Trash or Treasure?

Third- to fifth-grade students develop reading and creative-thinking skills as they ponder how trash can affect animals and their habitats.

By Donna Kowalczyk
Most children know they should not pollute but have never considered why. I created a lesson for third- through fifth-grade students that makes the connection concrete. In the lesson, students consider the possible effects a trash item would have on an animal and its habitat, identifying ways in which the piece of trash could be helpful or harmful to the animal and its habitat and then communicating their ideas about how people can clean a polluted environment to make it safe for animals. Along the way, students use reading skills to gather information about the animal and its habitat, writing skills to record their ideas on paper, and speaking skills to share their ideas about their animal and piece of trash with the class. Technology can also be integrated if the teacher chooses to use websites for the reading portion of the activity.

Getting Ready
Prior to the activity, I collect various household trash items: plastic milk containers, paper wrappers from food, cellophane, Styrofoam packing material, cardboard juice containers, aluminum foil, newspaper, plastic bags, paper towel rolls, empty cardboard boxes, and office paper. Make sure you select items that are clean and safe for students to handle—items free of sharp edges, food crumbs, liquids, or jagged metals. Each student will receive one piece of trash along with information on one animal. I use Wildlife Fact File cards (CSA 1996), but you could easily assemble your own fact sheets with any animal reference book. These cards contain detailed information about a specific animal’s habitat, breeding, food and hunting, lifestyle, and physical features.

For the reading portion of this activity, I select materials focusing on various animal species describing their life cycles, habitats, diet, nutrition, hunting practices, geographic locations, and any other interesting facts about the animal. The online Zoobooks Magazine and The National Wildlife Federation’s Kids and Families web pages provide excellent online reading information for the activity (see Internet Resources). The reading portion of the activity may be conducted in a computer lab, allowing students to select their own websites and gather information about their animal independently. Students may also work in pairs or small groups to find relevant information online or from one of the reading sources.

Creative Thinking in Action
I start with a brief introduction about animals, their habitats, and the role of pollution in the environment. I ask the students to talk about some of their favorite animals. Whales, dolphins, rabbits, deer, foxes, snakes, and fish are among some of the common species my students love to discuss. We usually spend 10 minutes discussing the similarities and differences among the types of species students added to the discussion. The terms mammal, amphibian, fish, reptile, insect, and habitat emerge from the discussion. I emphasize the fact that an animal’s habitat is the place where it lives, breeds, feeds, and hunts. Next, I question the students about pollution. “Pollution is
caused by people who throw their garbage and waste in the environment, " is a common statement given by the students. "Let's think about how pollution affects animals in their habitats" is my response.

As we discuss what we know about the role of pollution in the environment, I explain to my students that they will be reading about a specific animal and investigating a piece of trash during the activity. Then I assign a different animal to each student and distribute a trash item to each one. Before distributing the material, I pose the following questions to guide students during the activity.

- Where does the animal live?
- What does it eat?
- How does it get its food?
- How would you describe its habitat?

I also ask students to list five interesting facts they learn about the animal as they are reading. Next, I distribute one "animal fact card" to each student. Allow about 10 minutes for the students to read the cards and list the information.

Next, I ask them to list three to four properties of the trash item on a piece of paper and encourage them to apply the information they read regarding the animal and its habitat. For example, I tell the students that some properties of an empty plastic soda bottle are soft, plastic. round, and narrow to give them an idea of how they can describe their own trash items. I then encourage them to imagine that the animal they read about encountered that piece of trash in their environment. I ask them to consider two questions as they handle the trash and imagine this scenario:

Figure 1. Trash or Treasure? activity rubric.

<table>
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<tr>
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<tr>
<td>Identifies Important Information</td>
<td>The student lists all of the main points about the animal and its habitat using the article as a reference.</td>
<td>The student lists three to five main points about the animal and its habitat but uses the article as a reference.</td>
<td>The student can list or name two main points from the article but does not highlight the important points.</td>
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<tr>
<td>Identifies Facts</td>
<td>The student accurately locates and identifies three to five specific facts about the animal and its habitat and offers a thorough explanation of the information contained in the article.</td>
<td>The student accurately locates two facts about the animal and its habitat but offers a weak explanation of the information contained in the article.</td>
<td>The student has difficulty locating facts and explaining what was contained in the article.</td>
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<tr>
<td>Identifies Details</td>
<td>The student identifies three to five details about the animal, its habitat, and the trash item and does not refer to the article to explain what was read.</td>
<td>The student is able to identify two details about the animal, its habitat, and the trash item but needs to refer to the article to explain what was read.</td>
<td>The student has difficulty identifying details about the animal, its habitat, and the trash item and has difficulty explaining what was read.</td>
</tr>
<tr>
<td>Summarizes Information</td>
<td>The student uses three to five sentences to describe the helpful and harmful effects of the trash item and can clearly communicate his or her ideas.</td>
<td>The student uses one to two sentences to describe the helpful or harmful effects of the trash item but has some difficulty communicating his or her ideas.</td>
<td>The student has difficulty developing sentences to describe the helpful and harmful effects of the trash item and has great difficulty communicating ideas.</td>
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How would this piece of trash be harmful to your animal?
How would this piece of trash be helpful to your animal?

