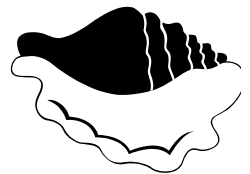
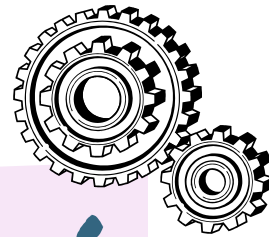
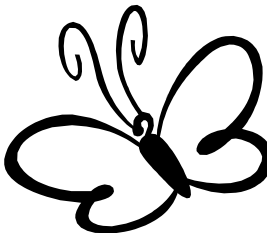




ELEMENTARY SCIENCE FAIR TEACHERS' HANDBOOK

Revised 2009



1995 Writing Committee Members
Diane Lowell, Chairperson
Maureen Allen
Leslie Appel
Alice Sexton

Written under the supervision of
Dean Gilbert, Science Curriculum Leader
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Revised 1997

Revisions made under the supervision of
Eric Brundin, Science Curriculum Leader
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Revised 2009

for

Long Beach Unified School District
1515 Hughes Way
Long Beach, CA 90810
(562) 997-8000

Publication authorized:
Christine Dominguez, Deputy Superintendent

Preface

The purpose of the elementary Science Fair Handbook is to provide guidelines and suggestions for organizing and planning a site science fair. Participation in the LBUSD district level science fair is also addressed and encouraged.

Please refer to the district web page for a downloadable version of this handbook. Go to www.lbschools.net. Click on “S” at the top; then on “Science” from the list; then under Upcoming Events, click on “Annual Science Fair Information” where you will find the Elementary Science Fair Teacher Handbook, Teacher Appendices, Science Fair Student Information Packets by project type, and Students Appendices.

Eric Brundin, District Science Curriculum Leader, is available to answer further questions concerning the handbook’s content. Contact him at ebrundin@lbschools.net or phone 562-997-8000, Ext. 2963.

Statement of Philosophy

This project grew out of a realization that many kinds of learning experiences, both in and beyond the classroom and laboratory, contribute significantly to the education of students. Science fairs provide a valuable opportunity for young people to be creative, to have pride in their work, and to experience the hands-on use of the scientific method. The goal of having a K-12 science fair is to help students become more and more proficient in their scientific method and communication skills so that by eighth grade, and continuing into high school, students are adept at generating and solving highly challenging problems with original experimentation.

Objectives of Site and District Science Fairs

1. To emphasize and support state science standards and literacy skills.
2. To provide a focus for students to apply skills and concepts learned in science, art, computer science, mathematics, reading and language arts.
3. To help students develop self-reliance, organizational skills, and productive work habits.
4. To provide our schools and community with the opportunity to recognize and encourage student interest in science.



ELEMENTARY SCIENCE FAIR TEACHERS' HANDBOOK



Revised 2009

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★ APPENDICES ★

Preparation for Judging Site Fairs

Judges Score/Comment Sheets

- ◆ Grades K-1 Collection, K-2 Experiment, 3-5 Experiment, 3-5 Invention, K-5 Research Project

Rubrics Guide

Rubrics for School Site Science Fair

- ◆ Grades K-1 Collection, K-2 Experiment, 3-5 Experiment, 3-5 Invention, K-5 Research Project

Resources

- ◆ Science Topics for Grades K-5
- ◆ Materials Sources
- ◆ Community Resources
- ◆ Internet References
- ◆ Library References

Helping Students Choose an ORIGINAL Project Topic



Getting Started:

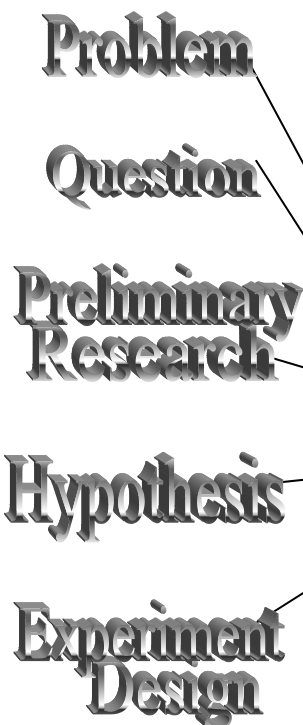
Where do you go to get ideas?

