SLMS Science Fair

Shoot for Excellence!

Project Information Guide

Friday, January 29, 2010
Grades: Six - Eight

Completed Projects Due in Science Lab 01/25/10	08.00a.m. – 3.00p.m.
Judging in Community Center 01/29/10	09.00a.m. – 2.30p.m.
Open House Family/Community Viewing 01/31/10	11.00a.m. – 1.30p.m.
Awards Assembly (date TBA)	08.10a.m. – 08.30a.m.

August, 2009

Dear Parents and Students,

The St. Lawrence Middle School Annual Science Fair is an opportunity to increase awareness and enjoyment of science while acquiring a better understanding of the scientific process through inquiry-based learning. Because we strive to prepare students for the 21st century world of work in Silicon Valley, here at St. Lawrence 6-8 grade participation is mandatory. These students also have the opportunity to progress to the SCVSEFA County Science Fair, the California State Science Fair and beyond! Each year we have been very successful and we hope to continue our success this year.

It is very important that students do the majority of the work themselves, but we encourage parents to guide their child as they select, investigate, and report on their chosen area of science. Parents should also supervise their child closely during any stages involving such potentially hazardous materials, as chemicals, electricity, moving parts, or biological materials. The final project should be a reflection of each student's individual effort and design.

The following information offers guidelines for science projects and their display at the St. Lawrence Middle School Science Fair. Grades 6, 7 and 8 will conduct controlled scientific investigations as they aim for the County Championships in March. Certificates will be awarded to all participants at the school fair. Ribbons will be awarded for 1st to 3rd place winners and Honorable Mention awards too.

In the meantime, if you have any questions, please contact me directly.

Sincerely,

Philip Dolan
Middle School Science Fair Coordinator
Email: pdolan@saintlawrence.org

Selecting a Science Fair Project

Your science project should be about something that interests you, but not something that you already know a lot about. Look for problems that need to be solved. Consider your own hobbies, interests and sports. Look around the community and the environment. Many Championship-winning projects are related to local and global environmental issues. What will help the public? Does your idea have a real-world use?

Select a topic, and then ask a question. The question should have a quantitative answer; meaning it should have an answer that can be measured. Try using questions that begin with; What? Which? Do? Can? and How? Be creative! Consider unusual measuring devices rather than the usual rulers and stopwatches.

Consider the materials you might need for your investigation. Check first with your Science teacher for these materials. It is important that you try to keep costs to a minimum. A successful Science Fair Project can be completed for $0.00!

Choose a project that is safe and will meet the Safety and Display Rules assigned by SCVSEFA. See the SCVSEFA Handbook online at www.science-fair.org. **This website is a super resource for ALL students**

Find a safe place for the experiment/project at home. If you choose to, you may carry out your project experimentation in the lab at school in collaboration with your Science teacher/Science Fair Coordinator.

The following websites may help with your selection. If none of these appeal to you, Visit the library, ask your teacher to look at their Science Fair books and talk to other classmates to see what lively and creative ideas you can conjure up!

Websites:

http://www.science-fair.org/ (The site for the SCVSEFA County Fair)
www.scifair.org
http://www.sciencebuddies.org/?gclid=CLqAsObcvpUCFQ0xawodmzv6Qw
http://earthquake.usgs.gov/4kids/sciencefair.html
http://www.sciencenewsforkids.org/articles/ScienceFairZone.asp
http://www.southlakems.org/science_fair_ideas.htm
http://www.super-science-fair-projects.com/science-project-ideas.html
http://school.discovery.com/sciencefaircentral/scifairstudio/ideas.html
http://www.twingroves.district96.k12.il.us/ScienceInternet/TopicChoices.html
http://www.all-science-fair-projects.com
http://www.exploratorium.edu/snacks/snackintro.html
http://www.ipl.org/youth/projectguide/

Project Categories

Below are some suggestions for the types of science fair projects you may do:

OBSERVATIONAL PROJECT/ PRODUCT TESTING (6th Grade only)

An observational project answers a question by gathering material or data of a reasonable sample size. This kind of project is not a simple nature collection or opinion survey, but uses the scientific method. *Example: Do big and small earthworms have the same number of segments?* Or in the case of testing products; *Which brand of Kitchen towel absorbs the most water?*

CONTROLLED EXPERIMENT (6th, 7th & 8th Grade)

This is the **ideal** model for a Science Fair project.
Using the Scientific Method; Pose a question, research the topic area(include all references for sites visited, books read etc) and make a hypothesis. Design an experiment to investigate your question, measure and gather results, analyze/interpret the results and then draw conclusions. The goal is not to choose a "correct" hypothesis; rather it is to learn something from the experiment that you didn't previously know. The final project is a display of the steps that you took in completing your project, any successes or failures, and a summary.

