January 6, 2022

Dear Parents and Guardians,
It's time for the Maine School Science Fair! We have not had a science fair for the last couple of years, but this year we are going to have one.

All 3rd, 4th, 5th, 6th, 7th and 8th graders will be required to enter the fair. It will be optional for K- 2nd ! For teachers requiring science fair entry the project will account for 20% of the science grade for that quarter. Some class time will be provided, however the majority of the project will be completed at home.
Please encourage your child to participate, as this is one of the few times that students get to take their ideas and truly utilize the scientific process as it is meant to be used. All projects in 4th - 8th must be of an experimental nature. This will be explained in the packet and time line that your child will receive later this week. K- 3rd graders may do an **experiment** or display a **demonstration**. The difference between the two is that an experiment utilizes the scientific method in testing outcomes (usually using a control and a variable) while a demonstration demonstrates a principle, such as how electrical circuits function or how wind can erode land forms. Only those entries that are of a true experimental nature, as discussed in the packet and required for 4th - 8th grade, will be judged; however, all projects can be submitted as part of the Science Fair. If you have any questions regarding the fair or the appropriateness of a project they may be directed to your child's teacher.

Help at home should include **support, presentation assistance, positive encouragement and accountability**, while the project **work** needs to be that of the student. Once again, the packet will include criteria for the fair as well as the judging criteria. Please see the back of this paper for items **not allowed in displays.**

Please also remember that all research information **must** be cited on the project in order to give credit to the appropriate researcher. This is a crucial element to the project, and to any future research that the students do. Not citing the work may lead to disqualification from the fair. In addition, creativity and originality are a highly valued aspect of the project.

Have a great time, and best of luck with your projects!
Sincerely,
Mr. Zink

PROJECT DISPLAYS MAY NOT INCLUDE ANY OF THE FOLLOWING:

1. Living or dead animals or parts of animals
2. Chemicals that are carcinogenic, toxic, poisonous, highly acidic, explosive or flammable
3. Items that have a strong odor
4. Pharmaceutical or illegal substances
5. Any substance not allowed on school campus including weapons and cigarettes
6. Hazardous substances
7. Bacterial or viral components
8. Exposed electrical wiring
9. Wet cells containing acid
10. X-rays, laser pointers or microwaves

Photographic documentation of experiments is highly recommended. Projects may not exceed 48'' in width and 36" in height when set up for display.

2022 Maine School
Science Fair Due Dates:

Please fill out the form and return it to your teacher by the 20th of January. If you need assistance in purchasing a display board please notify your teacher by January 27th. See reverse for what is not allowed for display.

1. January 20th - Topic form turned in to teacher.
2. February 18th, February 28th and March 10th Progress checks with individual teacher.
3. March 30th- Experimentation should be complete and presentation phase should begin.
4. April 26th Science Fair projects due in your class! Class presentations.
5. April 28th set up and judging

Topic Form

Name-_____

Teacher-_____

Grade-_____

Project title-_____

_____Demo (not judged) Kinder-3rd only _____Experiment (judged)

Category (please select one)

_____ Behavioral and social

_____ Biological (biochemistry, botany, medicine and health, microbiology, and zoology)

_____Physical (chemistry, computer, engineering, environmental, mathematics, physics, earth and space science)

Parent signature-_____

Signature verifies project is the work of the student.

Do not put your name on the front of your display board.

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Stages of Science Fair - Project Plan

I. Planning

A. Choose Topic (Introduction or Statement of Problem)

1. Select an idea that interests you.
2. Select an idea that you can complete in the allotted time.
3. Consider the level of difficulty of your topic.
4. Select a topic that is relevant and important.

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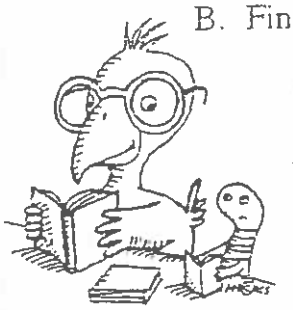
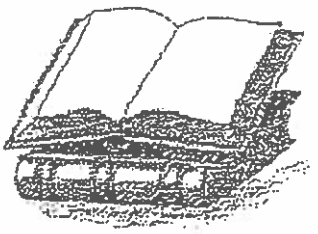
B. Find Background Information (Research)



1. List potential sources of information.
2. Take care that your sources are reliable.
3. Learn and read about your topic.
4. Record information and cite sources. (Bibliography)



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C. Develop Project Plan

1. State the hypothesis (based on background information, research)
2. Design of experiment
   a. Determine what special equipment or facilities will be necessary.
   b. List step by step procedure.
   c. List all variables. State whether they are controlled variables or experimental variables.
   d. Determine which form (bar graph, diagram, photograph, chart, drawing, poster, circle graph, line graph, table, etc.) will be used to display the data collected.
   e. Write a paragraph explaining how you plan to analyze or interpret your data.