Personal Interests	sports, hobbies, music, sources of products, realism (?) of TV, social interactions, environmentalism, entertainment, developing new products	Personal Experience	travel, observations of events, chores, study habits, physical activities, health, visits to zoos, museums, or professional offices
Science Journals, Periodicals & Textbooks Students Have Now			past, current, and future technology, medicine, consumer products, transportation, agriculture
Advertisement	proving advertisers' product claims, fact vs. opinion, testing new products	Current Events and News	social issues, discoveries, natural disasters, conservation, national/personal security
* Family		heredity, nutrition, parent/relative professions	

An example of how to model the process in class:

Advertisements:

1. Bring in an example of a commercial jingle (videos of old commercials [Nickelodeon], magazine, newspaper). Explain, very briefly, what a jingle is.
2. Assignment for homework => Every student has to bring at least two or three jingles that catch their attention from TV, radio, magazines, newspapers, etc.
3. The teacher compiles the student ideas on the front board.
4. Form students into groups.
5. Have each group select their favorite jingle (or have the whole class select one).
6. Have the students write, in their own words, a claim being made in the jingle.
7. Have students turn the claim into a question.
8. Then have students discuss and collect personal experiences with the claim. (The teacher may need to help students get rolling on this.)
9. Students form a testable, educated guess as to whether the claim is true or not with the information collected.
10. Students will then design a way to test the product claim.
11. Have each group share what they have come up with.
12. Remind students that on their own projects, they need to move on to performing the experiment, observing and recording data, organizing the results to show patterns, drawing conclusions, and revising the hypothesis if necessary.



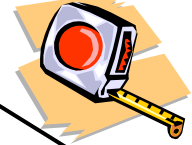
** Make sure that projects do not expose personal family information.*

DISPLAY SIZE & SET-UP

This page is also included in Student Information Packets.

