



### OVERVIEW

Students will learn about the role of plastic products in our society and the benefits and potential harmful effects of plastics by creating artwork from commonly found plastic items.

### Learning Targets

- Students will examine how plastic is used in our lives every day and how plastics can help make our lives easier.
- Students will identify how some of the properties of plastic make it harmful to the environment.
- Students will develop a plan to reduce plastic use and evaluate its effectiveness by tracking plastic water bottle use.

### GLEs

See attachment

### Materials Needed

- A variety of plastic materials including bottle caps, packaging, bottles and plastic bags — enough for every student to have several options to create an art project. These can be obtained by the students from their home, the school or litter cleanups.
- Craft supplies for every student:
  - Glue
  - Markers
  - Scissors
  - Construction paper
  - Other materials that students identify as needed
- Water bottle tally sheet

### Background Information

Plastic is all around us. There are more than 45 basic families of plastics and each have hundreds of variations. Plastic is made from crude oil and natural gas. Plastics are extraordinarily diverse and are used to make a variety of consumer products, including contact lenses, soft drink bottles, shopping bags, computer consoles and car airbags. The plastic industry has developed stronger and more versatile products over the years, creating an overall reduction in packaging materials, thus reducing waste and conserving resources. Plastics are helpful because they allow us to keep perishable foods fresh longer and by helping to protect products from damage, spoilage and breakage. Plastics are also useful for many applications because they don't break down very easily, can be made cheaply, and can be made to be flexible and moldable.

Unfortunately, the very things that make plastic useful can also create problems for the environment. If plastics are not disposed of properly, they can be very dangerous to our planet. Usually when we throw something away in the garbage, bacteria can eat (decompose) these things so that can be used again by plants and wildlife. These things are called biodegradable. Non-biodegradable materials, like glass, steel and plastic cannot be turned into nature-friendly products. The bacteria are unable to eat them or break them up. Plastic is harmful to our earth because it is non-biodegradable.

### Background Information (continued)

When plastic is thrown out on land, it causes litter that is unsightly and can harm wildlife. When we throw plastic in water it harms the marine animals. For example, if animals eat plastic, it gets stuck in their stomachs and makes them sick because the bacteria in their stomachs cannot break the plastic up into smaller pieces. These animals end up starving to death because their stomachs fill with plastic and there is no room for food. Some body wash and toothpaste products contain microbeads of plastic that wash down the drain and into our waterways where they harm wildlife.

Our world keeps demanding plastics from factories because of their usefulness. We can help these factories and the environment by giving back the old plastic in our house: recycling. For example, recycling can make new plastic items by using the old ones. We can also reuse, or repurpose (up-cycle), many plastic items. Many people reuse their plastic grocery bags as trash can liners! We can also help by reducing how much plastic we use (for example, using cloth bags for shopping instead of plastic bags). Imagine: If all of us stop asking for plastic bags, the factories will have no reason to make them — they can then start making beautiful cloth bags!

## ACTIVITY

### Part I

1. A few days before the activity, have students collect plastic items that would have been thrown away. Have them bring them to school the day of the activity.
2. Have students examine their trash. What were the items used for? Plastics have many beneficial uses, and students should be aware of how they are used in their homes and communities. Explain to students some of the properties of plastic that make it so useful.
3. Show the kids the video, The Majestic Plastic Bag <https://www.youtube.com/watch?v=GLgh9h2ePYw>. What are the properties of plastic that are beneficial to us when we use them, but harmful to the environment?
4. Briefly discuss with students how plastic can be harmful to the environment (review background info from Lesson 6 – Trash Effects on Wildlife).
5. Because plastic can be harmful to the environment, encourage students to identify ways to reduce the use of the plastic items they brought in. For example, they can use reusable containers for their lunch instead of plastic bags.
6. Continue to have students examine their trash and identify materials that may have been reused or repurposed. For example, plastic bottles can be turned into bird feeders.

