Boat Building Activity

Captain's Notes

Overview

In this activity, youth working alone will observe what happens when a lump of waterproof clay is placed in water. They will continue their exploration as they press the clay into a variety of shapes. Eventually, they will design a floating boat model. They will test their final designs by placing pennies in the floating clay models.

Difficulty/Grade Level

Easy/Grades K-2 (the activity can be modified for a particular age group)

Suggested Group Size

This activity can be done individually or in pairs

Time

45 Minutes

Objectives

Understand the basic principles underlying how ships float and sink.

WWW.THUNDERBAY.NOAA.GOV

Skills and Strategies

- *observation*
- *understanding that different materials act differently in water*

Materials

- *waterproof clay*
- *bowl*
- *water*
- *pennies (or alternate weights)*

Set-Up

Prior to performing this activity, you'll need to obtain waterproof clay. Non-toxic waterproof clay is commonly available in stores such as CVS/pharmacy, Wal-Mart, and Kmart. This kind of clay is inexpensive and is often sold in 1-lb boxes. Each 1-lb box contains four sticks of colored clay - enough for about eight boats. Modeling clay is also available in art supply stores.

Another kind of waterproof clay that you can use is green florist clay.

Have enough pennies on hand to test the boats. If you don't have coins, marbles, metal nuts, or other smal weights are a perfect substitute.

When doing the activity, give each child a lump of clay that is about equal in size to a golf ball. To make things easy, you might want to divide up the clay prior to the lesson.

Boat Building Activity

Captain's Notes

Procedure

1. Have each student get a bowl, lump of clay, and a stack of pennies.

2. Fill each bowl halfway with water.

3. Instruct students to roll the clay into a nice round ball and then have them place it on the water's surface.

4. Have students do the same with other shapes - a box, a canoe. Have students also try different thicknesses of clay. Let children experiment.

5. Students should now make their final boat. Once they have created it, let them test it in the water. Have students add pennies to determine how well their boat works.

Suggestions

If you are leading this activity, review the shapes of various ships. Have participants do an Internet search to compare and contrast rowboats, ocean liners, sailboats, fishing boats, military craft, and speedboats. Identify the similarity in hull shapes. Explain how the shape encloses a central compartment of air. In a canoe, that space is where people sit. In an ocean liner, the larger space is divided into cabins and rooms.

While doing the activity, have the participants use clay to model the basic design of a rowboat or canoe hull. Have them uncover how the thickness of the clay hull affects the model. Encourage them to actively update their models as they test buoyancy under pennyweight loads.

You might want to finish this activity with a type of contest or challenge. If so, make sure that everyone knows the rules and understands their role. Give away simple prizes as awards for "best boat."

Boat Building Activity

Arti-FACTS

There are two different types of suits SCUBA divers wear, wetsuits and drysuits. Wetsuits keep an insulated layer of water between your body and the suit. Drysuits, just like their name, keep divers dry. Body heat heats up the layer of air between the diver and the suit keeping the diver nice and warm in the cold waters of Thunder Bay.

Activity

In this activity, you will build a model boat that floats.

Materials

- *Lump of waterproof clay*
- *Bowl*
- *Water*
- *A stack of pennies*

Steps

1. *Get a bowl, lump of clay, and a stack of pennies from your leader.*
2. *Fill your bowl halfway with water.*
3. *Roll the clay into a round ball. Gently place the clay ball on the water's surface. What happens?*
4. *Shape the clay into a box. Place this shape on the water's surface. What happens?*
5. *Shape the clay to look like a canoe. Does this shape float?*
6. *Make the clay thinner. Does this change the way your model floats?*
7. *When you are ready, test your model. Add pennies, one by one, to the inside of your clay boat. How many pennies can it hold before sinking?*
8. *Make your model better. Keep changing it until you can float the most pennies.*

NOAA National Marine Sanctuaries Thunder Bay

WWW.THUNDERBAY.NOAA.GOV

Taking it Further:

Build a model boat out of aluminum foil. How many boats can your aluminum foil boat hold?