

TURNING THE TIDE ON TRASH

A LEARNING GUIDE ON MARINE DEBRIS



LESSON ONE

Coming to Terms with Marine Debris

Grade Level:

Grades 1 – 6

Subjects:

Language Arts, Mathematics, Science, Social Studies

Overview:

This lesson is designed to increase students' awareness of different kinds of debris in water environments and the impact it can have on animals, humans, and **aquatic habitats**. Students will first define marine debris, discuss its possible impacts, and then sort household trash items into different categories to learn about different sources of marine debris. Older students then use statistics and graphing to better understand the types of marine debris that are collected each year.

Objectives:

- Define “marine debris.”
- Discuss the concept of debris and entanglement.
- Predict the effects different kinds of debris (litter) will have on animals in water.
- Describe specific examples of debris' hazardous impacts on wildlife.
- Classify different kinds of debris found in water, using several different categories.
- Create a poster with information gathered from the classification exercise (older students can produce charts and graphs).

Vocabulary:

debris, marine, marine debris, trash, entanglement, ingestion

Materials:

A large bag of assorted trash items (clean and safe), provided by the teacher. Items can include soda cans, bottles, candy wrappers, balloons and ribbons, six pack holders, plastic/paper cups, forks, straws, shopping bags, small toys, fishing line, rubber bands, scraps of paper, and other items that are often found littered.

Learning Skills:

Analyzing, Calculating, Classifying, Collecting Data, Observing. Can also include Graphing/Charting, and Communicating.

Duration:

40 minutes

SAFETY PRECAUTIONS

All trash objects should be cleaned and checked by the teacher before being handled by students. Avoid any sharp objects or materials containing harmful chemicals.

Activity

1. Begin the lesson by asking students to define trash and litter. Through this discussion, identify the characteristics of “trash” and develop a definition. Write the definition on the board. Then ask students to think of synonyms for trash, and help them come up with the term “debris.” List all of the synonyms on the board. Emphasize to the students that trash or garbage refers to generated waste. If the waste is improperly disposed, it then can become debris or litter.

LESSON ONE

2. Now that debris has been defined, ask students what “marine” means. Write the definition on the board. Ask the students to list synonyms for marine and write them on the board.

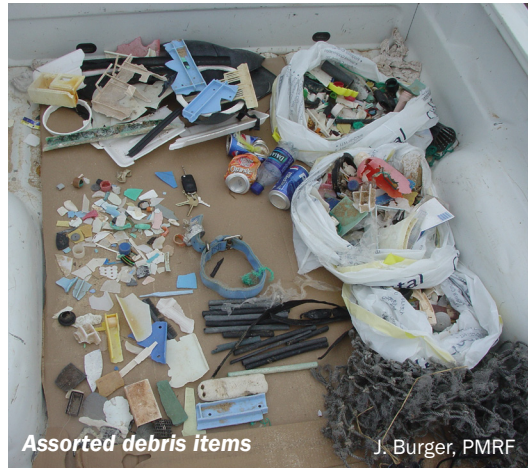
3. Then combine the terms and discuss the meaning of “marine debris.” Write this definition on the board. Use the lists of synonyms to come up with other terms that describe the concept of marine debris (such as “sea trash” and “ocean waste”). Read the definitions and terms aloud along with the class, so they can practice the words by reading them out loud. Leave these descriptive words written up on the board to help the children as they classify the trash items into groups.

4. Ask the students how the trash their families produce might find its way into a stream, lake or the ocean. Ask the students if they have recently visited a river, lake, or the ocean, and what trash they may have seen on the shore or floating in the waterway.

5. Talk with the students about how different kinds of debris in water may affect the animals living in that habitat. Discuss the concepts of ingestion and entanglement. If time allows, ask children to work in groups to predict some effects that debris might have on different animals. After the groups have shared their suggestions, describe some specific examples of debris’ hazardous effects on wildlife.

During the discussion, it is important that the students understand:

- Any trash that is improperly disposed of is considered debris (litter).
- Debris can potentially enter a waterway and have negative impacts there.
- Litter on our streets can enter **storm drains** when it rains, and become marine debris.



6. Provide the class with a collection of trash. For safety reasons, the teacher should provide this trash. Students should not bring trash from home. This allows the teacher to be sure that students will not come into contact with any harmful objects. The trash should also be washed clean before bringing into the classroom. A large plastic garbage bag can be filled with cleaned trash in advance, and emptied out in the classroom, either on the floor or on a large table.

7. Classifying Debris Items

Have the students work in small groups (four to six students) for the classification activity. Begin by having each of the small groups work together to sort their own collection of trash objects into separate groups of related items. Allow the students to select how they will separate the items into groups. Make sure to walk from group to group and ask a spokesperson from each group what it is that the objects grouped together share in common with each other. Young children will usually separate items into two groups, while older children tend to use several groups. Some items, including juice boxes, are made from several types of materials including foil, plastic and paper. Such items may generate questions from students as to how to classify these items.

LESSON ONE

Usually the students will group the objects based on the descriptive words that were used to communicate their earlier observations about litter and debris. When each group has sorted their objects, ask the group spokesperson to explain how the sorting was carried out. Then the groups of students should be instructed to reclassify the objects into groups again, this time using a different criteria for classification – they should not use a classification method that has already been used. This exercise teaches students that there are many different types of information (data) that can be learned from one situation.

Suggested Common Classification Categories

- By material (plastic, metal, glass, cloth, paper, etc.)
- By recyclable versus non-recyclable
- By different activities producing trash (fast food consumption, smoking, fishing, other sports and games, advertising with balloons, illegal dumping, etc.)
- By biodegradable or non-degradable
- By the type of impact they can have on the environment
- By color of trash items

8. Discuss with the class the different ways that groups have classified the trash, and tell students about some of the other possible ways that they may not have considered. Ask if some classification methods led to interesting observations, while other classification methods were not as useful.

9. For younger students: Have the students complete the classification activity with each group working together to create a poster showing how they chose to do their final classification. The students can glue the families of trash objects onto their

poster board. They should label each of the families of objects that they create on the poster board with a descriptive word, and they should write a number for each family of objects.

For older students: Have the students complete the classification activity with each group working together to create a pie chart and bar graph showing how they chose to do their final classification. The charts and graphs can be created on a computer, and should be labeled with descriptive words and percentages for each category.

EXTENSIONS

As a class, conduct your own cleanup activity at a seashore, lake, pond, stream, or river. Have students record the types and numbers of debris they find. See Unit III for more information on conducting a beach cleanup. Be sure the items you collect in the cleanup are recycled or properly disposed. Also, you could clean up the same area periodically and compare the quantity of debris collected each time.

Either in class or as a homework assignment, ask students to use trash items to create a marine debris sculpture. Display the sculptures in the classroom or school library.

For a long-term class activity, have students participate in an adopt-a-beach, -lake, -river, or -stream program.

DIVE DEEPER:

Other Resources on Marine Debris

- NOAA's Marine Debris website:
www.marinedebris.noaa.gov
- EPA's Marine Debris site:
<http://water.epa.gov/type/oceb/marinedebris/index.cfm>