

September 18, 2009

Dear Parents and Guardians,

The Los Osos Middle School science teachers would like to give your child the opportunity to explore a scientific question of their choosing and make some discoveries! The science project offers your children the chance to apply the scientific method, as well as their skills and knowledge to their areas of interest. The thinking skills your children will develop will be useful throughout their lives—to identify and clarify problems and to find creative solutions to them.

The science fair is mandatory for all seventh and eighth grade science students. The science teachers will be instructing and guiding your children through this process. **The science project due dates are included in this letter; please post these dates in a very visible place at home (i.e. the refrigerator door).**

The initiative and responsibility to complete a science project belongs to the student. Parents and other adults are encouraged to assist appropriately. This may include gathering the needed supplies and materials, proofreading written work, and managing their time to complete the project promptly. **Please discuss the project with your children and encourage them to put forth their best effort.**

The Los Osos Middle School Science Fair will be on Thursday evening, January 28, 2009 in the Multipurpose Room. Winners will be announced and all the projects will be on display. We hope this provides another exciting learning opportunity for your children.

Sincerely,
The Los Osos Middle School Science Teachers

18 de septiembre de 2006

Estimados Padres y Guardianes,

¡Las profesoras de Ciencias de la escuela, Los Osos Middle School, quisieran dare a su niño la oportunidad de explorar una pregunta científica de su elección y hacer algunos descubrimientos! El proyecto de ciencias les ofrece a sus niños la ocasión de aplicar el método científico, así como sus conocimiento en su campo de interés.

La feria de ciencias es obligatoria para todos estudiantes de ciencias. Las profesoras de ciencias serán las que dirigen y guían a sus niños con este proceso. Las fechas debidas del proyecto de ciencias se incluyen aqui; fijese en y pongalas por favor estas fechas en un lugar muy visible en la casa (por ejemplo, en la puerta del refrigerador).

La iniciativa y la responsabilidad de terminar un proyecto de ciencias pertenece al estudiante. Se anima a los padres y a otros adultos que asistan apropiadamente. Esto puede incluir los materiales necesarios, corregir el trabajo escrito, y el manejo de la hora de terminar el proyecto puntualmente. **Discutan por favor el proyecto con sus niños y animelos a que pongan adelante su mejor esfuerzo.**

La feria de Ciencias de la escuela será la tarde del jueves, 25 de Enero de 2006 en el cuarto multipropósitos. Anunciarán a los ganadores y todos los proyectos estarán en la exhibición.

Sinceramente,
Las profesoras de Ciencias
de Los Osos Middle School



What is a Science Project Proposal?

It is a detailed idea for a scientific experiment that you have designed to answer your own scientific question. You are proposing to do this for your science project to your science teacher and parents/guardians. It may be written neatly in ink or typed.

A proposal must include the following parts:

1. A specific scientific question that can be answered by testing and measuring something.
2. A Statement of Hypothesis, which includes your research and bibliography.
3. A description of your experimental methods. This includes a materials list, step-by-step procedures, and any operational definitions needed to clearly explain how you plan to conduct the experiment and gather data.

What is a Science Project Journal?

The journal is the scientist's notebook, containing the entire experiment designed, research, data, observations, notes, graphs, analysis, and conclusion. It is where the original data is noted during the experiment and demonstrates evidence that the experiment was actually performed. It is usually a report folder, or small binder or notebook that contains all the written work involved in conducting an experiment.

The Science Project Journal includes:

1. Science Project Proposal
 - Problem/Purpose Question
 - Hypothesis
 - List of Materials
 - Step-by Step Experiment Procedures
2. Results- Detailed descriptions of what happened in the experiment
 - Observations- Qualitative and Quantitative
 - Data Tables, Photos, Diagrams, etc.
3. Data Analysis- Graphs/Charts, Titled and labeled
4. Conclusion- answers the question and includes data as evidence. Explain why the results occurred based on research.

The Journal expectations are as follows:

- Use correct spelling and grammar
- Record data neatly, with each entry containing the date and time
- Completely label Data Tables and Graphs
- Each table and graph has a title
- The graph type is correct for data type
- The graphs are neat and colorful where appropriate.



The Science Project Proposal Expectations

QUESTION: Write the scientific question you would like to investigate. It must be *very specific*, and can be *answered by doing an investigation and measuring the results*.

STATEMENT OF HYPOTHESIS:

Independent Variable: Identify what will be tested in the experiment.

Dependent Variable: Identify what will be measured to answer the question.

Research Summary: In two to five paragraphs, summarize the main ideas you have learned about your variable conditions through research. Keep track of where you found this information for your bibliography.

Bibliography or Works Cited: You must have three to five good sources of information for your research listed according to the MLA format provided in this packet.

Hypothesis: Use the “If..., then....” format to answer your original question with a complete sentence. Remember that the “If...” part of the hypothesis describes the conditions you’re testing in the experiment; and the “then...” part describes the measurable results you are predicting.

