Calling all Students!

Participate in the EHIMS Science & Engineering Fair

Monday, March 1, 2010
Ecker Hill International Middle School
5:00-7pm

The top 10 projects selected will go to the SLYSEF in March!

Forms and information at http://ehms.pcschools.us/

See Ms. Krivick or Ms. Sobel for more information.

Last day to sign up for the science fair: February 5, 2010
When: Monday, March 1, 2010, 5-7pm  
Where: Ecker Hill International Middle School

Parents and Students:

Ecker Hill Students are invited to take part in an exciting school event – Ecker Hill’s first science fair open to all students on March 1st, 2010. Science fairs offer students experiences in exploring beyond the classroom to help understand more about their world as well as foster an appreciation for science.

We would like parents to support their students as they select, investigate and report on an appropriate area of science. With parental interest and encouragement, students can develop the skills and attitude needed to make the project a valuable experience. Parents may guide students, but should let the final project reflect the student’s individual effort and design.

A successful science fair project does not have to be expensive, time consuming or complicated. However, it does require some planning and careful thought. Projects become frustrating to students and parents when they are left to the last minute and are overly complex. You can’t rush good science!

To help our student scientists prepare, we have included guidelines and resources. These guidelines will offer some helpful hints on how to create an effective project.

What is a Science Fair Project?
A science fair project is a presentation of an experiment, a demonstration, a collection of scientific items, or an invention. It shows the efforts of a student's investigation and provides a way for the student to show what they have learned. Regardless of the project selection, students should find something they are interested in and can understand. Students will need to be able to explain their science project to our judges, so it should be an age appropriate topic and problem.

Science projects must submit an experiment following the Scientific Method, which will be explained on another page. Top participants will compete to participate in the Salt Lake Valley Science and Engineering Fair, and will follow the rules for that fair. More
information and the registration form will be sent separately, but is available to review at http://slvsef.org/.

Where Do We Start?
Selecting your topic can be the most difficult part. Libraries have books on science fairs and of course, the web is an easy place to start. Choose your favorite search engine and search for science fair ideas. The best and most comprehensive site we have found is http://www.sciencebuddies.org. This site guides a student to projects of greatest interest based on a series of questions.

Is Participation Mandatory?
Participation is voluntary for all Ecker Hill Students. Groups up to three students permitted.

What are the Requirements?
1. Regardless of the project, you must record what you do in a journal. You can refer back to this when preparing your final display. It will also be a part of your final display.
2. Follow the guidelines provided in this packet to complete your project, and use the attached Science Fair Rubric as guide.
3. Prepare a display to present your project at the science fair. All science fair projects should be presented on a display unit or backdrop – these are available at most office supply stores Please make sure your name, grade, and school are included on your project, preferably on the front.
4. Be prepared to discuss your project with a judge and be able to answer these questions:
   ♦ What scientific information was learned from your project?
   ♦ What did you do at each step in the scientific method (experiments only)?
   ♦ What did you learn from your project?
   ♦ What new questions do you have?
   ♦ What would you change if you did the experiment again?
5. Registration forms are due by Friday, February 5. Please make sure forms are legible and complete! The registration form is the same as for the SL Valley Science and Engineering Fair, and is included in this packet.
6. Science Fair projects are to be brought to EHIMS Monday, March 1 from 7:30 – 8:40am. Students will set up their project displays during this time.
7. The Science Fair is open to all on March 1 from 5:00-7:00. Students are asked to stay with their projects until they have been judged. All students asked to attend.
8. Projects will be judged during the fair.
9. If you have any questions please do not hesitate to contact Nancy Krivick (nkrivick@pcschools.us), Kim Sobel (ksobel@pcschools.us) or Sheri Prucka sprucka@prucka.com, (281-831-7042.)

Judging
Small prizes will be awarded to the top 10 projects at the science fair. The top 10 finalists will proceed to the district fair in SLC on March 26.

