

Title: When Litter Becomes Harmful

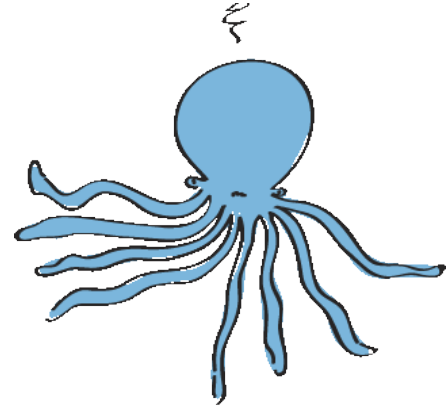
Grades: 2

Time 45 minutes

Subjects: Science, Health, Language Arts

Objectives

- Describe litter; explain how litter moves and its connection to water pollution.
- Identify ways humans can help improve the environment by preventing litter.
- Differentiate between point source and non-point source pollution.
- Make observations and draw conclusions about a litter related event.



Standards

Technology Standard 3: Understand the relationship among science, technology, society and the individual.

- Benchmark # 3: Know that man-made materials, products, and systems can affect the environment adversely, yet there are things that can be done to circumvent this process (e.g., disposing of waste properly).

Science Standard 10: Understand force and motion.

- Benchmark # 3; Know that the position of an object can be described by locating it relative to another object or the background.
- Benchmark # 5: Know things move in many different ways (e.g., straight line, circular motion).

Science Standard 12: Understand the nature of scientific inquiry.

- Benchmark # 1: Know learning can come from careful observation and simple experiments.

Health Standard 2: Know environmental and external factors that affect individual and community health.

- Benchmark # 1: Know the sources and causes of pollution in the community.

Language Arts Standard 2: Use stylistic and rhetorical aspects of writing.

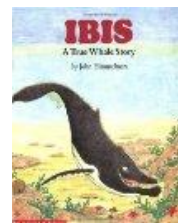
- Benchmark # 1: Use descriptive words to convey basic ideas.
- Benchmark # 2: Use declarative and interrogative sentences in written compositions.

Language Arts Standard 6: Use reading skills and strategies to understand and interpret a variety of literary text.

- Benchmark # 1: Use reading skills and strategies to understand a variety of familiar literary

Materials

- A copy of "Ibis: A True Whale Story" by John Himmelman
- Art paper
- Pencils and crayons
- Protective gloves for litter collector
- Collection bin
- "Where Litter Ends up" Flow chart provided below
- "Dangers of Plastic to Marine Life" poster provided below



Overview: While the general definition of litter is any trash that is inappropriately disposed of, not everyone agrees with the objects that fit into that category. Most people consider items that could be



recycled but are not, such as bottles, cans, and food wrappers to be litter; but other items seem to fall into a gray area. Some people don't think of their pet droppings as litter, while others don't consider food scraps, such as banana peels, to be litter. Still others don't believe a cigarette butt is litter, seeing it as something too small to make a difference. However, these views can be very far from the truth. Whenever trash is left unattended and nature's forces, wind and weather, move it from place to place, it can create a problem. It finds its way onto highways and into waterways, to backyards and playgrounds, just about anywhere on Earth.

Litter can be a menace, contaminating natural resources. Some studies suggest that almost 20% of all litter becomes water pollution, posing a threat to drinking water, and the plants and animals that live in water habitats.

There are two kinds of water pollution, point source pollution and non-point source pollution. Litter is an example of non-point source pollution.

Kid's Speak: Litter is trash that has not been properly recycled or thrown away. People sometimes throw trash on the sidewalk, street or out a car window instead of putting it into a garbage can or litterbag. Sometimes it blows out of trucks or away from construction sites. Sometimes animals rip open trash bags left out for trash collectors. When people leave trash behind, not taking responsibility for it, it becomes litter and a problem for everyone.

Litter doesn't stay where it is dropped. Wind and water move it from place to place. It can be found on the ground, in bushes and trees, and in ponds, rivers, and streams. It can be found almost anywhere on Earth. It can pollute our drinking water, harm plants, animals and their habitats, cause accidents and cost a lot of money to clean up. If everyone reduced the amount of trash they made, reused the things they could use, recycled what they couldn't use and carefully threw away what was left, then litter would not be as much of a problem.