Following this part of the activity, I invite each student to share their animal, piece of trash, and ideas about the helpful and harmful nature of the trash with the class. Many students generate very creative and humorous ideas and uses for the trash and list appropriate adjectives to describe each trash item and animal. Some examples of student responses are given below:

- Nathan read about the raccoon and received a piece of aluminum foil as his piece of trash. Shiny, soft, flexible, and thin were properties Nathan listed describing the aluminum foil. He thought that the foil would "hurt the raccoon's stomach" if it was eaten. Nathan concluded that since raccoons wash their food before they eat, they could use the foil to "wrap their food to keep bugs out of it if they didn't want to eat it right away." Students often share unlikely uses for the trash items. Encouraging them to try to think like they believe their animal would think as it encounters the trash is one way I respond to those unusual ideas. I also urge them to imagine what life would be like for the animal living in the habitat described in the fact card. These suggestions sometimes help students to think of more realistic and believable uses for the trash items.

- Renee read about the common mole and imagined that a plastic antacid bottle would act as a good place to hide food from other animals. She also felt that any medicine left inside the bottle when found by the mole could be toxic if ingested by the mole. "I think a large mole might get its head stuck inside the bottle if it tried to crawl or sniff inside," she added. Renee described the bottle as hard, plastic, and small.

- Neal shared his ideas about the gray fox and an empty cardboard box. Flexible, sturdy, and brown were the adjectives Neal used to describe the box. He said the cardboard box could be used as insulation for the fox's den during cold winter months and for trapping small animals for food. He also stated that the box could be harmful to newborn cubs that are born blind and helpless if they became trapped inside the box and would be easy prey for predators when the adult foxes are away from the den.
• Christina read about the angelfish and its lifestyle as a reef-dwelling fish. After examining a brightly colored cereal box, she concluded that since the angelfish has colorful markings, it could use the cereal box as camouflage to hide from other reef-dwelling predators. One negative aspect she discovered was the idea that if the angelfish became trapped inside the box it would become easy prey for its predators. She described the cereal box as bright, colorful, and empty and was surprised to realize that she used some of the same words to describe the angelfish.

• Joey read about the pilot whale. He had no problems generating ideas about the metal soda can and was eager to share his ideas with the class. The bendable, shiny, and sharp soda can could get caught in the pilot whale's teeth and prevent it from grabbing its prey as it hunts in the North Atlantic waters. He thought the can could help the pilot whale to locate its prey if the can was floating in the water and the whale's echolocation bounced off the can indicating the presence of a large school of fish.

I am always impressed with the students' creative, logical, and reflective thinking abilities as they complete the activity. Not only do they exhibit an understanding of the effects of pollution on animals and their habitats, they also gain additional knowledge about the specific animal species, its habitat, and special features. The concepts of camouflage, echolocation, prey, and predators were additional concepts typically encountered during the reading segment of the activity and are eagerly shared by the students during the closing discussion.

Extending the Activity
After students share their ideas, I present some additional questions to extend their thinking and spark more interest in reading about animals and their habitats:

• What kinds of litter or trash items have you seen in the environment around your home or school?
• What role do people play in transporting trash into the environment?
• How can people work to clean up the environment for the health and benefit of animals?
• What happens to trash and litter that remains in an environment for a long period of time?
• How does trash and litter affect people?

Another way to extend the learning experience is to take the students on a short field trip around the school building. During the field trip, tell the students to explore the area, looking for animals, insects, living things, and litter that may be in the immediate environment. Encourage them to think about the negative and positive effects of the trash items on the living things they encounter in the outdoor school environment. The field trip helps the students to connect the classroom activity to the physical environment surrounding the school.

Final Thoughts
During the activity, the students write their ideas on paper and share them with the class. Figure 1, page 34, is a rubric to assess the students' writing, speaking abilities, and formation of ideas regarding the positive and negative uses of the trash. Students may also record their ideas in their science journals, which may be assessed informally or with the use of a rubric.

Following the activity, I ask my students what they learned from the experience. Students invariably say they learned many interesting facts about their animals and that they enjoyed discussing the logical and sometimes silly uses the animals had for the trash items. In my book, that makes this trash-inspired activity a real treasure!

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Resources

Internet
National Wildlife Federation Kids and Families www.nwf.org/kids
Zoobooks Magazine www.zoobooks.com