FOR SCHOOL SITE AND IBUSD SCIENCE FAIRS

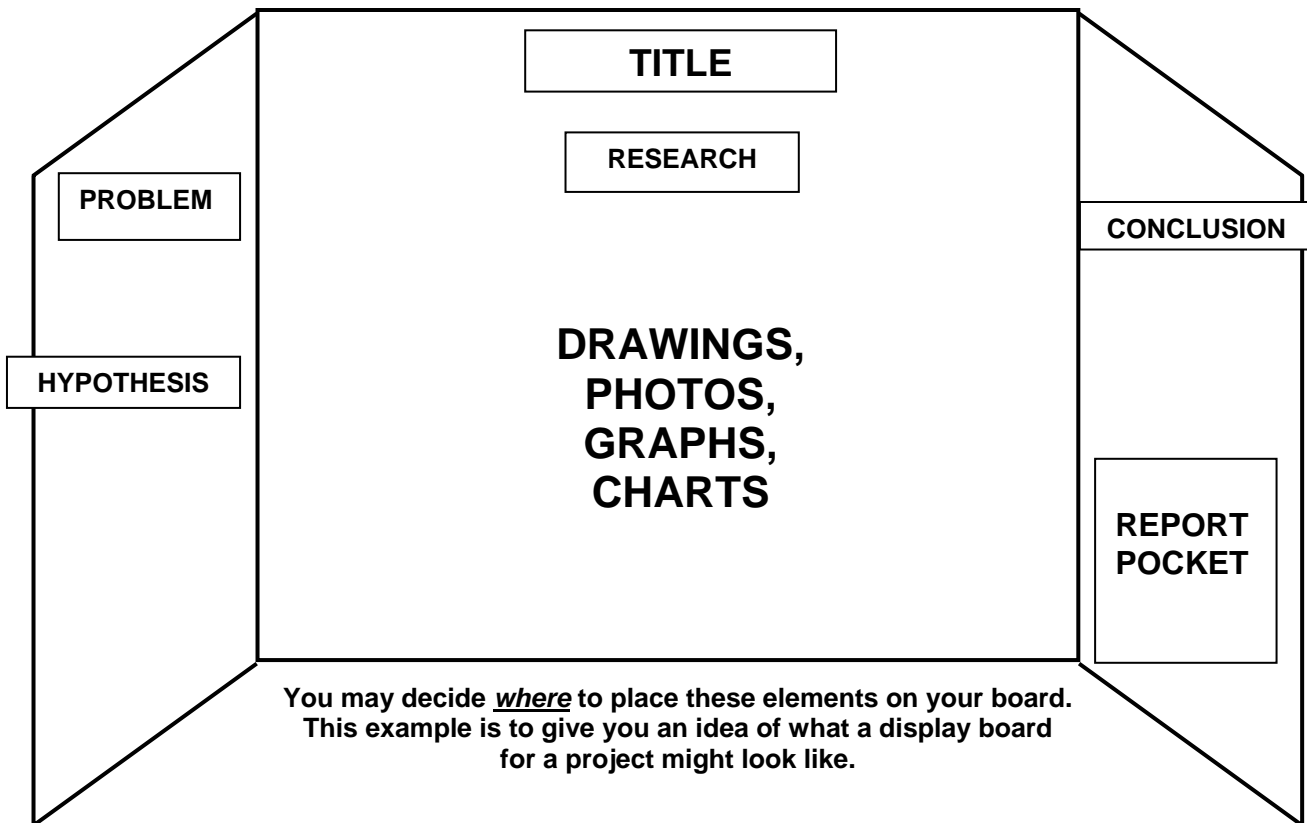
18" max
12" min



48" max
32" min

Minimum sizes are *suggested*, not required.

48" max
36" min



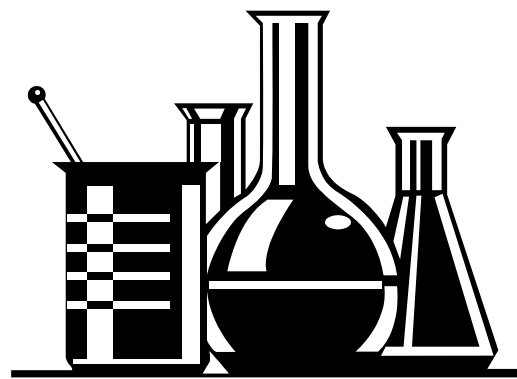
You may decide *where* to place these elements on your board.
This example is to give you an idea of what a display board for a project might look like.

LBUSD

DISTRICT LEVEL

SCIENCE FAIR

INFORMATION



The district level science fair provides a unique setting where selected student projects from elementary through high school are displayed and viewed in a common public area. Projects are reviewed by local scientists, professionals, and dignitaries and receive individual oral and written feedback. All students receive recognition for their work and each participating school will receive an engraved plaque. Rather than being competitive in nature, the district level fair is a showcase of the very best LBUSD science projects from the schools. It is intended to *celebrate the achievement* of all the outstanding students chosen as the best at their schools.

Specific details about each year's District Science Fair are sent to each school in the fall.

Those schools participating in the district level fair must choose a Coordinator (teacher, parent, administrator, etc.) to head up a school site team or committee which will be responsible for:



- Notifying staff, students, parents, and community about the fair.
- Encouraging staff, student, and parent communication.
- Determining how to choose projects to be displayed at the district level fair (there *will* be a limit). (See Teacher Appendices section of Science Fair Handbook for related forms and other helpful information.)
- Monitoring the setting up and taking down of projects for your school, making sure parents and students know about the requirement to leave all projects in place from 9:15 a.m. to 12:15 p.m.
- Providing for supervision of projects and students during the fair.
- Working closely with the District Science Fair Committee.