EXPERIMENTAL METHODS:

Materials List: Make a specific, complete, and detailed list of *all* the materials you will use in your experiment. It should read like a recipe but all the measurements must be in ***metric*** units (grams for weight/mass, liters or cm³ for volume, and meters for length).

Procedures: Write a numbered list of extremely clear, step-by-step directions to explain exactly how you will do the experiment to test your hypothesis. It must include any operational definitions that will explain what to measure as well as when and how to gather reliable measurements and observations. Again, be sure to specify ***metric measurements***.

Data Table: Sketch out a rough draft of a labeled data table. The data table should have a title that describes the data that it will contain, for example, “*Height of Sunflowers in Artificial Light.*” Each column and row should be labeled specifically with the items to be tested and the type of measurements that will be recorded, including the units, such cm or minutes, etc.

Parent Approval: Parents and Guardians must sign the bottom of the paper as evidence that they have proofread your proposal and approve the project idea.

SCIENCE PROJECT

COMPLETION SCHEDULE

<u>ASSIGNMENT</u>	<u>DUE DATE</u>
3 TOPICS & Questions	Sept. 18
Final QUESTION	Sept. 25
PROJECT PROPOSAL Includes: <ul style="list-style-type: none"> • Question • Research Notes & Bibliography • Statement of Hypothesis • Experiment Materials List • Experiment Procedures & Operational Definitions • Sketch of Data Table *When approved, you will be authorized to begin the experiment and collect data.	Rough Draft Oct. 9
	Final Draft* Oct. 23
JOURNAL Includes: <ul style="list-style-type: none"> • Final Draft of Project Proposal • Data Tables • Results 	Progress Check Nov. 6
<ul style="list-style-type: none"> • Graphs • Analysis • Conclusion 	Completed Dec. 11
DISPLAYBOARD	Jan. 13
ORAL PRESENTATIONS	Jan. 13-15
SCIENCE FAIR	January 28

Science Fair Guidelines

1. **All work should be done by the student.** Appropriate assistance may be provided by teachers, parents, or others.
2. Upon completion of the project, student may give oral presentations in class and bring equipment used. After school on the day of the Science Fair, students may set up any equipment they may want to display in front of their project display boards. However, they must follow these guidelines. **At the conclusion of the Science Fair, students are responsible for taking home equipment and project display boards.**
3. **No hypodermic needles or syringes** are allowed to be used with projects.
4. **Dangerous chemicals, drugs, open flames, and explosives** must have parent approval and supervision. These items **may not be brought to school** for presentation.
5. **Valuable items**, such as special equipment, cameras, microscopes **will not be allowed to be displayed**; please use photographs or drawings to illustrate their use in the project.
6. **No names or photos of participants** should be visible on the front of the project display, which is why you must have a cover sheet the journal and the written report.
7. **No liquids of any kind** should be in project displays. Please substitute photographs or drawings instead.
8. **Food samples may not be included in the display.** Drawings, plastic food or photos may be used or heir labeled containers.
9. Boards should be able to fold down flat easily.
10. **Students' names, science teacher, and class period should be written discreetly on the back of the display board.**
11. **Gravel, sand, and dirt must be tightly enclosed and sealed** securely if they are on display.
12. **Protists, bacteria, fungi, etc. may not be exhibited.** Please use photographs or drawings instead.
13. **Live animals may not be brought to school for the science fair.**
14. Students may work with ONE partner who is in the same science class period only with parent approval.
15. Living things may not be harmed, maimed, mutilated, or intentionally distressed.
16. Don't get upset if your experiment(s) demonstrate that your hypothesis is incorrect.

My student and I have read the Science Fair Guidelines and we understand the rules and regulations.

Student Name and Class Period:

Parent Signature:

Tips for Parents

You know the problem. You want to help your child, but you don't want to "accidentally" take over the project. Where do you draw the line? How do you help without doing it yourself? Here are a few tips that might help.

Do

- Assist your child in finding a project that is interesting and challenging but within their ability to carry out in the time available.
- Discuss the plan for the project with your child. Help him/her to understand the procedure to follow.
- Take him/her to the library or other resource center as needed.
- Point out importance of accurate observations and careful record keeping
- Supervise the use of tools, chemicals, or other possibly hazardous materials
- Ask, "Why do you think that happened?" and other thought provoking questions to help them understand what they are observing.
- Review their work using the checklists generated by the teacher before each deadline.
- Give a lot of encouragement along the way.
- Encourage neatness and organization.
- Discuss ways to display the project.
- Encourage your child to be creative and make clear, neat lettering for the display.

Don't

Don't select the project for your child.

Don't *do* the project for your child.

Don't let your child wait until the last minute to start planning.

Don't do any of the lettering, writing, etc. for your child.

Don't let your child think that a project is a failure if it doesn't turn out as expected. There is learning when one finds out what doesn't work, as well as what does work.

General Idea: If you are tempted to anything that *might* make your child feel as if they had less ownership in the project, don't do it!

It is very difficult to sit back and watch your child "mess something up," but remember, they will learn and enjoy a "messed up" project more if they do it themselves than a "great" project their parents did for them. Please help, but limit your role to "helper," not a "doer."

