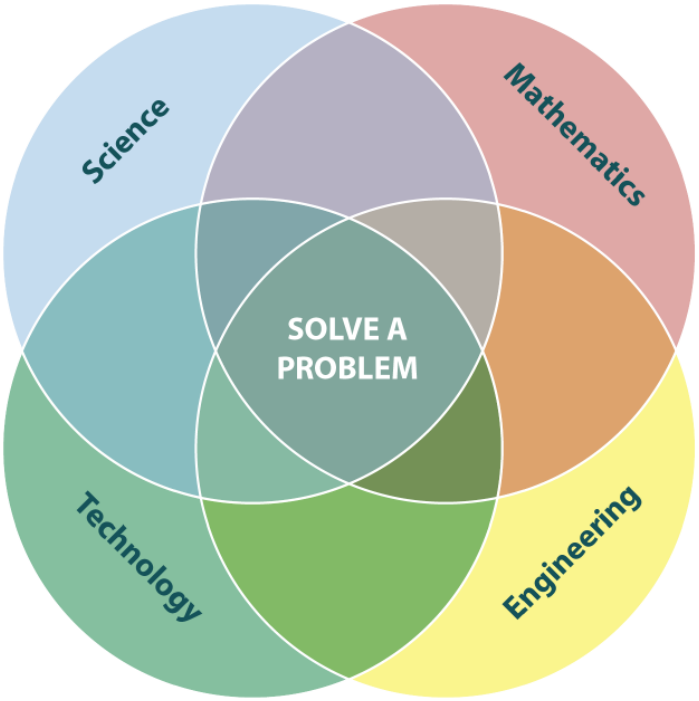
CLYDE HILL ELEMENTARY



SCIENCE PROJECT HANDBOOK

Young Scientist Fair March 22 2017

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Welcome to Clyde Hill's PTA sponsored event, Young Scientist Week!

We are excited to continue the YSW tradition at Clyde Hill and are looking forward to a fun and educational experience for all.

There will be events scheduled throughout Young Scientist Week during the school day. On the evening of Wednesday, March 22rd, all families are invited to the Clyde Hill Science Fair. We look forward to seeing the young scientists at Clyde Hill display the findings of their Science Projects with students and their families.

SCHEDULE FOR YOUNG SCIENTIST WEEK 2017

March 10	**Deadline for YSW Science Fair Registration http://clydehillpta.org/academic-challenge-registration**
Board pickup Days	
March 13 (Mon)	7:30 – 8:00 am and 2:15 – 3:00pm
March 14 (Tue)	7:30 – 8:00 am and 2:15 – 3:00 pm
March 15 (Wed)	7:30 – 8:00 am
March 16 (Thu)	7:30 – 8:00 am and 2:15 – 3:00pm
March 21 (Tue)	**Completed Boards Due**
March 22 (Wed)	Students present work in class (am)
	STEM Night and Science Fair 6-8pm Multi-Purpose Room, Clyde Hill Elementary School

INFORMATION FOR PARENTS

Working on a science project and participating in Young Scientist Week is intended to be an enriching experience for Clyde Hill students and their families to share. We want to encourage all students to participate according to their ages, interests, and abilities. Our focus is on inquiry-based science projects in order to reflect the inquiry-based teaching method Clyde Hill Elementary School and Bellevue School District utilize in their science curriculum.

What does "Inquiry-Based Science" mean?

In a full science inquiry, students begin with a question, design an investigation, gather evidence, formulate an answer to the original question and communicate the results. Students should approach science in ways that are within their developmental capabilities. Starting with a simple question and a simple investigation, students can observe results/collect data and come up with a reasonable explanation for the results.

Guidelines

Parents should help the student choose a project that the student fully understands. There are science project books in the school library. Parents may encourage students to choose books from school or visit the public library with their child. There are also links in this handbook to websites that can help students decide on a topic. Parents may assist their child in brainstorming ideas, choosing and researching a topic, and gathering supplies and materials.

Although the project should be the student's own work, parents, grandparents, mentors, etc. are welcome to assist the student as necessary. It is understood that some students will need more assistance than others, depending on the age of the child, complexity of the project and so on. It is up to the parent or other adult assisting to determine how much and what kind of assistance is appropriate. Please exercise good judgment and remember that your child will benefit much more from "owning" his or her project than from exhibiting a nifty display that Mom or Dad built.

GUIDELINES FOR YOUR SCIENCE FAIR PROJECT

1. You will need a free-standing, three-sided display board for your project. The PTA will be distributing display boards on various days at the front entrance at drop-off and dismissal. Your registration fee ($5) covers the cost of the board, labels, and medals for successful entries. Please prepare to pay for your board, preferably by debit or credit card, at pickup. Those requiring scholarship assistance should send mail to sciencefair@clydehillpta.org

2. Label your display board with the "SCIENCE FAIR PROJECT IDENTIFICATION LABEL" provided with your board. This will allow the YSW committee, teachers, and Science Fair attendants to know to whom the science project belongs.

3. Students will need to be able to set up their own projects. No "hands on" activities should be included, as students will be asked not to touch the projects.

4. No glass containers, explosives, open liquid containers, bubbles, active volcanoes, flames or dangerous chemicals. If your project requires any of these, do the experiment at home and prepare an exhibit of the results with photos.

5. Experiments with pets or animals must have parental consent and must not cause harm.

6. You may partner with another student at Clyde Hill to work on a project; both students must register and pay a registration fee.

7. You are responsible for anything fragile or valuable. Due to this, think carefully about including fragile or valuable items in or on your display.

SCIENTIFIC INQUIRY GUIDE FOR K-3

Ask a Question about Objects, Organisms, or Events in the Environment

The emphasis should be on asking questions that students can answer with scientific, knowledge, combined with their own observations. Students should answer their questions by seeking information from reliable sources of scientific information and from their own observations and investigations.