Schools are encouraged to take advantage of this valuable opportunity for our students to interact with their peers and members of the community.

ELEMENTARY SCIENCE FAIR



TEACHER FORMS LIST

FOR SCHOOL SITE SCIENCE FAIR

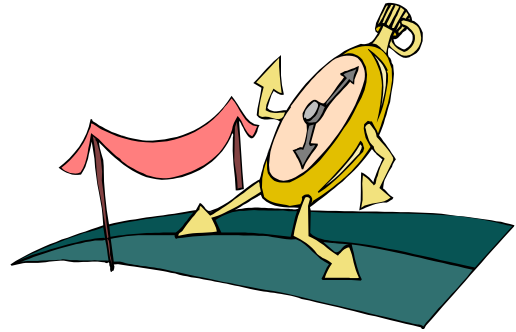


FORM	SUGGESTED PURPOSE & USE <i>Forms are listed in order of sequential use.</i>
Teacher Timeline for School Site Science Fair	To help you plan and organize the activities and essential responsibilities leading up to your school science fair
Introductory Letter to Parents	To introduce the science fair concept to parents and stir up their enthusiasm for it This is the cover letter for <u>Project Selection Form</u> .
Helpful Hints for Parents	For parents on how to best guide their children in the completion of a science fair project. You could send it along with either the <u>Introductory Letter to Parents</u> or later with the <u>Project Approval Form</u> .
Project Selection Form	A preliminary form for students to submit their science question (or problem) and choose what type of project they wish to do to answer (solve) it Parent's or Guardian's signature is requested. When students turn these forms in to you, you will check to see if their question/problem is appropriate for (1) the science fair, and (2) the project type they selected. If not, you will be able to make adjustments at the beginning of the process.
Project Log	Log information from <u>Project Selection Forms</u> turned in to you and keep track of how students are doing.
Project Approval Form (half sheets – color suggested) A - With student packet attached B – Includes download instructions for student packet	This form gives the student approval to go forward with the project. Choose which form to use depending on your school and/or parent resources. Use A if you will be copying the student packets for your students. Attach this <u>Project Approval Form</u> to the front of the appropriate project type <u>Student Information Packet</u> , along with student's original <u>Project Selection Form</u> . Use B if you will be asking them to download the student packets themselves from our district Science Fair web page. Instructions and the link are on the form. Attach this <u>Project Approval Form</u> to the front student's original <u>Project Selection Form</u> .
Student Timeline for Science Fair Project	To keep students on target with the due dates you set up for your school science fair
Student Final Checklist for Project Completion	Send as you near the due date for projects to be turned in. This is a user friendly check-off list so nothing will be overlooked by the students.

TEACHER TIMELINE

for

SCHOOL SITE SCIENCE FAIR



BEFORE THE FAIR

Date
Due

1. Form a Science Fair Team. Be sure to select lead and back-up coordinators.	
2. Ask for parent, PTA, principal, and custodial support.	
3. Inform the school and public libraries and other resource people.	
4. Set a date and secure a location at your school for the fair.	
5. Develop due dates for the <i>Student Timeline for Science Fair Project</i> .	
6. Send <i>Introductory Letter to Parents</i> . (You can use the one in this handbook or create your own.) Attach a <i>Project Selection Form</i> , and perhaps include <i>Helpful Hints for Parents</i> .	
7. Download and use all or part of the <i>Student Information Packets</i> to fit your needs. There are four separate packets based on project types - Collection, Invention, Research Project, and Experiment. You may also wish to download the <i>Science Fair Information Folder</i> .	
8. Monitor student progress.	
9. Determine how projects will be selected for the District Science Fair.	
10. Determine the type of recognition students will receive at school.	
11. Publicize the fair to your school's community. Invite parents, staff, district officials, and community to the school science fair	
12. .Arrange for the set-up of projects at your school science fair.	
13. Allow classroom time for presentations.	
14. Schedule daytime viewing of projects by other grades / classrooms / schools. Provide student representatives to monitor and/or present projects.	
15. Determine how to get projects back to the students.	