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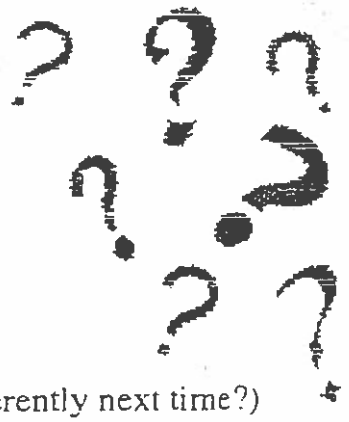
II. Doing

A. Carry out Experiment

1. Conduct the experiment safely.
2. Record data and observations accurately (you might use a journal).
3. Take pictures if you choose.



B. Interpret Data
   1. Examine the data and look for relationships
   2. Construct graphs, charts, or data tables to express results.

C. Make Conclusions
   1. Compare interpreted data to hypothesis.
   2. Answer questions stated in problem.
   3. Think about other questions generated by experiment.

D. Further Research
   1. Was the experiment a success?
   2. Can you improve your project? (What would you do differently next time?)

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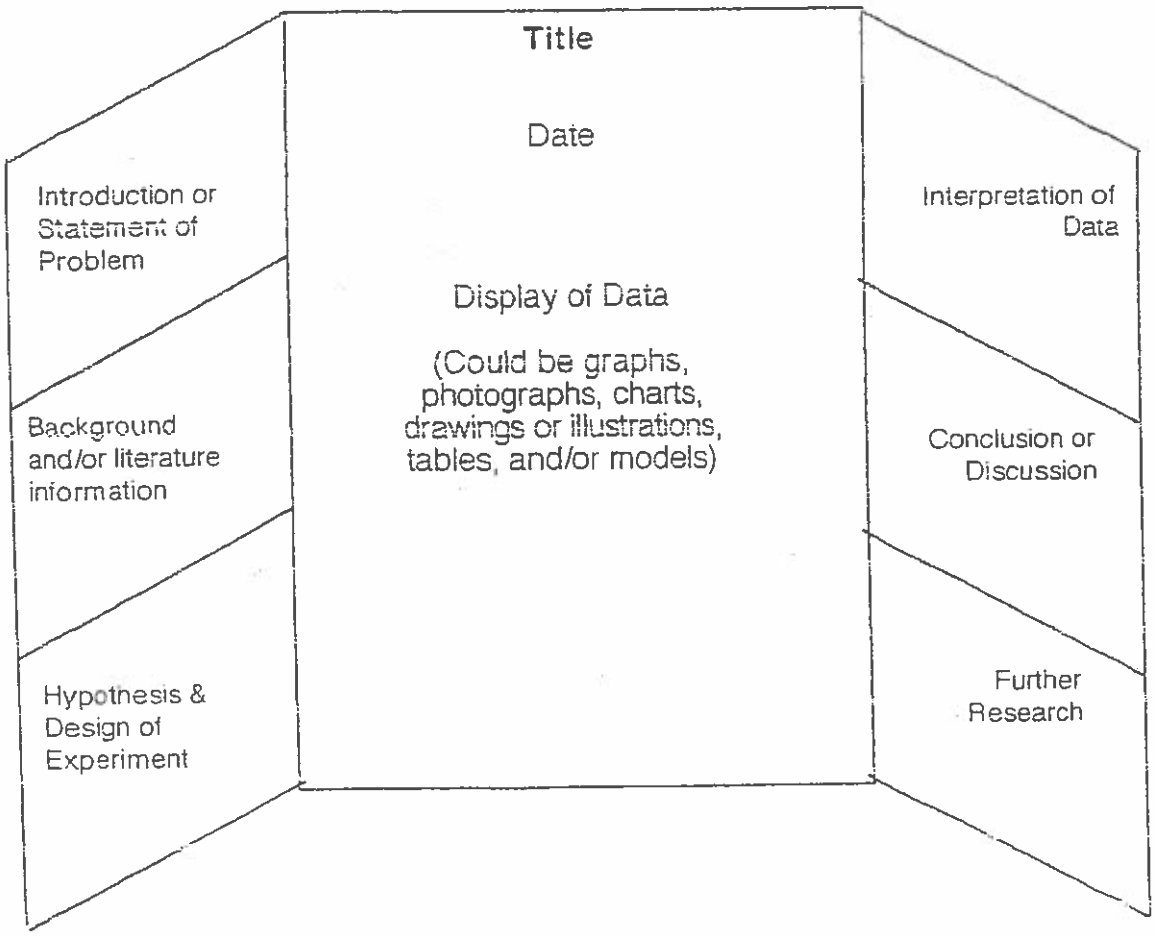
III. Presenting