All entries should include the display unit, exhibit materials and journal or written report. Display units should:
- Be sturdy and self-standing. Self-standing boards are available at Staples.
- Be no larger than 30" (Depth) by 48" (Width) by 108" (Height).
- Have a title include any written data such as: purpose or problem, hypothesis (experiments only), materials, procedure, results and conclusion.
- Include any visual aids such as photos, charts, graphs, drawings, diagrams, brochures, etc.
- Be neat, edited and easy to follow.
- Include NAME, GRADE, and SCHOOL NAME on backside of display board

The judges will be looking for:
- Scientific thought (followed scientific method)
- Creative ability (unique and original project idea for age)
- Understanding (understands topic and project)
- Clarity (nature of problem clearly communicated)
- Display (visually appealing, emphasis given to important ideas, neatness, spelling)
- Technical skill (majority of work done by student)

Guidelines For Completing Your Project

Using the Scientific Method
Remember to record each step and all information in your journal. Keep in mind that these are guidelines only. The steps followed are dependent on the project you have chosen. There is no one way to do a science fair project. However, if you have chosen a problem which will be answered by conducting an experiment, then all of these steps should be followed.

Purpose, Problem, or Question: What problem does the project intend to solve? The problem or question should be clearly written and easy to understand.
Research or Background Information: Research your topic. Be sure to write down all the information that you collect in your journal.

Hypothesis: (experiments only) A hypothesis is a prediction as to what will happen as a result of an experiment and should answer the question posed in the problem. It is your educated guess and it doesn’t matter if you are right or wrong; it is what you think will happen before you perform your experiment. Don’t try to do this after you do your experiment.

Experiment or Procedure: These are the steps you take to find the answer to your problem or question. Documentation of the experiment should include the step by step process you followed, as well as a list of items used to complete your project
(materials). For experiments be sure to include quantities, weight or any other important information.

For those choosing to do an experiment, show the steps you used to perform your experiment. If possible, experiments should be repeated 3 times in the same environment. Be sure to record variables that will change and those that will not (control variables). Write down any data or observations from your experiment in your journal such as; weight before and after, descriptions, changes, etc.

**Analysis or results:** What does the information or data you have gathered (either from doing research on your topic, or doing your experiment) mean? You may want to use charts or graphs to display the data from your experiment to make it easier to understand.

**Conclusion:** The conclusion should answer your original question. Based on the results section, what can you conclude? If you chose an experiment as a project, some things to think about when writing your conclusion:

1. Was my hypothesis correct? Why or why not?
2. Was there something that happened or didn’t happen in your experiment that changed the results?
3. What steps were important?
4. How do the outcomes compare to the hypothesis?
5. What observations during the experiment were expected or unexpected?
6. What does the data mean?
7. What are some other questions you have after doing this experiment?
8. Is there anything that could be changed to make it a better experiment next time?
9. Is there some other experiment you would like to do based on the results of this experiment.
Ecker Hill Science Fair at a Glance—Post on your refrigerator!
When: Monday, March 1, 2010 from 5:00-7:00pm
Where: Ecker Hill International Middle School
Information: [http://ehms.pcschools.us/](http://ehms.pcschools.us/)
Registration: Will be online by January 29th. Don’t wait to start your project!
Contacts: Nancy Krivick: nkrivick@pcschools.us
Kim Sobel: ksobel@pcschools.us
Sheri Prucka: sprucka@prucka.com

Who May come: Students, families and friends are invited to view projects at this time.
Who Participates: All Students are invited to participate, and will compete for a chance to attend and present at the Salt Lake Valley District Fair on March 26.

DATES & TIMES
- February 5, 2010: Registrations due. Registration will be online on the Ecker Hill Web site. PLEASE HONOR THIS DATE as the science fair requires a lot of organization.
- 7:30 – 8:40 am on March 1: Bring projects to school, and be prepared to set them up on provided tables. Make sure that the student name, grade, and school name are written clearly on backside of display board.
- Projects will remain on display at the school through Wed, March 3rd, when they must go home.
- Students are asked to stay with their project as much as possible during the event, but may take some time to view the other projects as well only after their project has been judged.
- Students should arrive by 5:00. This is the fun part! Kids get to share their work!
- It means a lot to the visitors to meet the kids and a great time for students to celebrate their work.
- Wed, March 3: Projects must be taken home on Wed, March 3rd. Please remove your project when leaving the school on Wednesday.

Volunteers make this event a success! Please contact Sheri Prucka if you are willing to help at sprucka@prucka.com. It is a lot of fun to get involved and to help keep the fair going! No experience necessary!