SCIENCE FAIR PROJECT EVALUATION

Teachers will be evaluating projects based on the following criteria:

PROJECT:

- ❖ There is evidence that thought, study and effort have gone into this project.
- ❖ The student develops their own question and performs the investigation to test their own hypothesis.
- ❖ The scientific method has been used to plan and conduct a controlled investigation.
- ❖ Accurate, scientifically verifiable facts are used throughout this project.
- ❖ Experiments are repeated often enough for accurate and valid results.
- ❖ Results are measured.
- ❖ Samples of data are displayed.
- ❖ A logical conclusion is reached based on data and research.

DISPLAY AND CREATIVE EFFORT:

- ❖ The display is neat, attractive, easy-to-read and understandable.
- ❖ There are appropriate graphs from data.
- ❖ The steps of the scientific method are displayed on the project.
- ❖ The construction of the display is solid and durable.
- ❖ There is an imaginative use of materials.
- ❖ All graphs are titled and the axes are labeled completely.
- ❖ All spelling is correct.

My student and I have read the Science Project Information Packet, and we understand the rules and regulations.

X

Parent/Guardian Signature

X

Student Name Science Class Period

Los Osos Middle School Library

Print Resources for Science Experiments

LOMS Library has a large collection of books containing science experiments. To find one of these books, do the following:

- At one of the library's search stations, or at any computer with an Internet connection, go to the LOMS Library webpage and click on "LOMS Library Online Catalog."
- In the empty search field type in "science experiments" (actually "science exp" will get you there faster). A list of subjects will appear.
- Click on "science experiments." Take a look at the list of all the books.
- The red arrows at the top and bottom of the page will take you to additional listings.
- If a book is "IN" jot down the call number (e.g., 507.8 BIN) of the book and find it on the shelves.
- Ask for assistance if you need help with any of these steps (and/or any of the steps below).

Online Resources for Science Experiments

Web Path Express

Especially designed for K-12 students, this resource offers access to over 60,000 academic websites vetted by educators for their currency, accuracy, appropriateness, and other vital criteria. Included are thousands of science experiments and related information.

- At any computer with an Internet connection, go to the LOMS Library webpage and click on "LOMS Library Online Catalog."
- In the empty search field type in "science experiments" (actually "science exp" will get you there faster).
- Click on the SUBJECT icon (a big yellow "S" next to a blue and purple globe). A list of subjects will appear.
- Click "science experiments." (It should be the first one listed.)
- Click the red arrows until you find a square blue icon with the words "Internet Sites about Science Experiments" next to it. (NOTE: The listing of sources is in alphabetical order, so keep going until you get to "I.")
- When the record appears, look for "Elec. Access." Click on the blue hypertext next to "Elec. Access." (The hypertext reads, "Internet Sites about Science Experiments") This will take you to pre-approved, on-target websites.

The Internet

Four of the best Internet resources for science fair projects are the following:

- <http://school.discovery.com> Click on "Scotch Science Fair Central."
- <http://www.sciencebob.com> Choose "Science Fair Ideas."
- <http://www.ipl.org> On left side of page, click on "Kids Space" and then "Science Fair."
- <http://www.sciencebuddies.org> Check out "Science Fair Project Ideas" and "Student Resources."

SLO County Office of Education Technology Center (ETC) Portal

Information databases produced by Gale Cengage provide hundreds of thousands of magazine and reference articles, approved images, and other resources that could help you with your science project.

- Go to www.etcportal.org OR choose the link titled "ETC Portal" found on the LOMS Library webpage. Log in.
- Click on the tab marked "Learning."
- Look at the list of Gale Cengage resources listed in the left column.

- Choose from the following: [Kids InfoBits](#), [InfoTrac Junior Edition](#), [InfoTrac Student Edition](#), [Opposing Viewpoints](#), or [Informe!](#) and conduct your search.
- Be sure use “Help” to learn how to craft good searches.
- Also, be sure to click on [Junior Edition’s “Toolbox”](#) to get valuable assistance.
- [Images](#) available through [Kids InfoBits](#) are especially good.
- Once you’ve conducted a successful search in the Junior or Student Edition, you may search for images on that same topic by clicking on the link near the top of the screen that says, “Click here to search Google for images.” This method uses Google’s strictest filter.

NOTE: *You ARE allowed to e-mail to your home computer documents found through Gale Cengage databases. Look for the instructions listed below the found documents.*

Bibliography

You must give credit to (that is, “cite”) every source of information you use for your science experiment, whether it is for the research you are required to do on your variables or for simply acknowledging the source of your experiment idea. These sources include experts you consult, websites you use, and books, magazines, and encyclopedias you read.

These sources are listed alphabetically, most often by the last name of the author or expert. This list is called your “bibliography.” Bibliographies must be constructed in a particular format. Our school district uses Modern Language Association (MLA) format.

You are encouraged to use Calvin College’s interactive website [KnightCite](#) to formulate your bibliography according to MLA format. Ask for assistance with this whenever you need help.

Below is a sample bibliography.

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