

Cedar Grove Elementary Science Expo

**Application and Planning Guide
2018**



Dear Students and Parents,

Cedar Grove Elementary is excited to be once again hosting a non-competitive Science Expo on the evening of **Thursday, January 11, 2018**. The Science Expo will be open for all students in grades K-5 and will be held at Cedar Grove Elementary School.

Students will develop an experiment based on a testable question from any area of science. Students may work with a partner; however, both partners must turn in a separate application. If working with a partner, the applications should have the same testable question and summary. The vast majority of the work must be done at home, but we will be happy to give guidance as requested. Parental or community assistance to students is encouraged.

The displayed experiments will be limited to a space of 48" long X 36" high. The displays must be free standing with a backboard, which can be purchased at craft or any multipurpose stores. No resources other than a table will be available the night of the expo.

Guidelines for Participation:

12/04/17	Applications and permission slips will go home with students interested in participating in the Science Expo. You may turn in completed applications as soon as you complete them—you do not need to wait until the due date. Please return applications to your homeroom teacher.
12/13/17	Applications are due. Please try to turn them in to your classroom teacher as early as you can. Remember your experiment must be based on a testable question and approved before you may begin working on your project. **If you are working with a partner, you both need to turn in a separate application.**
By 12/18/17	Participants will receive approval or advice as to how to improve the testable question. Once the experiment is approved, applications will be returned to the participant, at which point the participant may proceed with the actual experiment.
01/11/18	Participants must be prepared to discuss their work with the public and visiting scientists on the evening of January 11, 2018. More details will be sent home with participants including presentation time closer to the event date.

Planning Guide

Adapted from Lora Holt's Science Fair Planning Guide

Special Considerations

Your project must be an experiment that goes through the inquiry process; it cannot be a model, display, or collection. An experiment that goes through the inquiry process will take you through the Scientific Method.

Example Testable Question: How does the type of liquid affect how an ice-cube melts?

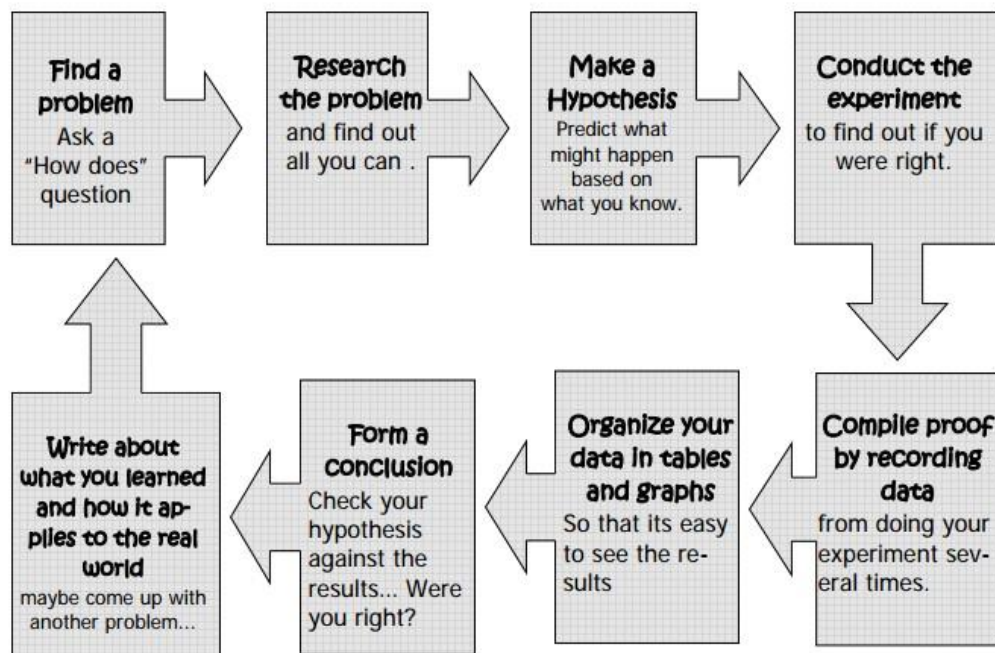
Example Non-testable Question: How do volcanoes work?

Please be sure you are being a responsible scientist! This means to be considerate of the environment and your subjects. Experiments where humans or animals might be harmed will not be permitted.

Additionally, open flames, caustic and flammable chemicals, bottled gas, or explosives of any kind are **not permitted** in the school building. Animals are also **not permitted** in the school building. Any foods or tastings the night of the expo are **not permitted**.

Parents should provide appropriate supervision of all science experiments to assure the safety and well-being of their child. If you have any questions, please contact: Terri Anderson, Terri_D_Anderson@mcpsmd.org; Teresa Cornell, Teresa_M_Cornell@mcpsmd.org; Krista Romagnoli, Krista_N_Romagnoli@mcpsmd.org; or Terrie Ward, Terrie_L_Ward@mcpsmd.org.

What is the Scientific Method?



How do I conduct a Science Expo Project?



Step 1: Coming up with a Good Question

You need to develop a testable question. Use the sentence starters below to help you develop your question. Remember, you should only have one question.

The Effect Question:

What is the effect of _____ on _____?

sunlight on the growth of plants

eye color pupil dilation

brands of soda a piece of meat

temperature the size of a balloon

oil a ramp

The How Does Affect Question:

How does the _____ affect _____?

color of light the growth of plants

humidity the growth of fungi

color of a material its absorption of heat

The Which/What and Verb Question:

Which/What _____ (verb) _____?

paper towel is most absorbent

foods do meal worms prefer

detergent makes the most bubbles

paper towel is strongest

peanut Butter tastes the best

Step 2: Doing the Research

You've picked a testable question and now it's time to research your question as much as possible. As a scientist, it's important to become an expert at your topic.

