

Where Does All the Garbage Go?

Integration: Health (Environmental); Science; Social Studies; Mathematics

Grade Levels: K-2

Time: 2-3 class periods

Materials:

- Paper grocery bags
- Large garbage bags
- Disposable gloves (non-latex, in case of allergies)
- Bathroom or health room-type scale
- *Garbage, Garbage Everywhere* handout
- *What's in the Garbage* handout (optional)
- Paper and drawing supplies

Objectives:

Students will:

1. Discuss the importance of controlling the amount of garbage that is produced at home, in school, and in their communities.
2. Understand what Antarctic explorers do to protect Antarctica's environment.
3. Explain ways for adults and children to manage garbage daily.

Lesson:

1. Ask students the following questions
 - a. "Do you ever think about the garbage that you produce?"
 - b. "Where does the garbage that is produced where you live go? (landfill, incinerator, etc.)"
 - Teacher may need to explain to students the process in the area.
 - c. "What would happen if everyone just threw their garbage outside and left it there?" (the streets would be dirty, there would be disease and vermin, the area would be ruined).
2. Conduct a mini-lecture about garbage in Antarctica.
 - a. Tell students that for a long time, people that explored Antarctica did not care about what happened to the garbage they left.
 - b. Many times when they left to go back to their own countries, they left behind litter, used equipment, abandoned building and shacks, and the remains of animals that they had killed for food.
 - Because Antarctica is like a big freezer, nothing rots away.

3. Explain that today the scientists who live on Antarctica and explorers that visit are more concerned about what happens to Antarctica. They are trying to keep it beautiful.
 - a. They only bring the supplies that they know they will need. This means there is less of a chance that they will have things left over.
 - b. They do not leave their garbage on Antarctica when they leave. The garbage gets shipped back to their country with them.
 - Garbage is placed on airplanes or on boats and taken back to the other countries for disposal.
4. Tell students that explorers like Ann Bancroft and Liv Arnesen are very concerned about protecting Antarctica and keeping it clean and beautiful.
5. Ask students why it may take more work for Ann and Liv, or other explorers, to keep Antarctica clean.
 - a. Ann and Liv are skiing across Antarctica, not staying in one place.
 - b. They are carrying all of their supplies with them.
 - c. There are no garbage cans to throw garbage in and no restrooms along the way.
6. Tell students to imagine that they are explorers in Antarctica. Ask, “What are some examples of the waste that you may have as explorers?” (food, paper and packaging materials, fuel (cooking) tanks, human waste).
7. Ask students what they think explorers do with the garbage they produce. (carry it with them and ship it out at the end of the expedition)
8. Explain that explorers like Ann Bancroft and Liv Arnesen of the Bancroft Arnesen Expedition are very concerned about protecting Antarctica. They have to prepare ahead of time and work hard during the Expedition to keep Antarctica clean.
 - a. They re-package all of the food they bring with them so that there is very little paper or plastic.
 - b. All paper and plastic waste is shipped out of Antarctica when they leave.
 - c. They consume all of the food they bring with them.
 - d. The fuel drums, which earlier expeditions would leave on the ice, are shipped out of Antarctica.
 - e. Human waste is buried.
 - f. There is no wastewater. Because the food and water freezes, the food must be eaten quickly and scraped from the bowl. The cooking gear cannot be washed.
9. Ask students what they think Antarctica would be like if everyone did not work to keep it clean (dirty, smelly, garbage dump). Ask students what problems would arise if people dumped their garbage in Antarctica (water would be polluted by garbage falling in, animals could become sick from the garbage, etc.)

10. Tell students that, as they can see, protecting Antarctica's environment takes work. Tell them that it is just important to protect the environment where they live.
11. Have students perform the activity "What's In Our Garbage At School" to determine how much garbage one class produces in a day.
 - a. Have the class collect all the garbage they produce during one school day. If students move to other classrooms during the day, provide them with paper grocery bags so that they may collect their garbage.
 - b. At lunchtime, the class should have its own garbage so that their garbage will remain separate from the other classes. Have students record what was in their lunch garbage before throwing it away (this way no one will have to touch it later).
 - c. After one day's worth of garbage is collected, combine all the garbage and weigh it. Have the students work in small groups to complete the *Garbage, Garbage Everywhere* worksheet (for groups who can add).
 - If students have mastered multiplication, have them complete the *What's In the Garbage* handout.
 - d. Wearing disposable gloves, they will need to separate the garbage to identify basic materials. The go through the garbage piece by piece. Have students identify what it is and what material it is made of. Keep a record on the board. Then have students read their list of lunchtime garbage and record their data.)
12. After completing the activity, ask students for their reaction to the amount of garbage that is produced in schools alone. Discuss what types of garbage are found most often.
13. Ask students for suggestions of what they can do in the classroom and at home to help keep the Earth clean and beautiful.
 - a. Have students to decide on one suggestion to begin practicing in the classroom.

ALTERNATIVE: For younger students, focus the discussion around the topic of littering.

EXTENSION: Have someone from a local recycling plant speak to the class on the importance of recycling.

Assessment:

Teachers will assess:

1. Student's recognition of the importance of proper garbage disposal in Antarctica and where they live.
2. Student's ability to describe how explorers prevent pollution.
3. Student's mathematics skills.
4. Student's ability to work cooperatively.