



THE
CHILDREN'S MUSEUM
AT LA HABRA

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Second Grade Engineers

Overview

Students will design and build cost-effective homes that can withstand the force of an earthquake.

Processes/Skills

- Observing
- Comparing
- Researching
- Engineering
- Analyzing
- Cooperating

Recommended For: Grade K-3

Time Required: One hour

Materials Required:

- *Wonderful Houses Around the World* by Yoshio Komatsu
- *Homes Around the World* by Bobbie Kalman
- Building materials such as spaghetti, toothpicks, marshmallows, cups, popsicle sticks, aluminum foil, and modeling clay
- Large baking sheet

Connecting to the Standards

- Language Arts
 - S.L. 1. Participate in collaborative conversations with diverse partners about *grade 2 topics and texts* with peers and adults in small and larger groups.
 - S.L. 2. Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
 - S.L. 3. Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.
- Mathematics
 - 2.OA.A.1 Represent and solve problems involving addition and subtraction.
 - 2.MD.C.8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately.
- Science

- ETS1.A: Defining and Delimiting Engineering Problems

Activity Objectives

- The learners will (TLW) learn about different types of houses throughout the world.
- TLW will compare the features (building materials, design, and structure) of these houses.
- TLW will design and build (based on a budget set by teacher) a house that will withstand the forces of an earthquake.

Main Activity, Step-by-Step Procedure

1. Read “Wonderful Houses Around the World” and “Homes Around the World.” Discuss the features of various structures- can you guess, based on the building materials, whether that structure is located in an area where earthquakes happen?
2. The teacher will set a budget for each student/group and price the building materials accordingly.
3. Have them draw a picture of their house before they build it.
4. Students will “purchase” their materials based on the budget set by the teacher.
5. Students (working singly or in groups) will construct their own home with the materials listed above.
6. Teacher will place the house on baking sheet and shake it to simulate an earthquake.

Discussion Questions

1. Have you experienced an earthquake before? What does it feel like?
2. What is your house made of? Why do you think the builders chose those materials?
3. Is our location in the earthquake zone?
4. For the buildings, did your structure withstand the earthquake? How could you make it stronger?

Assessment

1. Students are able to model new learning by completing “I used to think... but now I know...” statements.
2. Students will be able to describe the qualities of a house that can withstand an earthquake’s forces.
3. Students are able to discuss how their ideas have changed as they learned about homes around the world.

Resources

Bautista, N. and Peters, K. “First Grade Engineers.” *Science and Children*, v47 n7 (2010)

Kalman, B. 1994. *Homes Around the World*. New York: Crabtree

Komatsu, Y. 2004. *Wonderful Houses Around the World*. Bolinas, CA: Shelter Publications