Johnson, James. The Color of Foods. Chicago: Double Day Press, 2009.

# BENNETT ELEMENTARY SCHOOL BIBLIOGRAPHY STYLE SHEET

A **BIBLIOGRAPHY**, a list of resources that tell where you found your background information that helped you design your experiment and make your hypothesis. The Bibliography **MUST** be included as part of the project abstract. Examples of Bibliography entries are given below for several types of popular reference materials.

## **Non-Fiction Book:**

Last Name, First Name. Title. Place of Publication: Publisher, Copyright Date.

### *Sample:*

Fleischman, Paul. Bull Run. New York: Scholastic, Inc., 1993.

## **Reference Book:**

"Title of Article." Title of Reference Book. Copyright Date. Volume Number.

### *Sample:*

"Dinosaur." The World Book Encyclopedia. New York: World Book, Inc., 1995.

## **Computer / CD-ROM Programs:**

"Title of Article." Title of CD Source. Copyright Date. Type of Source.

### *Sample:*

"Diving Underwater." The 1998 World Book Multimedia Encyclopedia. 1998. CD-ROM.

## **Computer On-Line Source:**

"Title of Article." URL Address. Date Article (Month, Day, Year) Accessed and/or Downloaded.

### *Sample:*

"A Worker Classifies Bananas for Export." [http://www.elibrary.comis/k6/getdoc.cg1002\\_0203&dtype](http://www.elibrary.comis/k6/getdoc.cg1002_0203&dtype). October 26, 2000.

## **Magazines /Newspapers:**

Last Name, First Name: "Title of Article." Title of Magazine/Newspaper. Date. Article (Month, Day, Year) Published.

### *Sample:*

Jones, Paul. "Ferns Are Great." Plants in the Home. October 15, 1998.

## Contents of a Project Display Board Grades 4 & 5

<b>Part</b>	<b>Purpose</b>
Title	Write a sentence that gives the main idea of your project and that tells how the independent and dependent variables were investigated.
Introduction	Describe the rationale, purpose, and hypothesis for the investigation. Use these three questions to guide you in writing the introduction: <ol style="list-style-type: none"> <li>1. Why did you conduct the experiment? (Rationale)</li> <li>2. What did you hope to learn? (Purpose)</li> <li>3. What did you think would happen? (Hypothesis)</li> </ol>
Variables	Be sure to list your variables: Independent, Dependent and Controlled Variables
Procedure & Materials	<ul style="list-style-type: none"> <li>• List the steps that you followed to complete the investigation. Be sure to check the list carefully for accuracy, completeness, and precision. Be sure to give all measurements using the metric system.</li> <li>• Make a list of all materials that were used for your experiment.</li> <li>• Identify your independent, dependent, and controlled variables.</li> <li>• Identify your experimental control. If your experiment did not have an experimental control, state that it did not and tell why.</li> </ul>
Results	Summarize the results of your experiment. You can summarize by writing a paragraph and by putting the information in a table, graph, or by using a combination of methods.
Conclusion	Write a summary that does the following: <ul style="list-style-type: none"> <li>• Restates the purpose of your experiment.</li> <li>• Briefly describes what you did.</li> <li>• Answers your question.</li> <li>• Tells whether or not your hypothesis was supported.</li> <li>• Describes any errors you had in your experimental process.</li> <li>• Tell one or two new things that you learned.</li> <li>• State one or two things or questions you had after doing this experiment that you can investigate in the future.</li> </ul>

## Criteria that Will Be Used to Judge Your Science Project

*(Each project can be awarded a maximum of 50 points.)*

### **Project Idea** *(Two items in this category for a total of 10 possible points.)*

- **Originality/Creativity** — The student has done a project based on his/her interest and that will enable him/her to learn or understand something he/she does not already know. The project is designed to answer the student's question and is not simply an experiment he/she found in a book and decided to do. Project is appropriate for his/her age.
- **Background Research** — The student has completed research that enables him/her to understand his/her question and the scientific principles involved.

### **Project Design** *(Three items in this category for a total of 15 possible points.)*

- **Hypothesis** — Student's hypothesis is logical and based on the preliminary research completed.
- **Procedures** — The student has designed an experiment that will enable him/her to find the answer to his/her question. The student's procedures are clearly stated, logical, and thorough.
- **Variables and Experimental Control** — The student has accurately described the independent, dependent, and controlled variables of his/her experiment as well as the experimental control.
  - The **independent variable** may be called the **manipulated variable**. There is only one independent variable and is the thing being tested.
  - The **dependent variable** may be called the **responding variable**. Though often there is only one dependent variable, there may be more than one. The dependent variable provides the data to answer question of the project.
  - The **controlled variables** may be called **constants**. Controlled variables are those things in the experiment that are kept the same so that the results of the experiment will be valid. There are many controlled variables
  - The **experimental control** is the part of the project that is used as a comparison of the data collected. For instance, in an experiment testing laundry detergents, the experimental control would be the washing of clothes in plain water. Not all experiments will have an experimental control.

