

Puckett's Mill Elementary School



Science Fair Handbook 2011-2012

Science Fair Application Puckett's Mill Elementary

Name _____

Teacher _____

Grade Level _____

Project Title:

Scientific Question:

(Student's Name)

has reviewed the information in this packet and would like to participate in the Puckett's Mill Science Fair. We are aware that a science fair project is a big commitment that takes time to plan and conduct. We understand that the project is due on January 30, 2012.

(Parent/Guardian Signature) _____

(Student Signature) _____

Please return this form to your teacher at school.

Puckett's Mill Elementary

Science Fair Handbook

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To the Student

Participating in a Science Fair is an exciting adventure! You will make new discoveries and teach yourself some new Science ideas. Science Fair investigations require time and space. Persevere with enthusiasm. Keep to a schedule, complete experiments, make conclusions, and retest results if necessary. Show Puckett's Mill Elementary your knowledge and skills! Begin thinking about the possibilities you might explore through the Scientific Method. **HAVE FUN WITH SCIENCE!**



To the Parent

Please support your children's participation in the Science Fair. A positive, meaningful, and fun experience will create a feeling of pride for what they have accomplished. The project should be primarily the student's ideas and effort. However, there are many ways a parent can help:

- *Read this handbook.
- *Help your child choose an interesting, specific topic.
- *Help your child select a project that he/she can do.
- *Provide technical or safety assistance.
- *Assist in collecting materials.
- *Help your child get organized.
- *Ask questions and provide encouragement.
- *Check on progress.
- *Listen to your child practice presenting his/her project.
- *Ask questions and provide encouragement.



Getting Started

Think: What am I interested in?

- *Find a project that is interesting to you!
- *Be specific. Narrow the topic.
- *Be realistic.
- *Refer to Science Fair books at your local library or visit online resources to get ideas about possible topics.

Choose: Choose a project of interest.

- *The topic and experiment should be acceptable in the given time line.
- *Put the topic in the form of a question.
- *Make a schedule or checklist.
- *Learn as much as you can from books, magazines, and online resources.

Record: Keep a notebook.

- *Gather materials. They should be affordable.
- *Experiment.
- *Collect data.
- *Make notes of resources you use.
- *Keep a record of what you do, when you do things, and what is happening.
- *Take pictures.

Purpose: Use the Scientific Method.

- *This is a way to ask and answer questions by making observations and doing experiments.

Scientific Method

Question: *Select or state a problem. Put the topic in the form of a question. Or, "state the purpose" of the project.*

The question should not require a simple "yes" or "no" answer.

Ask a question about something you observe: How, What, When, Who, Which, Why, or Where?

Choose something you can measure, preferably with a number.

Example: "How much current does a robot's arm use to lift a weight?"

Be specific. Instead of "In what conditions do plants grow best?" try "Do bean plants grow better in direct sunlight, indirect sunlight, or shade?"

Background Research: *Put together a plan for answering your question. Use the library and Internet research.*

Identify key words and main concepts. Talk to people with more experience than yourself: mentors, parents, and teachers. Design and describe a method for investigating the question.

Hypothesis: *Construct an educated guess or a solution to the problem. It might be in the form of an "If..., then..." statement. This is a prediction. "If I do this, then that should happen." Form a statement about the predicted results of your experiment. It is what you think will happen, based on the research you've done and your knowledge. A hypothesis doesn't include why you think you'll get certain results, just what you think the results will be. The more you know about your problem, the better equipped you will be to come up with a logical hypothesis. Your hypothesis should be clearly and simply stated, and it should be in statement form—not a question. Because it's understood that a hypothesis is an educated guess, you don't need to say that you are guessing. What happens if you find out your hypothesis is wrong after the experiment? Nothing!*

Scientific Method (continued)

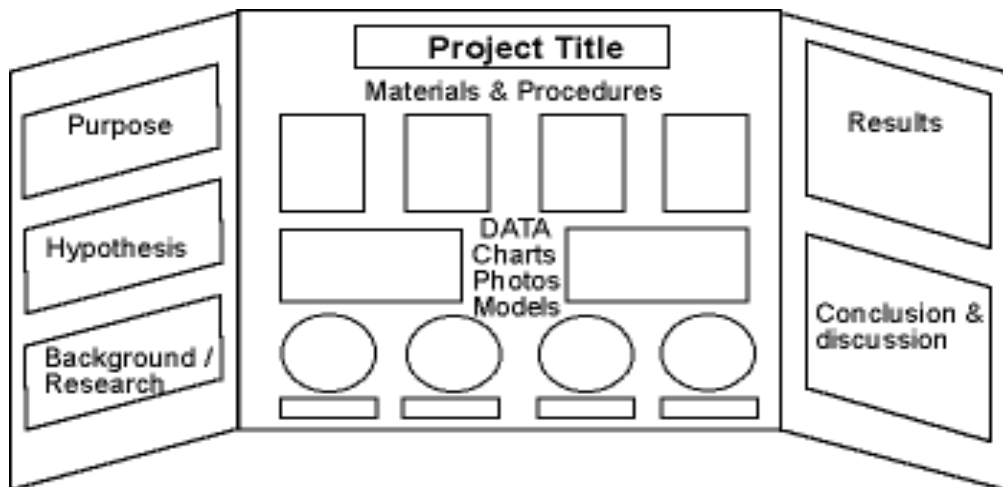
Experiment: *Test your hypothesis by conducting an experiment.*

Discover if your hypothesis is true or false. Keep detailed notes about everything you observe and do in a **journal**. Take **pictures** or **make sketches**. Repeat your experiment several times to make sure results are valid. It is important for your experiment to be a fair test. A "fair test" occurs when you change only one factor (variable) and keep all other conditions the same (constants). The experiment that you conduct will be to test your hypothesis. Your experiment will be designed around your hypothesis, and will either prove or disprove it. It will be important to conduct your experiment with your hypothesis in mind. However, it's imperative that you don't engineer your experiment to prove that your hypothesis is correct.

