

Create a Cold water Current Lab

ACTIVITY: Kids create a cold-water current.

GRADE LEVEL(S): K to 6th



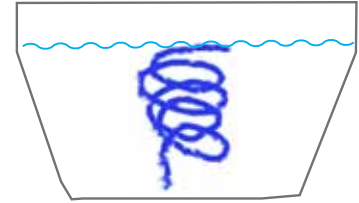
20-30 minutes

OVERVIEW: Observe how cold water moves through warm water.

DISCIPLINES: Science, oceanography

OBJECTIVES: Students will be able to:

- create a cold-water current
- describe how water currents move throughout water.
- recognize that even though we cannot see them, currents travel throughout the water column.
- explain how currents move nutrients and pollutants through the water.
- recognize that currents move water vertically and horizontally throughout the ocean
- discuss how animals rely on currents to find food.



MATERIALS:

You'll need

Preparation:

- Food coloring (blue, red, and yellow)
- Ice cube tray

Day of Activity:

Observation Center (aka lab) Set up for watching currents:

- 2-quart clear Acrylic or plastic container, approximately 5-inches tall (one per group)
- Warm tap water (The temperature a student can safely and comfortably wash hands in)
- Pre-made blue ice cubes
- Yellow and red food coloring
- Sturdy tables, flat desks, or other safe child height surface to safely place acrylic containers for kids to observe water.

(OPTIONAL)

- Thermometer
- Flashlight (small) (one per group)

For kids:

- Crayons or color pencils: blue, red, purple, yellow, green
- Writing/drawing paper

NOTE: In order for the current to flow naturally, kids should not touch water, bowl, and avoid shaking the table. Kids need to be able to see the current from the top and side. Depending on the size of the group, you may want to have a couple observation centers.

☺**This is a simple and excellent activity. Don't let the materials list scare you!**☺

The ice cubes and water do all the work! Most of the list is the set-up so the kids can become scientists and really observe, discuss, and note what they discover.

Preparation:

At least a day before: Make dark blue ice by adding several drops of food coloring to water in each compartment of ice cube tray(s). Make one ice cube for each observation center/group. Freeze.

The day of:

1. Place bowls at each group's observation center.
2. Have warm water, ice, yellow and red food coloring (if using), and flashlights nearby.
3. Have clipboards, paper, writing utensils ready for students.

WHAT TO DO:

Introduction Discussion

Tell the kids they'll be ocean scientists observing water and thinking about how and why it moves. Explain that when observing, scientists don't interfere with what they're watching (You might ask kids if they know why). Explain that scientists don't want to change or disrupt what would naturally happen. Since the kids will be scientists, they must not touch the water, ice, or bowls, and need to be careful not to bump the table(s).

Like scientists, the kids must use their eyes and brains. Also, like scientists, kids should record observations by drawing what they see. Hand out clipboards and writing utensils.

Activity

STEP 1: Carefully fill one container (about 4/5ths of the container) with warm water. Measure the water temperature (share temperature or have students read themselves). Ask: *Is it cold or warm?* (Help them with answer if necessary).

STEP 1A: If more than one lab set up, pour water into each bowl before moving on to Step 2.

STEP 2: Show kids the blue ice cube. Ask: *What is this? Is it cold or warm?* Tell students they will observe what happens to the "blue" as it melts. The blue will create a current they can see in the water.

STEP 3: Gently set a blue ice cube into center of water of each bowl. (Remind kids not to touch the bowl, ice or water.) Let them know the ice should melt slowly enough to allow everyone to get a close view, so they can take their time to observe.

STEP 4: Have kids observe what happens from the top and side.

STEP 5: Encourage kids to discuss, describe, and draw what they see. Have them hypothesize what might be happening and why. You may want to ask questions to get them thinking, but allow them to brainstorm freely. You might ask.

- *What happens when the ice cube melts?*
- *What do scientists call water moving through water?*
- *Is the blue water current warm or cold?*

- *Where does the cold water go? Why?*
- *Why does the cold water sink?*

STEP 6: Once the ice cube melts completely, ask: *Do you think the cold water current is still moving? Why or why not?*

STEP 7: **Have an adult squirt a couple drops of red food coloring into the water above the blue current.** (Do not stir or touch water.) (NOTE: The cold current becomes purple, allowing the kids to see how the cold water current continues to move through the warm water.)

STEP 8: Again, have kids discuss, describe, and draw what they see with their group and share with class. Be sure to view the current from top and side – eye level.

OPTIONAL: Give each group a flashlight and have kids take turns using it to highlight the current.

STEP 9: When the red seems to be completely incorporated, **have an adult add a couple drops of yellow food coloring.** Keep observing. (NOTE: The current pulls in the yellow color.)

If working with younger students, move on to Step 11

STEP 10: With older kids, after swirling cold water current slowly sinks, you might ask:

- *Where did our cold current start?*(Note: at the surface)
- *Where is the current, now?* (Note: middle or bottom)
- *What does that tell you?* (You can lead them with, Does that mean water at a certain temperature is heavier or lighter than another? So cold water sinks because it is...?)
- *In the ocean, is the water at the surface usually warmer or cooler than below?*
- *Is the water further down usually warmer or colder? Why?*

STEP 11: Discuss what they saw from the blue ice in warm water, then when you added the to the yellow food coloring. Let kids share observations and thoughts. Explain that the ocean is full of warm and cool currents. Let them finish their drawings of the current.

REMEMBER: Food coloring can stain clothes, carpeting, and furniture.



Allow students time to write down (or draw) their thoughts, discoveries, and questions in their *Deep Thoughts Journal* and/or add their drawings of the currents in the journal.