AFTER THE FAIR

Date
Due

1. Send thank you notes to those who helped.	
2. Recognize student achievement.	
3. Evaluate the site science fair with your Science Fair Team.	
4. Begin preparations for the District Science Fair.	

ELEMENTARY SCIENCE FAIR

INTRODUCTORY LETTER TO PARENTS

Dear Parents,

Our school will be having a **Science Fair**! We hope that, with your enthusiastic encouragement, your student will participate in the fair by preparing a project. This will be an exciting experience for your child!

Although students receive help at school from teachers, parent support and assistance are essential to your child's success. A general rule of thumb to go by is:

- 4th and 5th graders should be doing almost the entire science project by themselves.
- 2nd and 3rd graders should be able to do many parts.
- Kindergarteners and 1st graders will need help for most of the project.

We are confident the following benefits will result from your child's participation in the Science Fair:

- ☆ Reinforcement of grade level science, literacy and math skills
- ☆ Fostering curiosity, awareness, and creativity
- ☆ Increased scientific knowledge
- ☆ Learning research techniques
- ☆ Growth in ability to work independently
- ☆ Having fun with science!



In addition to the opportunity to work on a project, the Science Fair provides students with an increased awareness of science and an opportunity for them to develop positive attitudes about themselves and their work. The science project allows children to use critical thinking and problem solving skills learned in science and in math.

Attached is a Science Fair **Project Selection Form**. Please complete the form with your child and have your child return it to me by the date listed at the top of the form.

For more information about a "project type" (collection, invention, research project, experiment), the related student packets can be found at www.lbusd.k12.ca.us. Click on "S" in the A-Z index at the top, then click on "Science". Then click "Upcoming Events - Annual Science Information" and on the left side bar click "Parent Resources" or go to:

http://www.lbusd.k12.ca.us/Main_Offices/Curriculum/Areas/Science/parent_resources.cfm

*"Science is not merely a collection of facts printed in an encyclopedia.
It is a living adventure of the human spirit." (Source unknown).*

ELEMENTARY SCIENCE FAIR

HELPFUL HINTS FOR PARENTS



Welcome to the Science Fair!

This should be a fun project! Success is when your child asks their own question, completes their project with a smile, and knows more than when they started. Enjoy this time of discovery and fun for you and your child!

- The science fair project reinforces reading, writing, logic and math skills, and creativity.
- The goal is that your child learns “the scientific method” or “the engineering design process” through direct experience.
- For their daily reading, recommend they choose a science book that can be a research resource for their project.
- A **Report** is part of the process.
 - It does not have to be typed, unless you intend to have your child’s science project considered for the LBUSD district-level Science Fair.
 - Type the report *as your child wrote it or dictated it to you*. If the sentence structure is off, ask them if it needs correction. **Guide** them to the correction.
 - Use their words; children say things in unique and fun ways.
- It is best to guide and answer their questions with questions. You may know the answer, but help them discover it themselves. For example, you may want to show them which paragraph in the book to re-read rather than giving them the answer.
- Although neatness is good, it’s not the main focus. A 6-year-old can make the data chart with a little help. They should do that part while you operate the hot glue gun.
- The project does not have to look store bought. It needs to be made by them, so that they truly get better every year they participate.
- Encourage your child’s artistic side with the display. For example, you can show how the use of color and shapes can be used to show the importance of a part of the display.
- If you allow your child to use web sites for research; verify the site is “correct” and then let them use the research found there. *Remember:*
 - Anyone can create a web site; this does not mean its information is correct!
 - Make sure the web site is run by a large, recognized group such as a college or organization.
 - DOT “org”, “gov” or “edu” are generally trustworthy for accuracy of content.
- What is an acceptable science fair project?
 - Something that answers a question to which they do not know the answer
 - Something they can figure out themselves
 - Something they can change somehow, add another variable, and then predict the outcome. That’s an experiment!
- What is NOT an acceptable science fair project?
 - Reproducing results found on the web is *not* an experiment; it’s a reproduction.
 - A demonstration is not an experiment (i.e., volcano).