A. Plan Display (keep in mind project requirements)
   1. Decide what you want to display (some elements are required - see Project Display Board, below)
   2. Decide on the materials you want to use.
   3. Decide on how to display your project. (Sketch a rough draft)



Due date:

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Definitions

Title - The name of the science fair project.

Problem or Purpose - The question being asked.

Hypothesis – This is a word that many students, parents and teachers misunderstand. For example, let's use a classic: "Which Laundry Detergent Works Best?"

Now the teacher says you need a hypothesis. What in the world is that? Many people will tell you that it is an educated guess, so you might think you should guess which one will work the best. A hypothesis is not a guess, but it should be educated. The first thing to do in this project would be to look what really makes the detergents different. Does the color of the bottle make a difference? No. What about the price? No. Then what makes them different? Their ingredients! Look at the label to see what they contain. Oops! No luck there. Most laundry detergents contain very little information about what they contain. The internet provides more useful information though.

After a bit of Google searching, you find a ton of information on the ingredients of the various detergents. The first thing you find is that many of them are very similar. Still, you do find small differences. Now you have something to work with. More searching would give you some information about the properties of the different ingredients.

Notice that up to this point, we have not done any experimenting. For a good project, we need to do quite a bit of research before we do anything else. So now it is time for us to form our hypothesis, right? No, not yet. First, we need to define the subject of our project. "Which Laundry Detergent is the Best" is far to broad a topic. By best, do you mean the cheapest? Or that it works best on stains? What kind of stains? Maybe different detergents work better with different stains. Do you want to try all the detergents in the store? In the interest of time and money, we need to narrow this down quite a bit. For our imaginary project, let's compare detergents with enzymes and those without the enzymes.

Now, we are ready to form our hypothesis, right? No, not yet. Now it is back to the research. We need to find out about these enzymes. Detergents grab onto the oil that holds dirt to your clothes. By attaching to the oil and to the water, it pulls the oil away, releasing the dirt. The problem is that some stains are stuck to the cloth with other things, such as guar gum. This chemical is used as a thickener in all sorts of things you use every day. Read a few labels in your kitchen, and it won't take long to find it.

The enzymes used in detergents are chemicals that attack certain kinds of stains. For example, Tide Deep Cleaning Formula contains a mannanase enzyme that attacks certain carbohydrate based stains, including guar gum. Now we are sufficiently educated to set the goal of our project. It could be something along the lines of "Are detergents with enzymes better at removing carbohydrate based stains?" Now, finally we are ready to form our hypothesis. Based on our research, we could state that we think that an enzyme based detergent would be much better at removing carbohydrate based stains

Parental Help With Science Fair Project

Things a parent may do:

1. Give encouragement, support, and guidance. (Be positive)

2. Make sure your child feels it is his or her project. Make sure the project is primarily the work of the child.

3. Realize that the main purpose of a science fair project is to help your child use and strengthen the basic skills he or she has learned and to develop to a higher level.

4. Realize your child will need help in understanding, acquiring and using the major science process skills (researching, organizing, measuring, calculating, reporting, demonstrating, experimenting collecting, constructing and presenting).

5. Realize that your child may be using reading, writing, arithmetic and social skills for the first time in a creative way to solve a problem.

6. Help your child plan a mutually agreed upon schedule, to prevent a last minute project and a disrupted household. The following steps (you may want to add more) should be on your schedule:

a. Find a topic
b. Narrow down the topic to a specific scientific question that is appropriate to the child's ability
c. Research what is already known about the problem.
d. Develop a hypothesis (see definition sheet).
e. Develop a procedure/investigation to test the hypothesis.
f. Make observations and collect appropriate data.
g. Interpret the data and other observations.
h. State and display the results.
i. Draw appropriate conclusions.
j. Create the exhibit.

7. Help your child design a safe project that is not hazardous in any way.

8. Provide transportation to such places as libraries, nature centers, universities, museums, etc. that can help the child find project information.

9. Help the child develop the necessary technical skills and/or help the child do the technical work, such as building the exhibit and doing the photography.

10. Help your child understand that science is not an isolated subject, but a "way of looking at the world around us."