Eco-Fact: Approximately 70 percent of the trash floating on the ocean was originally disposed of on land. Plastic is the most common form of trash found in the ocean. Approximately 100,000 marine mammals and a million seabirds die each year from ingesting or becoming entangled in plastic debris.

Procedure:

Before Conducting the Lesson:

- Read the story "Ibis: A True Whale Story" by John Himmelman. Explain to students that this is a true story about a marine mammal that got caught in a fishing net. While Ibis breaks out of the net she has some of it caught in her mouth and around her tail, and because of it she can't eat or get to the surface easily. In the end of the story a friend of Ibis pushes her to the surface of the water and Ibis is helped by people and freed from the net. Explain to students that while this story has a happy ending, not all ocean animals and sea birds are as lucky as Ibis. Many die each year because they either get caught in, or eat litter that has found its way to the ocean.
- Review the term pollution, what pollution is and how it can be harmful. Remind students that there are two kinds of water pollution, point source pollution and non-point source pollution. Litter is an example of non-point source pollution. Remind students the effects water pollution has on the environment and the plants and animals that live there.

Conducting the Lesson:

- Use a simple flow chart, similar to the one below, to explain to students how litter moves from one place to another. Explain to students that litter starts with people who are careless or perhaps too lazy to properly dispose of their trash, so they leave it for someone else to clean up. Trash left unattended becomes litter. If no one picks up the litter, wind and water will move it from place to place. With the help of nature litter often finds its way into sewers and storm drains. The litter moves along these drains with the water. Some of the organic litter breaks down and dissolves in



the water creating pollution (e.g., see *Where Litter Ends Up* lesson on the GEF website), while solids, such as plastics, travel on with the flow. The drains eventually empty out into waterways, such as rivers, and streams. The polluted water mixes with the water in the rivers and streams and can have harmful effects on these ecosystems. These waterways also move the solid litter along until they empty into the ocean, where the solids can float around indefinitely, or until they entangle, or are ingested by, the marine wildlife.

- Take students on a walking tour of the grounds around school and locate any sewers or drains that may be in the area. Have students look around the areas of the drains for litter. Have an adult helper collect any litter the students may spot and properly dispose of it. Once back in the classroom discuss with students the types of litter, if any, that was found and what might have happened to it if it had not been picked up. If no litter was found, discuss with students how well litter collection is keeping potential litter out of the waterways.
- Explain to students that plastics are a main cause of harm for marine mammals and sea birds. (See *Eco-Fact* for details.) Explain to students that plastic does not decompose or break up over time. It can float around the ocean for a very long time. The ocean currents move the plastic from place to place. There are places in the world, such as the Sargasso Sea, where much of the plastic litter has collected.
- Ask students to brainstorm a list of the kinds of plastic objects that could be floating in the ocean. Some suggestions might include: shopping bags, bottles, foam packing peanuts, garbage bags, six pack rings, fishing line... Make a list of possible plastic objects. Ask students what kind of problem they think each could cause marine animals. Add this information to the list, filling in with any facts the students may not be aware of on this issue. Discuss with students the potential problems each of these litter items may have in relation to marine wildlife and their implications. (See PDF below.)
 - The Dangers of Plastics to Marine Life:
 - Plastic Bags Resemble jelly fish when floating and are eaten
 - Six Ring Packs Get tangled around various body parts
 - Plastic pellets and foam pieces Are mistaken for fish eggs and eaten
 - Fishing Line Get tangled around various body parts

After Completing the Lesson:

- Students will develop a simple flow chart, using drawings and words, to illustrate how litter finds its way from the schoolyard to the open ocean.
- Students will do a quick share of their flow charts with a partner explaining how litter moves, where it ends up and what can happen to it there.

Adaptation: Teachers may choose to bring the litter collected around the sewers and drains back to class for students to observe and examine, before disposing of it.

Extensions:

- Teachers may wish to demonstrate how a floating plastic bag might be mistaken for a jelly fish or how a six ring pack might entangle a marine animal, helping students to understand that items, such a six ring packs, should be broken up so they cannot harm wildlife.
- Use the *Litter From Lunchtime* lesson found on the GEF website as a follow up to this lesson.