Parent Volunteers Needed:
- March 1 at 7am: 2 volunteers are needed to set up tables for the projects.
- March 1 at 7:30 am—volunteers needed to check in and assist students with setting up their projects. Three Volunteers are needed for this.
- We need 2 volunteers to supervise the projects after school until the fair begins at 5 pm.
- We need 2 volunteers to assist with break-down of the fair on Wed afternoon after school.
Projects to Avoid

Projects should NOT be demonstrations or repeat previously done experiments, but rather should be a collection and analysis of DATA. The Salt Lake Valley Science and Engineering Fair organizers suggest that the following projects be avoided, and Ecker Hill does not permit the first two items in the list to be used.

1) Volcano Demonstrations (not permitted)
2) Coke & Mentos (not permitted)
3) Effect of music on plants
4) Effect of talking to plants
5) Effect of dark vs. light on plants or colored lights, etc.
6) Effect of giving plants other things than water, e.g. milk, soda, salt water, etc.
7) Effect of cola, coffee, etc. on teeth; tooth decay, coloring, etc.
8) Effect of running, jumping, music, video games, movies, etc. on blood pressure
9) Balanced diets (data usually unreliable)
10) Strength/absorbency of paper towels (and other products)
11) "Which is best?" -- Approach generally without scientific merit (which popcorn pops better, which soap, fertilizer, etc.)
12) Basic maze running
13) Any project which boils down to simple preference; what do girls/boys/cats/dogs like better...
14) Effect of color on memory, emotion, mood, etc.
15) Effect of color on food taste, e.g. changing the color of Jell-O to effect the taste
16) Optical illusions
17) Reaction times in general and distractions effecting reaction speed
18) Many male/female comparisons, especially if bias shows
19) Basic planaria regeneration
20) Detergents vs. stains
21) Basic solar collectors
22) Acid rain projects (Important: to be considered, thorough research into the composition of acid rain and a scientifically accurate simulation of it would be necessary.)
23) Basic flight tests, e.g., planes, rockets
24) Battery life (plug in and run down)
25) Basic popcorn volume tests
26) Taste comparisons, e.g., Coke vs. Pepsi can you tell the difference?
27) Sleep learning
28) Music effecting learning
29) Taste or paw-preferences of cats, dogs, etc.
30) Color choices of goldfish, etc.
31) Basic chromatography
32) Wing or fin shape comparison with mass, surface area, etc. not considered
33) Ball bounce tests with poor measurement techniques
34) Fingerprints and heredity
35) Hovercraft design
36) Colonizing bacteria from doorknobs, student’s hands, places around the school, etc.
37) Memory Tests
38) Penny polishing; what cleans pennies the best
39) Insulation effectiveness
40) Hand sanitizers and bacteria; which sanitizer is best?
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<th>Pts.</th>
<th>Evaluation Criteria</th>
<th>Excellent 12-14 points</th>
<th>Good 9-11 points</th>
<th>Average 6-8 points</th>
<th>Needs Improvement 5 or below</th>
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<tr>
<td>___</td>
<td>1. Objectives / Requirements Hypothesis (question) Or Problem Statement (invention / design goal)</td>
<td>Applies to all projects... -- Clearly stated &amp; well-written -- Appropriate for grade level &amp; original testability I. Testable, clear, bounded hypothesis A. Creative in design concept to meet separately identified usage requirements</td>
<td>Lacking in 1 area: clarity, appropriate level, and insight by student I. Hypothesis present, but not completely testable A. Problem / design statement present, but not original</td>
<td>--Lacking in 2 areas: clarity, appropriate level, and insight by student I. Hypothesis incomplete or not testable A. Incomplete problem / design statement</td>
<td>--Poorly conceived or lacking in all 3 areas: clarity, appropriate level, and insight by student I. Hypothesis missing or poorly defined A. Problem / design statement missing or poorly defined</td>
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<td>2. Design &amp; Procedures Scientific method in experimental design &amp; implementation (hypothesis testing) Or Engineering process in design of invention &amp; its implementation (fulfilling requirements)</td>
<td>I. Exemplary plan to support / refute hypothesis with valid testing II. Sequential experimental procedures are quantitatively and/or qualitatively listed, and connect hypothesis, data &amp; results III. Variables, controls, trials are sufficient IV. Procedures are logical and repeatable A. Design goals &amp; approach clearly stated &amp; reproducible, alternatives considered B. Design creative, schematics / software provided (as applicable), well labeled C. Assembly details or set-up instructions for device are clearly laid out D. Photos provided or prototype on display E. Materials used in appropriate ways</td>