Plan and Conduct a Simple Investigation

Investigations for K-3 are largely based on systematic observations. As students develop, they may design and conduct simple experiments to answer questions.

Employ Simple Equipment and Tools to Gather Data and Extend the Senses

Students have developed basic skills to observe, measure, cut, connect, turn switches on and off, pour, hold, tie, and hook. Beginning with simple instruments, students can use rulers to measure the length, height, and depth of objects and materials, thermometers to measure temperature, watches to measure time, scales to measure weight, magnifiers to observe objects and organisms such as finer details of plants, animals, rocks, and other materials. Children can also develop skills in the use of computers and calculators for conducting investigations.

Use Data to Construct a Reasonable Explanation

Emphasis should be on the students' thought process as they use data to formulate explanations. Even at the earliest grade levels, students should learn what constitutes evidence and judge the merits or strengths of data and information that will be used to make explanations. After students propose an explanation, they will appeal to the knowledge and evidence they obtained to support their explanations. Students should check their explanations against scientific knowledge, experiences, and observations of others.

Communicate the Investigation and Offer Explanations

Students should begin developing the abilities to communicate, critique, and analyze their work and the work of other students. This communication might be spoken or drawn as well as written.

Use this simplified version of the Inquiry Process to help younger students plan and communicate their project:

1. **MY QUESTION**

   Have your child create their own question. One possible way to start is with "What happens if…" or

2. **MY PREDICTION (OR HYPOTHESIS)**

   "I think that x will happen when I do y"

3. **WHAT I DID**

   Observe! Write down the steps taken in the experiment. Write (or draw, or take pictures of) what happens, from start to finish and all the steps in between. Note the ending. Did it match the hypothesis?

   The point is not to guess correctly, it's to guess, observe, and learn!

4. **WHAT I LEARNED**

   Tell us about what you learned from the experiment! It's your chance to share and teach us!

SCIENTIFIC INQUIRY GUIDE FOR GRADES 4-5

Identify Questions That Can Be Answered Through Scientific Investigations

Students should develop the ability to refine and refocus broad questions. An important aspect of this ability is to clarify questions or problems and direct them towards objects or phenomena that can be described, explained, or predicted by scientific investigations. Students should be able to develop the ability to identify their questions with scientific ideas, concepts, and quantitative relationships that guide investigation.

Design and Conduct a Scientific Investigation

Students should develop general abilities, such as systematic observation, making accurate measurements, and identifying and controlling variables. They should develop the ability to clarify their ideas that are influencing and guiding the inquiry, and to understand how those ideas compare with current scientific knowledge. Students can learn to formulate questions, design investigations, execute investigations, interpret data, use evidence to generate explanations, propose alternative explanations, and critique explanations and procedures.

Use Appropriate Tools and Techniques to Gather, Analyze, and Interpret Data

The use of tools and techniques, including mathematics, will be guided by the question asked and the investigations that students design. The use of computers for the collection, summary, and display of evidence is encouraged for students.

Develop Descriptions, Explanations, Predictions, and Models Using Evidence

Students should base their explanation on what they observed, and as they develop skills, they should be able to differentiate explanation from description – providing causes for effects and establishing relationships based on evidence and logical argument.

Think Critically and Logically to Make the Relationship Between Evidence and Explanations

Thinking critically about evidence includes deciding what evidence should be used and accounting for anomalous data. Specifically, students should be able to review data from a simple experiment, summarize the data, and form a logical argument about the cause-and-effect relationships in the experiment.

Recognize and Analyze Explanations and Predictions

Students should develop the ability to listen to and respect the explanations proposed by other

students. They should remain open to and acknowledge different ideas and explanations, be able to accept the skepticism of others, and consider alternative explanations.

Communicate the Investigation and Explanations

Students should be able to communicate, critique, and analyze their work and the work of other students. This communication should be able to be spoken as well as written.

Use this version of the Inquiry Process to help older students plan and communicate their project:

1. STATE THE QUESTION OR PROBLEM

What interests you? Brainstorm by yourself or with parents, friends or teachers. Check books and magazines for ideas.

2. PERFORM RESEARCH

Check the Science book cart in the school Library. Visit the public library or other places like the zoo and the Pacific Science Center. Look on the Internet via sites found in this guide.

3. STATE YOUR PREDICTION (OR HYPOTHESIS)

This is your guess. What do you think is the answer to your question? What did you think would happen if....?

4. CONDUCT THE EXPERIMENT

Make up an experiment to test your prediction. How did you gather data to see if your guess was right? What equipment or materials did you use?

5. RESULTS

What happened? Write down your observations at each step.

6. CONCLUSION

Compare the results of your experiment with your prediction. Use your research to help explain the results.

RESOURCES

Online

Pacific Science Center: http://www.pacsci.org
Bill Nye the Science Guy: http://www.billnye.com
Science Made Simple: http://sciencemadesimple.com
Science Buddies: http://sciencebuddies.org
Washington State Science and Engineering Fair: http://www.wssef.org

CHE Library

50 Science Zingers: 50 Ooh-Aah Science Experiments by B.K. Hixson
Science Experiments You Can Eat by Vicki Cobb
What's Up? 45 Hands-On Science Experiments That Explore Weather by B.K. Hixson
Dig It! Over 40 Experiments in Geology by B. K. Hixson
60 Super Simple Science Experiments by Q.L. Pearce
201 Awesome Magical, Bizarre and Incredible Experiments by Janice Van Cleaves
Guide to the Best Science Fair Projects by Janice Van Cleaves
Science in Seconds for Kids by Jean Potter