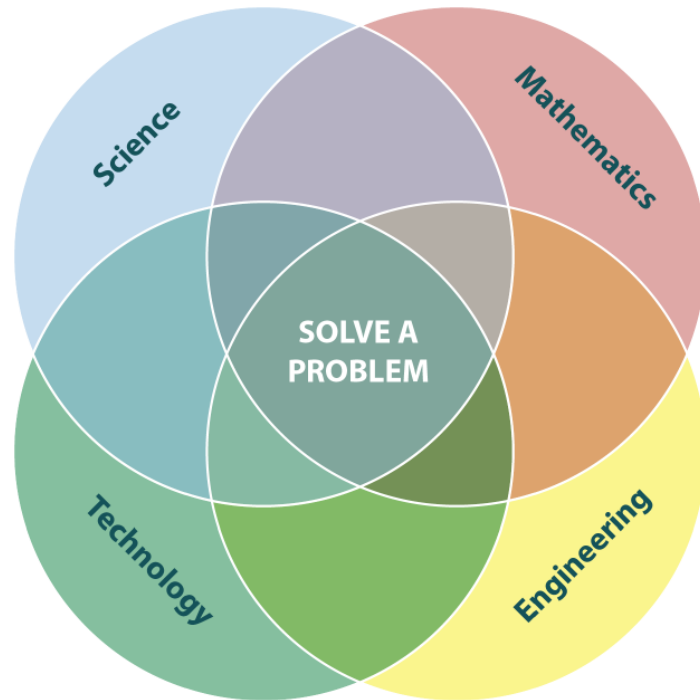


# CLYDE HILL ELEMENTARY



## SCIENCE PROJECT HANDBOOK

Science Fair

Thursday, May 4th

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## Welcome to Clyde Hill PTA's Science Fair!

We are looking forward to a fun and educational experience for all.

All families are invited to attend the Clyde Hill PTA's Science Fair on Thursday, May 4th, regardless of whether or not a student creates a science project presentation board. All participating students should register by clicking this link. Registration and participation in science fair are free. We have a limited number of poster boards available for pick up.

We look forward to seeing the young scientists at Clyde Hill display the findings of their Science Projects with students and their families.

<p><b>PLEASE REGISTER FOR SCIENCE FAIR</b> Registration is for tracking participation and student recognition only.</p>	<p>The science fair is free of charge and for all of our students. We have 50 presentation boards available for pick up on a first come, first serve basis.</p>
<p><b>Presentation board pickup times</b></p>	
<p>Sat., April 29 Sun. April 30</p>	<p>Porch pick up all day at 8472 Hunts Point Lane</p>
<p>Mon, May 1</p>	<p>7:30 – 8:00 am and 2:15 – 3:00 pm</p>
<p>Tue., May 2</p>	<p>7:30 – 8:00 am and 2:15 – 3:00 pm</p>
<p><b>Completed Boards Due the morning of Thursday, May 4th, at school.</b></p>	
<p>Presentation boards will be organized by grade to be set up at the Science Fair.</p>	
<p>Thur., May 4</p>	<p>Science Fair 6 - 7:30 p.m. in the gym</p>
<p>Demonstration by Titan Robotics</p>	
<p>Thank you to the International School's Titan Robotics team for attending our science fair and providing a robotics demonstration!</p>	<p>Students and families can learn more about Titan Robotics at: <a href="https://www.titanrobotics.com/">https://www.titanrobotics.com/</a></p>

## **INFORMATION FOR PARENTS**

Working on a science project and participating in Science Fair 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. The focus is on inquiry-based science projects in order to reflect the inquiry-based teaching method Clyde Hill Elementary School and Bellevue School District utilizing 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 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. 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” their project than from exhibiting a nifty display that an adult 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.
2. Label your display board with Student Name, Grade, and Teacher. This will allow the YSW committee, teachers, and Science Fair attendants to know to whom the science project belongs.
3. Students may arrive 15 minutes early to Science Fair if there are additional items they want to rest in front of their presentation board. No “hands on” activities should be included, as students will be asked not to touch the projects. Please be mindful of shared table space, and do not bring items that will consume more space than the width of your presentation board.
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 their information needs to be on their presentation board..
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 is 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**

Visit the school or public library or other places, like the botanical gardens, zoo, or 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