Following the Scientific Method

The scientific method makes it easier to get clear and understandable results from your efforts. It provides a structure for doing your project and presenting your results. Scientists and engineers use this method when making new discoveries. Focus on the scientific method rather than the complexity of your experiment or display. There are five main steps to the scientific method:

- Question/Inquiry/Problem statement
- Research (all references cited correctly)
- Hypothesis (Educated guess)
- Procedure (Instructions and Materials)
- Data/Results (graphs and tables)
- Conclusions (+further questions/research/evaluation)

Students should use the following approach, which incorporates these main parts:

1. Topic or Title - Select a topic of real interest to you. *(Example: The best Insulation materials for roofing)*

2. Question/Inquiry/Problem statement- Narrow your topic to one project question. The question should be specific and should identify the variable to be studied. *Narrow the question down to ONE variable.* This will help make your procedure & conclusions clear. The answer to the question should be measurable.(Example: *Will the Shape of the Hull on a Boat Effect the Drag on a Boat?*)

3. Research - Collect information about your topic by reading books at the library, articles on the computer, or talking with experts. Write what you learn in a journal or on paper or a computer document and state where you got your information **(bibliography/Reference list)**. Your Language Arts teacher will help with the referencing. All of your ideas, research, changes in project idea or direction and actual procedures should be logged into your journal. It is good science to record all your problems, solutions and changes along the way.

4. Hypothesis - The hypothesis is your *educated guess* about the answer to the question or problem. It takes into account the research you have done and reflects your *opinion* of what will happen. It must be testable. A hypothesis is usually written as an "If" and "then" statement. *(Example; **If** fertilizer makes plants stronger, **then** bean plants watered with Wonder-Gro will have thicker stems after six weeks than those watered without Wonder-Gro)*

5. Materials List - Make a list of the equipment, materials and supplies you will need and then obtain them. If you find you need additional items during your procedure, note this in your Journal and add the items to your materials list. Include numbers and scale/size of materials needed.

6. Procedure (What are you going to do ... *the recipe*!)
Design an experiment or process to test your hypothesis. A procedure gives the step-by-step directions just like a recipe for baking cookies. Be very specific (how much, what brand, what size, for how long, what temperature etc.). Someone else should be able to follow your procedure and get the same results you do. Remember to *Change only one variable.* Be sure the results can be measured. Write all calculations and notes on how you developed the procedure in your journal. If possible do your entire procedure at least twice to test its accuracy.

Note: You should plan to use a reasonable sample size for all subjects. For example, if you are studying plants, you should use several for each condition (what if one dies?). check with your teacher if you are not sure about this.

7. Observations and Data/Results - (What happened during your experiment?) Set up or perform your experiment (or process) and observe what happens. *Make sure* you *are only changing one variable; all* other conditions must remain constant. Record all changes, events, situations, growth or any data (all measurements and calculations) in your journal. Record all data neatly so you can read it later. Keep good notes and date each entry to assist you with your final presentation.

8. Conclusion (What is the answer to the question and why did this happen?) The conclusion is the answer to the question. Analyze the results of your experiment. Draw a conclusion based on your results. Was your hypothesis correct? What was different? What was the same? Your conclusion should explain what you learned and how it is important. *Remember, a project is not a failure if the hypothesis is proven wrong.* The conclusions should include a description of any problem or unusual events that occurred during your investigation, and what you would do differently next time.