So how do you become an expert?

You Read!!! Read about your topic. Read encyclopedias, magazine articles, books from the library, and articles from the internet (with parent supervision). Make a list of any new science words you learn, and all the sources you used. You'll need this list for your project.

You Discuss!!! Talk about it with your parents, teachers, and experts who work with the things you are studying. **Step 3: Make a Hypothesis**

Now it's time to predict what will happen if you test your question. This type of "smart guess" or prediction is called a hypothesis. Be sure to make this prediction BEFORE you even start your experiment. You should support your hypothesis with research you found.

Example Question: Which paper towel is more absorbent?

Example Hypothesis: I think Brand X will be more absorbent because it's a more popular brand; it is thicker and the people I interviewed said that the more expensive brands would work better.

I think that _____ (will happen) because (my research shows...)

Step 4: Test your Hypothesis by Conducting the Experiment

Now we've come to the good part...the experiment! Designing an experiment is really cool because you get to use your imagination to come up with a test for your question, and most of all, you get to prove (or disprove) your hypothesis. Remember, that at the Science Expo you cannot perform your experiment live, so you'll have to take plenty of pictures as you go through the experiment!

1st Gather your Materials: What will you need to perform your experiment? The safest way to do this is to get an adult to help you get the stuff you need. Be sure to keep a list and take a picture of all your materials for your display.

2nd Write a Procedure: A procedure is a list of steps that you did to perform an experiment. Again, be sure to record the steps and take a picture.

3rd Identify your Variables (3rd, 4th, and 5th only): The variables are any factors that can change in an experiment. Remember that when you are testing your experiment you should only test one variable at a time in order to get accurate

results. In other words, if you want to test the effect that water has on plant growth, then all the plants you test should be in the same conditions, these are called controlled variables: same type of plant, same type of location, same amount of sunlight, etc. The only variable you would change from plant to plant would be the amount of water it received. This is called the independent or manipulated variable. The independent variable is the factor you are testing. The results of the tests that you do are called the dependent or responding variables. The responding variable is what happens as a result of your test. Knowing what your variables are is very important because if you don't know them you won't be able to collect your data or read your results.

4th Test, Test, Test: You need to make sure you perform your experiment more than once in order to test it properly. We recommend five times or more. More is better! Don't forget to take pictures of the experiment being done and the results.

Step 5: Record Data

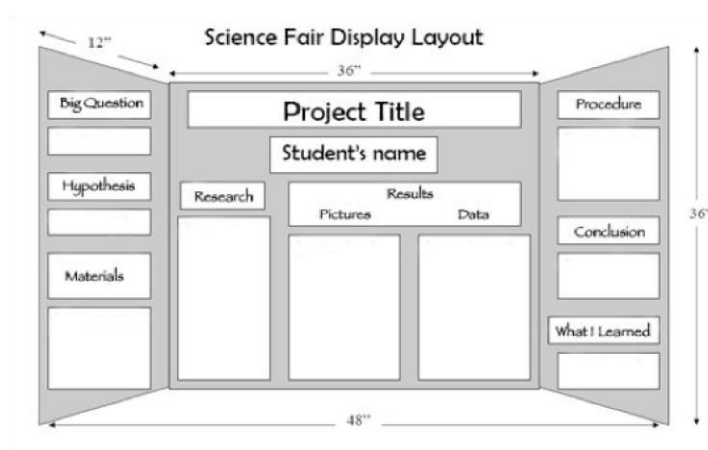
This means write down or record the results of the experiment every time you test it. You also need to organize the data in a way so that it is easy to read the results. Most scientists use tables, graphs, and other organizers to show their results. Organizing makes the results easy to read and much easier to recognize patterns that might be occurring in your results.

Step 6: Form a Conclusion

Tell us what happened! Was your hypothesis right or wrong? Were you successful, did it turn out okay? Would you change anything about the experiment or are you curious about something else now that you've completed your experiment? And most of all, tell us what you learned from doing your experiment! How does your experiment apply to real life and why is it important to know about your experiment?

Step 7: Create your Display

Here is a sample display board. Your board should have pictures from your experiment and include all your information. Be sure your display board isn't bigger than the allowed size: 48" long X 36" high.



Cedar Grove Science Expo 2018

Application

Please detach this form, complete it, and return to your homeroom teacher by Wednesday, December 13, 2017. No late applications will be accepted, so make sure you plan accordingly and try to turn in early!

Please PRINT Clearly

First and Last Name:	
Homeroom Teacher:	
Grade Level:	

*** If you are working with a partner, this part also needs to be completed***

Are you working with a partner?	YES OR No (circle one)
Partner's Name:	
Partner's Homeroom Teacher:	
Partner's Grade Level:	

What is your testable question?

(continued on back)

Write a brief summary of how you will conduct your experiment (*remember not to start your experiment until you have been approved!):

Attention Parents: if you work in a field of science or have a science background and are willing to volunteer the night of the expo to be a Visiting Scientist to offer feedback to students about their experiment, please list your name, email, and occupation on the lines below (please print).

Name: _____ Email: _____

Occupation: _____ Telephone: _____

Parent Permission: I have read the Science Expo Application and Planning Guide and give my child permission to participate. I understand that this is an out of school project, and the event will occur after school on Thursday, January 11, 2018 at Cedar Grove Elementary School. Additionally, I understand that my child should not begin their project until he/she has received approval.

Child's Name: _____ Teacher: _____

Parent Signature: _____ Date: _____

Parent Name (please print): _____