ELEMENTARY SCIENCE FAIR

PROJECT SELECTION FORM

Return this form to your teacher by _____

Student's first and last name (printed) _____

Grade _____ Room # _____ Teacher's name _____

★ Parent's/Guardian's signature _____ Date _____

THE ORIGINAL **SCIENCE QUESTION** (KNOWN AS A **PROBLEM**) OUR PROJECT WILL ANSWER (SOLVE) IS:

Our project will be (please check one):

- COLLECTION** (Kindergarten & 1st grade ONLY) - You will collect and organize something of interest, answering questions related to observations made while exploring your world. *Examples: What kinds of insects can be found in my backyard? What types of tree leaves can be found on my street?*

- EXPERIMENT** (Kindergarten through 5th grade) - You will conduct an experiment to find the answer to your question/problem. Using **The Scientific Method** will take you through the correct process of asking a question, doing some preliminary research, making a hypothesis (your best guess at how it will turn out), planning and conducting your experiment, and analyzing your results.

- INVENTION** (3rd through 5th grade ONLY) - Everyone is an engineer! You will use science, math, and creativity to dream up and design an object or a process to solve a real life problem. Using The Engineering Design Process will take you through all the necessary steps: asking a question, brainstorming, planning, creating, testing, and making it even better.

- RESEARCH PROJECT** (Kindergarten through 5th grade) - Someone has already found the answer to your question/problem, and you will look for their answer/solution by reading books, talking to experts, and gathering information from other sources such as schools and public libraries. Your display board will have drawings, photographs, charts, graphs, dioramas, etc. *Examples: How does a solar cell work? How does a light bulb operate? How do clouds form?*



TO:

Student's Name

ELEMENTARY SCIENCE FAIR
PROJECT APPROVAL FORM

Student Information
Packet attached

Super!

Your Science Project has been approved! It looks you are on the right track to answer your question (problem). Good luck finding out the answer and have fun!

The type of project you have chosen is:

<input type="checkbox"/> COLLECTION (Kindergarten & 1 st grade ONLY)	<input type="checkbox"/> EXPERIMENT (Kindergarten through 5th grade)	<input type="checkbox"/> INVENTION (3 rd through 5 th grade ONLY)	<input type="checkbox"/> RESEARCH PROJECT (Kindergarten through 5th grade)
--	---	--	---

Please read the attached Science Fair Student Information Packet for your project type. It contains written instructions for you to be able to complete your written report and your display board.

Reminder: Your completed project is due on _____.

TO:

Student's Name

ELEMENTARY SCIENCE FAIR
PROJECT APPROVAL FORM

Student Information
Packet attached

Super!

Your Science Project has been approved! It looks you are on the right track to answer your question (problem). Good luck finding out the answer and have fun!

The type of project you have chosen is:

<input type="checkbox"/> COLLECTION (Kindergarten & 1 st grade ONLY)	<input type="checkbox"/> EXPERIMENT (Kindergarten through 5th grade)	<input type="checkbox"/> INVENTION (3 rd through 5 th grade ONLY)	<input type="checkbox"/> RESEARCH PROJECT (Kindergarten through 5th grade)
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Reminder: Your completed project is due on _____.

TO:

Student's Name

ELEMENTARY SCIENCE FAIR
PROJECT APPROVAL FORM

Please download your Student Information Packet.

Super!

Your Science Project has been approved! It looks you are on the right track to answer your question (problem). Good luck finding out the answer and have fun!

