

‘Ōpala Bellyaches



Grade 3

Lesson at Glance

Students use their creativity to teach others about the dangers of plastic ‘ōpala (litter) to aquatic animals.

Key Concepts

Litter degrades the beauty of the landscape. Plastic litter is particularly harmful to aquatic animals. People can show they care about plants and animals by recycling and disposing of litter properly.

Objectives

Students will be able to:

- 1) Identify actions they can take to help reduce plastic litter.
- 2) Educate others about the hazards of plastic ‘ōpala.

Time

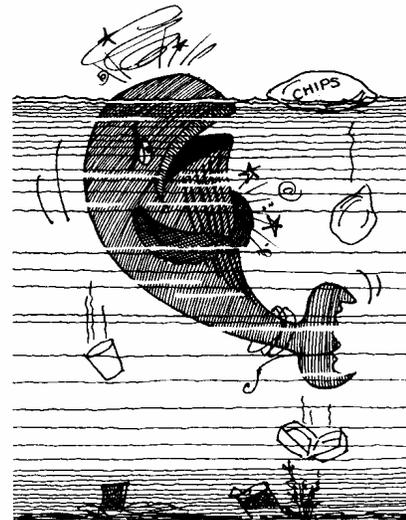
two class periods

Subject Areas

science, art, language arts, Hawaiian studies

Materials

plastic litter (optional, see teaching suggestion #4)*
yarn (green, gray, white, blue)
glue
staplers
scissors
colored markers



Preparation

*A few days before conducting this activity, ask students to begin collecting plastic garbage. Ask them to rinse and dry all items before bringing the litter to class.

Teacher Background

Plastic debris is becoming a common feature of wetlands and oceans. The National Academy of Science estimates that 6,345,611,000 kg (14,023,800,000 lb) of litter are dumped into the sea annually; mostly from merchant ships. Recreational boating accounts for 102,767,000 kg (227,115,000 lb) of that ‘ōpala or trash. There is now an international ban, signed by most developed countries, prohibiting the disposal of plastics at sea. The United States Coast Guard helps to enforce this ban but plastics continue to be dumped into the world’s oceans.

Besides being unsightly, some of the litter is hazardous to birds, reptiles, fish and mammals. A plastic bag or a balloon floating on the ocean can look like a jellyfish to an **endangered**

Hawaiian green sea turtle. Turtles have been found with as many as 15 plastic bags in their stomachs. One whale's stomach contained 50 plastic bags! Birds, whales, monk seals and fish all mistake plastic objects for food, and when the plastics fill or block their stomachs, the animals may starve.

Birds diving for fish can become hopelessly entangled in floating six-pack rings and choke to death. Researchers have found more than 15,600 six-pack rings along 300 miles of the Texas coastline in only three hours. Each year, thousands of fish, seals and birds become entangled in plastics, including fishing nets and lines that are left to drift at sea. Since plastics can persist in the environment for hundreds of years, they can have a long-term impact on the environment. For example, some scientists estimate that it will take 450 years for a plastic six-pack ring to degrade.

To solve the problem of plastic debris in the ocean, the efforts of researchers, industry and individuals are needed. Researchers have developed degradable plastics that break down with exposure to the sun and other plastics that degrade with exposure to microorganisms. These developments are promising in terms of reducing the time that these products persist in the environment, yet the effects of the byproducts of degradable plastics have not been fully determined.

The efforts of private industry have led to some success with plastic recycling. Plastic milk bottles have been recycled into toys, pails, pipes, traffic barrier cones, kitchen drain boards and other products. A nonprofit foundation, funded by industry and government grants, is researching ways to make plastic recycling a more practical and economical option for industry. Some recycling centers in Hawai'i now accept plastic bags and bottles.

Individuals can help to reduce hazards to marine life by recycling or disposing of plastics properly, including cutting six-pack rings before discarding them. People need to be made aware that plastics carelessly tossed onto the ground can be washed into storm gutters and be washed into streams or wetlands and eventually end up in the sea. Consumers can also help to reduce plastic litter by selecting alternatives to plastic products. For example, shoppers can carry reusable string or canvas bags as alternatives to plastic shopping bags.

Teaching Suggestions

1. Hold up a plastic six-pack ring and begin cutting the rings. Ask students if they can think of reasons for this action.
2. Tell students how the six-pack rings can harm animals and ask them how this plastic *'ōpala* might end up in the ocean.
3. Sort through some of the other plastic items that students have brought in and discuss possible hazards to wildlife.
- ✓ 4. Ask students to think of ways they could educate others about the hazards of marine debris and then implement an education effort.

- Create a display showing animals, such as monk seals, turtles, fish and birds with ‘ōpala in their bellies or around their necks, wings, legs or flippers. The animals can be outlined in various colors of yarn and then filled in with plastic litter.
 - Write public service announcements or commercials that could be “aired” in other classrooms.
 - Design posters and display them around the school.
 - Write a play and perform it for other classes.
- ✓ 5. Discuss actions that students and their families can take to reduce plastic litter. Make a list of these actions on the board. Generate an “instead of” list showing all of the products or items one can use instead of plastics. Then ask each student to write a brief slogan or message about the dangers of plastic ‘ōpala and ways to recycle it or dispose of it properly. These slogans can be used in students’ messages to others.
6. If students create a display, hang it on a bulletin board in an area where other classes can view it. When the display is dismantled, be sure all the plastics are recycled or carefully discarded. Cut up the six-pack rings!

Extended Activities

- Create a large mural of a whale or turtle in a central location in the school and set a garbage can in front of the animal where its stomach is located. Have students post their slogans on the mural and encourage others to bring in plastic trash they find at the beach or in the schoolyard and put it in the can. See how much plastic collects over a period of two weeks.
- Make “Can It!” or “Recycle It!” stickers to wear and spread the message about properly disposing plastic litter.
- Clean up litter on a beach near your school. Sort the litter to see if any items, such as cans, bottles or glass can be recycled. Beware of broken glass; place it in boxes instead of plastic bags so that no one is cut.