### **Project Results** *(Two items in this category for a total of 10 possible points.)*

- **Data** — The student has sufficient data to reliably answer his/her question. The data appears to be accurate and is organized for analysis.
- **Conclusions** — The student's conclusions and answer to his/her question is logical and based on the project's data. The conclusion is well stated.

### **Project Display** *(Three items in this category for a total of 15 possible points.)*

- **Creativity** — The student's display is creative and attractive.
- **Clarity** — The student has clearly told the story of his/her project.
- **Thoroughness** — The display is complete and uses correct grammar and spelling.

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- Scoring:** 5 points - Outstanding. All is correct, thorough, logical, developed, creative, well presented.  
4 points - Well done. All or most is correct. Evidence of logical thinking and creativity.  
3 points - Average. Generally correct though some errors may exist. Standard thinking.  
2 points - Low average. Information & understanding present, but sketchy. Errors present.  
1 point - Attempted. Incomplete. Many errors. Lack of understanding.  
0 points - Non-existent.

What is your question? \_\_\_\_\_

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List **two (2) or more** resources you used or will use to learn about your topic.  
*(See the "Bibliography Style Sheet" so you know what information you need.)*

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What is your hypothesis?      *(Use an ".....If.....then ..... because " statement.)*

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What are your variables?

**Independent Variable:**

*Ask, "What am I testing?"  
There should only be one independent variable.*

**Dependent Variables:**

*Ask, "What are the results that I will use to answer my question?" There can be more than one dependent variable.*

**Controlled Variables:**

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

*Ask, "What things will I do the same way for everything I test so the experiment will be fair?"  
There are many controlled variables, or constants, in an experiment.*

**Experimental Controls:**

*Ask, "What am I doing so that I know that I am really learning what I want to know?" Also ask, "What am I doing so I know my results are accurate?"  
Describe what you are doing to see if your independent variable really has an effect.  
Tell how many times you will repeat the experiment to make sure your results are accurate.*

# Bennett Elementary School Science Fair Project Registration Form for Grades 4

A science fair project at the 4-5 level is meant to be a fun, independent, learning activity for a fourth or fifth-grade student that allows him/her to investigate a topic of his/her choice using the scientific method of discovery. Each participating student must follow directions for completing his/her investigation as described by his/her fourth-grade or fifth-grade classroom science teacher. Further, an experiment must be done as part of the investigation. Each participating student makes a display showing what he/she did and learned. A **bibliography of two or more resources** that tells from where each participating student found information that helped him/her design the experiment and make a hypothesis **MUST** be included. The participating student MAY submit a written research paper that summarizes the research done for the project or on a topic related to his/her investigation. *(Parental involvement for fourth and fifth grade investigations should be **minimal**. Fourth and fifth grade students must plan and complete their own investigations, displays, and reports. A parent may only supervise and critique his/her child's work for safety; age appropriateness; validity and accuracy of process, results, and conclusions; and timely completion.)*

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**Please complete the information below to enter a grade 4 project in the Bennett Elementary School Science Fair and return this form by February 12.**

**NAME OF STUDENT** \_\_\_\_\_

**TEACHER** \_\_\_\_\_ **GRADE** \_\_\_\_\_

**TITLE OF PROJECT:** \_\_\_\_\_

**Signature of Parent:** \_\_\_\_\_

## IMPORTANT

Projects which involve experimentation with vertebrate animals or humans will not be allowed in the science fair unless a project protocol has been completed and approved.

Projects may not display any live or preserved animals. Project displays may not contain combustible, flammable, or other fire causing materials. Project displays may not contain any potentially hazardous chemicals (all other liquids or chemicals must be in SEALED, NON-GLASS containers). Project displays may not include food (human or animal), bacteria cultures, yeast cultures, mold, fungi, or other microbial cultures (living or dead). Project displays may not contain sharp, pointed, or other possible hazardous objects.

The Bennett Elementary School Science Fair Committee reserves the right to remove any objects, materials, and other items which they determine to be unsuitable for display in a science fair exhibit.