

Floating and Sinking

SNWA Goal 3 Objective 3.2, 3.3, 3.4

CCSD Curriculum Essentials Framework

Science

It is expected that students will:

- (4) 1.2 investigate and describe how objects can sink or float in water [NS 1.4.4]
- (4) 1.3 investigate and describe properties of materials when they are combined (mixtures) [NS 2.4.1]
- (4) 4.1 investigate and describe the variables that affect the survival of organisms within an ecosystem [NS 15.4.2]

English Language Arts

It is expected that students will:

- (4) 3.4 identify implied themes in a variety of reading selections [NS 3.4.4]

Purpose: This activity introduces students to floating and sinking objects that can pollute water supplies and water ecosystems.

Time: 45 minutes

For each group of students, you will need:

- plastic baggies containing the same items for each group, such as:
 - paper clip
 - cork
 - rubber band
 - grape
 - marble
 - plastic ring
 - bottle cap
 - button
 - penny
 - nail
 - leaf
 - straw
 - string
 - small stick
 - paper towel
 - wooden centimeter cube
 - piece of chalk
 - safety pin
 - small piece of soap
 - apple
 - piece of bread
 - orange peel
- containers of water for every four students
- a few drops of oil

Introduction

1. Distribute baggies containing items. Say, “Looking at the objects in the bag, which do you think will float on water and which do you think will sink? What will happen if we drop oil onto the water?” Allow time for students to make a prediction for each object, and ask them to record their predictions in their notebooks.

Name of Item	Prediction	Test Results

Making Discoveries

2. Distribute containers of water (e.g. small basins, bowls) and allow about 15-20 minutes for students to try each item and record the results.

Teacher note:

Why do some things float and some do not? For something to float, the object must displace its own weight in water. If it does not, it sinks.

3. Make a class chart, entering each item. If students achieved different results for the same item, ask what could make the difference.

Teacher note:

Variables might include how the item is placed in the water.

4. Ask, “Which items do you think might break up and disappear over time? (biodegradable) How could we find out?” (You can leave items in water over time for observation, and you can look in outdoor water sources for evidence of breaking up.)

Closing

5. Ask, “Which of these items could be harmful or affect the quality of our water?” Place a checkmark beside those items and ask students why they might be harmful. “How could these items get into the streams, washes, or lake? What has to happen in order to make sure our water is safe for us to use?”
6. Introduce the idea of a filtering system to remove pollution from water so that it can be reused. Share the overhead illustration of the water treatment process (see Grade 5 - Water Treatment Process from the welcome.pdf). Find the overhead illustration of our valley’s water system (see Grade 5 - Southern Nevada Water Cycle from the welcome.pdf).

Extension

Share with the class the water quality song on the enclosed cassette. (Song words included with this lesson can be copied and distributed.) Ask, “What is the main idea of the song?”

Word Bank

The teacher should introduce or review the following vocabulary with the students within the context of this lesson.

buoyancy: the ability of water to support weight and the degree to which it can support weight

conservation: wise use and protection from depletion and pollution

pollutant: any substance suspended or dissolved in water that builds up in sufficient quantity to impair water quality

ecosystem: the relationship between all the parts (living and nonliving) within an environmental community



Water Quality Song

*By James Quill Smith
(for the Southern Nevada Water Authority)*

Can we keep our water fit for life?
Yes, we can if we follow good advice.
Let's quit poisoning our rivers, lakes and streams.
Even dumping things in your yard hurts, it seems.

Like fertilizers and pesticides
In our cities and countrysides,
Soap, detergents and motor oil
Find their way down through our soil.
Into the water that we drink
From our factories and kitchen sinks.
Maybe it's time we stop to think
That pretty soon we might just be extinct.

Because water's being used up fast,
Without water we won't last.
Every living thing depends
On the water, it's our good friend.
And without it our food won't grow,
Fish would have no place to go.
Without water there'd be no rainbows.
So let's take care of every drop that flows.

'Cause what will we do
When the water's gone?