<td>I. Sufficient plan to support / refute hypothesis with all other criteria met, or II. Exemplary plan and 2 of 3 other criteria for excellence met, or III. Some improvements needed throughout A. 3-4 of 5 criteria required for excellence are met, or some improvements could be made</td>
<td>I. Sufficient plan with 2 of 3 other criteria for excellence met, or II. Exemplary plan and 1 of 3 other criteria for excellence met, or III. Major improvements needed throughout</td>
<td>I. Sufficient plan with 1 of 3 other criteria for excellence met, or II. Plan information is unclear / missing / insufficient, or III. Non-plan criteria are lacking or untreated</td>
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<td>___</td>
<td>3. Data / Results Experimentation (completeness &amp; documentation) Or Problem Solution (fulfilling requirements)</td>
<td>I. Where possible, data are presented in graphs and/or tables II. Correct &amp; appropriate data presentation III. Sufficient data to create confidence A. Where possible graphs, tables or other data were used to evaluate &amp; document invention design goals vs. requirements B. Functionality is fully tested &amp; validated C. Records on testing are included D. Prototype was redesigned or potential design improvements were identified</td>
<td>I. 2 of the 3 criteria for excellence met or some improvements could be made A. This information is sufficient but not outstanding (as per criteria for excellence)</td>
<td>I. 1 of the 3 criteria for excellence met or major improvements required A. This information is deficient</td>
<td>I. Data were not presented in graphs &amp; tables, or were improperly presented A. This information is missing or improperly presented</td>
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<td>4. Discussion / Conclusions Experimentation (hypothesis supported or not) Or Problem Solution (usage value, potential)</td>
<td>I. Status of the hypothesis is correctly and logically addressed, and stated in an unbiased manner (confirmed / refuted) II. Completeness of work and validity of conclusions are substantiated III. Discussion is insightful, demonstrates clear understanding of research project, broader subject &amp; suggested new work A. Applications... Significance, utility, cost effectiveness, value, practical applications identified, improvement directions clear</td>
<td>I. 2 of 3 criteria for excellence met, or some improvements could be made A. Applications... Sufficiently addressed</td>
<td>I. 1 of 3 criteria for excellence met, or overall information is lacking in quality and perspective A. Applications... Vaguely identified</td>
<td>I. No discussion / conclusions provided A. No applications or needs addressed</td>
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<td>5. Interview How precisely are questions answered?</td>
<td>Exemplary understanding... -- Research findings / design results -- Ability to interpret graphs, statistics, etc... -- Related background information -- Project rational, details &amp; validity</td>
<td>Good understanding... -- Research findings -- Ability to interpret graphs, statistics, etc... -- Related background information</td>
<td>Fair understanding... -- Research findings -- Ability to interpret graphs, statistics, etc... -- Related background information</td>
<td>Poor understanding... -- Cannot answer questions adequately and precisely</td>
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<td>6. Display</td>
<td>Exemplary... -- Creativity, clarity, logic, interpretability, construction, writing, graphics, grammar</td>
<td>Good... -- Creativity, clarity, etc...</td>
<td>Average effort... -- Creativity, clarity, etc...</td>
<td>Inadequate display... -- Creativity, clarity, etc...</td>
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<td>7. Notebook</td>
<td>-- Clearly written, complete and clear -- Goals &amp; procedures are easy to follow -- Comments included -- Records include dates</td>
<td>-- 3 of 4 standards for excellence were met, or some improvements could be made -- 2 of 4 standards for excellence were met, or major improvements required</td>
<td>-- No notebook or 1 of the standards for excellence were met</td>
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<td>8. Use of Resources</td>
<td>-- A comprehensive, correctly formatted bibliography was included &amp; footnotes are present in text of introduction &amp; discussion -- Acknowledgements, crediting individuals, businesses and/or educational / research institutions included (when necessary) -- Student(s) used full resources available (e.g. labs, advisors, experts, periodicals, texts, reference literature, Internet)</td>
<td>Bibliography, acknowledgements... -- Present -- Formatted correctly -- Incomplete bibliography</td>
<td>Bibliography, acknowledgements... -- Minimal effort, requires improvement</td>
<td>Bibliography, acknowledgements... -- None incorporated into the presentation</td>
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