Analyze Results: *Analyze the information you have collected.*

Organize your notes. **Construct charts, tables, and/or graphs** with data.

Conclusion: *Communicate your results to others in a final report and display board.*



Experiment Planning Sheets (#2 Continued)

Materials:

List the things used to do the experiment.

Hypothesis:

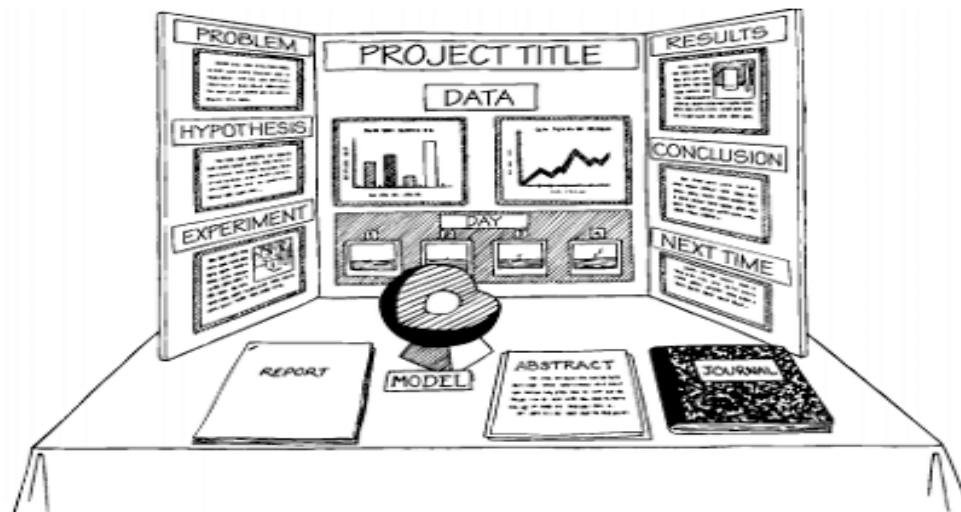
Make an educated guess or a possible answer to the question.

"If..., then..." statement

Display Boards

The display board shows what you know, what you did, and what you learned.

- * Sturdy cardboard, plywood, or foam board make great display boards.
- * Size: 76 cm (30") deep - front to back
122 cm (48") wide - side to side
274 cm (108") high - floor to top
Using a 48" x 36" presentation board works well.
- * State your title in large writing at the top of your display board.
- * Include major headings. Lettering for the headings should be read from 5 feet away.
- * State your hypothesis, materials, procedures, results, and conclusions.
- * Tell about your research findings. Make it interesting!
- * Illustrate information with charts, graphs, tables, drawings, pictures, photographs, or a model.
- * Be original.
- * Use your best handwriting or type information.
- * Report information on separate sheets of paper. These can be neatly glued or taped to the display board under appropriate headings.
- * Use various colors to attract attention to different features.



The value of scientific investigation would be lost if it were not reported to others. At the Science Fair, you will report your project in the following way:

- *Displaying an exhibit of your project and materials.
- *Telling the judges and visitors about your project.

Judges will consider:

- *The depth of knowledge and understanding demonstrated by you in the subject matter of your project.
- *The use of the scientific method to conduct your project.

Your display should be interesting and eye catching. Use pictures and diagrams to illustrate your work on a poster display. Present your **title** prominently. Be sure to include the **purpose** of your project, your **hypothesis**, the **procedures** followed, your **results**, and **conclusions**. Take the time to develop an exhibit that is indicative of the effort you put into your research.

Samples, demonstrations, models, or experimental equipment should also be exhibited. These can be displayed in front of your presentation board.

Participants are welcome to use their own video equipment as part of their display. Equipment will not be provided by the school.

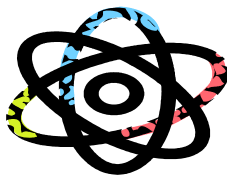
Presenting Your Project

Practice! Practice your presentation to your parents and friends.
Be confident! Remember you know this project the best - more than any other person. Talk naturally from your own experiences.

Do not read directly off your display board.

Do the following as you present the day of the Science Fair:

1. Dress for success!
2. Stand up and introduce yourself.
3. Look in the eye of the reviewer and have a conversation with him/her.
4. State the "catchy" title of your project.
5. Explain the purpose of your project. Why did you choose this topic? How did you get interested in this subject?
6. Tell about your research.
7. Explain the procedures. Allow your interest to show. Be animated.
8. Tell about your charts, tables, graphs, and/or pictures.
9. Discuss your conclusions.
10. Explain what you have learned or proven.
11. Thank the reviewer at the end for taking time to come to your Science Fair.



Judging

Students will be scored in the following areas:

1. The Scientific Process
 - a. Does the project promote analytical thinking?
 - b. Does the project demonstrate scientific thinking?
 - c. Is the student's growth and learning evident?
2. The Project Display Board
 - a. Does the project contain all the appropriate sections?
 - b. Is the Display board neat?
3. The Oral Presentation
 - a. Can students communicate their findings?
 - b. Is the student knowledgeable about their work?
4. The Journal/Experiment Planning Sheets
 - a. Is there a journal with all of the student's original data?

Bring your completed Science Fair project to school on January 30, 2012.

**THANK YOU for participating in the
Puckett's Mill Elementary
Science Fair!**

**All projects must be picked up from
school on Thursday, February 2 after
Sci/Tech Night or on February 3.**

YOU DID IT!!