The Project Display

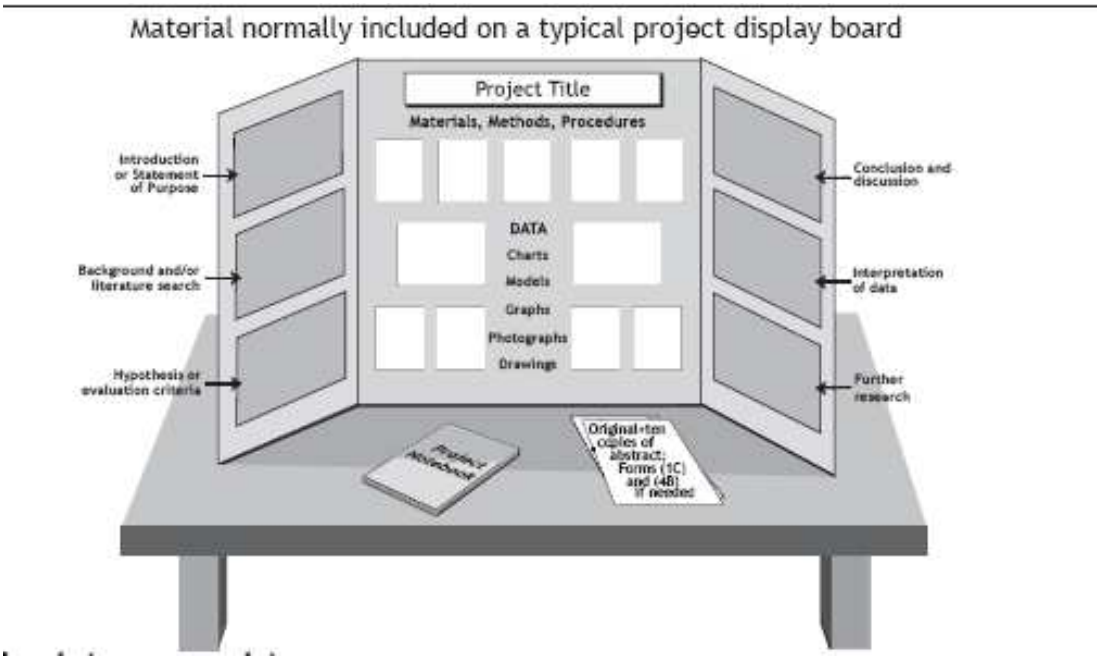
Your project should be displayed in a neat, clear, visible, well-organized format. Use your creativity to design the display, with the following important guidelines:

The display size cannot exceed 30 inches deep (76 cm),front to back; 48 inches wide (122 cm), side to side; and 108 inches high (274 cm) floor to top including the table(36 inches/91 cm high).

Display boards will be provided for you by your teacher. You do not need to purchase these yourself.

Note: Projects requiring electricity should use batteries or other power sources, if possible. If electrical power is needed, you must have prior approval from your teacher. Include a power-surge strip in your design.

The following information should be evident on your display board:
The Title of the project, the Purpose/Question, Hypothesis, Research, Procedure and Materials, Results, Conclusions, Bibliography and any photos/drawings/graphs. Not all projects will contain all of these elements, but will probably include most of them. Make sure you include your name and grade clearly somewhere in the display and also with a marker on the reverse of the display board. All text should be clear and large enough to be seen from a distance (approx 24 font sizes, minimum). Charts, graphs, photos and drawings should be clearly labeled and the person who took the photographs needs to be credited on the display board.
The area in front of your poster display should be used for your full written project report, your journal, a project abstract and any part of the project that needs to be displayed (such as plants, equipment, etc.). Do not display anything that could be hazardous; use photos or drawings instead. We will follow SCVSEFA guidelines again at this point to check the 'Unacceptable for Display' rules.



Science Fair Assessment

Assessment Criteria	Points Awarded
Completed Participation Agreement	10
Research notes written with a complete, accurate Bibliography	20 (10/10)
Correctly written Hypothesis	10
Full, detailed Procedure with a specific materials list	20 (10/10)
Observations and Results recorded (includes graphs, charts, photos etc.)	20
Data Analysis and Conclusions	20 (10/10)
Completed Display Board (All information present and creativity points)	30
Final Written Report (see lab report rubric)	100
Total Points Available	230

Bonus points will be issued for the 1st, 2nd, 3rd and Honorable Mention Awards at the SLEMS Science Fair