The type of project you have chosen is:

<input type="checkbox"/> COLLECTION (Kindergarten & 1 st grade ONLY)	<input type="checkbox"/> EXPERIMENT (Kindergarten through 5th grade)	<input type="checkbox"/> INVENTION (3 rd through 5 th grade ONLY)	<input type="checkbox"/> RESEARCH PROJECT (Kindergarten through 5th grade)
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Have a parent help you download the Science Fair Student Information Packet for your project type. Please read it thoroughly. It contains written instructions for you to be able to complete your written report and your display board. Go to:

http://www.lbusd.k12.ca.us/Main_Offices/Curriculum/Areas/Science/parent_resources.cfm

Reminder: Your completed project is due on _____.

TO:

Student's Name

ELEMENTARY SCIENCE FAIR
PROJECT APPROVAL FORM

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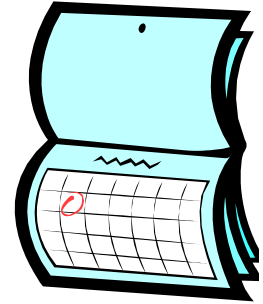
Reminder: Your completed project is due on _____.



STUDENT TIMELINE

for

SCIENCE FAIR PROJECT



TASK	Teacher's Date Due	Teacher's Initials	Parent's Initials
1. Choose, and submit for teacher approval, a topic question/problem to investigate			
2. Do preliminary research. Collect and read books for your topic.			
3. Develop a hypothesis (your best guess) based on your preliminary research.			
4. Decide on the procedure that you will use to test your hypothesis.			
5. Make a list of your materials. Gather your materials.			
6. Conduct your experiment or build and test your invention. Compile your research or collection. Record data.			
7. Organize your data and results.			
8. Write your conclusion based on your results. Write a "real world" application of what you learned.			
9. Write a draft of your science fair report.			
10. Proofread your draft or have someone else proofread it. Type or write a final copy of your report.			
11. Assemble your science fair display board and display items.			
12. Turn in your science fair project (report, display board and display items).			
13. Take your science fair project home.			

ELEMENTARY SCIENCE FAIR

STUDENT FINAL CHECKLIST for PROJECT COMPLETION



Date _____

Dear Science Parent or Guardian,

The purpose of this letter is to provide a checklist of procedures that need to be followed by your child when turning in and taking home his/her science project. If any questions remain after reading this, call me at _____ before or after school.

Before bringing the science project to school, the student must check to see that:

- The project display board and display items are sturdy. The display board “wings” are prepared as discussed in class. The display board does not lean or bend.
- Paper, labels, and letters on the display board are flat and firmly in place. There are no tacks, pins, tape, or staples on the display board--- only strong glue.
- The student’s name, grade level, teacher’s name, school name, and date (including year) are on the *back of the display board in the upper right hand corner*.
- The report is in a report cover with 3-hole fasteners.
- The report is in a “pocket” on the front of the display board.
- The student’s name, grade level, teacher’s name, school name, and date (including year) are *in the upper right hand corner on the outside of the report cover*.
- The student has the original report inside the report cover and a *copy* at home or on the computer.
- Any display items other than the display board and the report are in a paper bag with the student’s *name and other required information* on the outside of the bag.
- Bring a UL approved extension cord for displays requiring electricity.
- Display items with many pieces (i.e. crystals) are not loose. They are in a display case or other “holder.”
- NO harmful materials or substances, and NO ‘live’ animals are part of the project display. (Use drawings and/or photographs to represent those items instead.)
- The project is completed **before** bringing it to school.

The project must be brought to school on the morning it is due. The project must be in class before school begins, unless other arrangements have been made. Students not coming to school that day must arrange for the project to be delivered. Students with expensive or very fragile display items may make arrangements with me to bring those items later. Put a reminder note to me on your paper bag.

Students must **take projects home by** _____ . After this date, the projects will be recycled unless other arrangements have been made.

Your child’s **project is due the morning of** _____ , for exhibit at our school Science Fair on _____.

The staff, students, and I are looking forward to seeing you at our school SCIENCE FAIR!

Teacher: _____ Room _____