CORAL REEF ECOLOGY

Concepts
Hypothesis
Experimentation

HCPS III Benchmarks
SC.4.1.1
SC.4.5.3

Duration
45 minutes

Source Material
PRISM

Vocabulary
Biodegradable
Data
Hypothesis

Types of Marine Debris

Summary

Students will devise a testable hypothesis about marine debris at a local beach and then create an experimental procedure to test their hypothesis. Students will graph their data, accept or reject their hypothesis, and then, as a class, compare their data to past studies of marine debris collection at the same beach.

Objectives

- Students will be able to categorize different types of marine debris
- Students will be able to predict what types of materials can become marine debris

Materials

"What Will Become of Marine Debris" Worksheet (1 per student)
Deep pan (1 for each group)
Sink
Water
A variety of trash that can become marine debris
Paper towels

Making Connections

Students may make a connection between their experiment and the time they spend in the real marine environment. They will see how their actions can help preserve the marine environment.

Teacher Prep for Activity

Copy one "What will become of Marine Debris" worksheet for each student. Gather the "marine debris" making sure there is a good assortment of different trash types. Pour water into the deep pan and have them ready for the students to use. Have a lot of paper towels handy!

Background

No additional background is necessary.

Procedure

1. Begin with a group discussion, ask the students to categorize the trash items into different piles (plastic, glass, rubber, metal, paper, Styrofoam, wood, and cloth) one at a time as you hold them up in the air.
2. Separate the students into small groups and ask each group to choose several marine-debris items to use for the experiment. Be sure that each student gets a worksheet at this time.
3. Explain that they must take the time to fill in each item in the space provided, and make their predictions of whether or not the item will sink, float, or be carried by the wind. Some items may sink, float, and be able to be carried by the wind. (For example, a piece of crumpled paper can be carried by the wind to the ocean, float for a while, and then sink hours later when it gets saturated with water.) Predictions MUST be made BEFORE the marine debris items are tested!!!!
4. Students should take turns placing items in the pan of water. Floatation of items may be influenced by their shape and other items that are in the tub, so help nurture student interest by asking them what would happen if they changed the shape of the marine debris.
5. After an item has been placed in the tub of water, students should record their observation on the "Marine Debris Observation" worksheet and the item should be taken out. The next student can then place their object in the water.
6. To end, bring the students back together as an entire class and discuss the impact humans have on their surrounding environment: (use the following questions to guide the discussion)
   - How do people use plastic items in their daily lives?
   - How do these trash items (ex. plastic, glass bottles, and cigarettes) affect our economy?
   - How do plastics and other forms of debris get into the ocean?
   - How is plastic marine debris different from **biodegradable** (items that break down through natural processes) materials?

   Brainstorm ideas about how people can reduce the amount of debris in our oceans. Explain that each of us frequently makes choices about the products we buy, where to discard trash (and recycling), and if we want to help clean up a mess that someone else left. The debris that is in the marine environment affects different animals and plants depending on the different material, shape and size of the item.

Assessments

Completed "What Will Become of Marine Debris?" worksheet

Name _____

What Will Become of Marine Debris?

Make a prediction about each item to see if it can be considered marine debris. Will it sink? Float? Is it carried easily by the wind? Write a Y for yes and N for no in each "Prediction" column. Test each item and record your results (Y or N) under the column titled "Result."

ITEM	*SINK?*		*FLOAT?*		*CARRIED BY THE WIND? = W*	
	Prediction	Result	Prediction	Result	Prediction	Result
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						

Follow-up Questions on Marine Debris:

1. Which items were the most buoyant?

2. Which items surprised you most? Why?

3. Which items do you think would harm coral reef organisms the most? Why?

4. Are any of the items biodegradable?

5. List at least three things you can do to spread the word and protect our oceans and coral reefs from marine debris!

1.

2.

3.