### Part II

1. Another way to reuse plastic is to turn it into art. You may want to show students some examples of trash that has been turned into art from the resources below. Explain to students that they will be creating “Plastic Art” in order to reuse the plastic and keep it out of the landfill. They will be using the plastic materials gathered to create an animal of their choosing.
2. Allow the students to pick several different plastic media to create their own plastic art animal
3. After the students have worked on their creation, allow them to share with the class what type of animal they made and how they have saved this animal from the harmful effects of plastics by working on this project.

### Part III

1. Organize a litter cleanup on the school campus or at another site (see Lesson 1: What is Litter?). Use the collected plastic litter to create artwork.
2. Let students get creative with their art. Works may be of wildlife, landscapes or abstract creations of how the litter has made the students feel, etc.
3. Have students research and create small educational statements about the harm plastic and litter can cause in the environment.
4. Display the students' artwork and educational statements around campus to create awareness about plastic.

### Part IV – Plastic Assessment

1. In this plastic assessment, students will calculate how many plastic water bottles they use in a year, and develop an action plan to reduce their use.
2. Using the plastic bottle tally sheet, have students count how many water bottles they used the previous week. Use the sheet to help calculate how many pounds of CO<sub>2</sub> were used to make those plastic bottles.
3. Continue this process each Monday for one month. At the end of the month, use the tally sheet to help estimate how many plastic bottles the students use during the year along with how much CO<sub>2</sub> was used to make those bottles.
4. Have students make a commitment and develop a plan to use fewer water bottles by reusing their water bottles, using refillable bottles, etc.
5. After a month, have students complete steps 2 and 3 again, and calculate the difference in plastic water bottle use.
6. How much CO<sub>2</sub> did the students save? The class? What if the whole school made efforts to reduce plastic use?
7. As a school-wide extension, students can lead an assessment of plastic use in the cafeteria.

Optional: Younger students may find it easier to graph their water bottle usage over time, while older students can graph as an extension of the activity.

### CALL TO ACTION

1. Many large grocery stores and some stores such as Target, Wal-Mart, Lowe's and Home Depot have collection bins for plastic bags. Programs that collect grocery bags also recycle other plastic bags and wraps including:

Newspaper Bags – Dry Cleaning Bags – Bread Bags – Produce Bags – Toilet Paper Wraps – Napkin Wraps – Paper Towel Wraps – Furniture Wrap – Electronics Wrap – Plastic Retail Bags – Grocery Bags – Food Storage Bags – Cereal Box Liners – Diaper Wrap – Plastic Shipping Envelopes – Case Wrap – Ice Bags – Bags Labeled #2 or #4

2. Plastic bags and wraps can be recycled into plastic lumber that is used to make park benches, backyard decks and fences – even playground equipment. They also can be recycled into new plastic bags – and then be recycled again. Start a collection program at your school for these plastic items to be dropped off for recycling.
3. Research a way to start a plastic bag recycling program at your school. The Plastic Bag Challenge is a competition to see which school can collect the most recycled plastic bags to recycle with Trex, a company that makes lumber out of used plastic and wood. Trex used more than three billion plastic bags last year to make its products. Go to [Trex.com](http://Trex.com) to learn more.
4. Learn more about "plarn" (plastic yarn) and how you can use it to make items, such as sleeping mats for the homeless.

### OTHER RESOURCES

- **See KLB Lesson 6: Trash Effects on Wildlife**
- **Plastic Planet Video** <https://www.youtube.com/watch?v=73sGgmZoMBQ>
- **Louisianan Marcus Erikson's work on plastic in our waterways** <http://www.5gyres.org/>
- **40 Terrific works of art made from common trash** <http://www.noupe.com/inspiration/showcases/40-terrific-works-of-art-made-from-common-trash.html>
- <http://www.healthguidance.org/entry/14901/1/The-Effects-of-Plastic-Bags-on-Environment.html>
- **Learn about Keep Oklahoma Beautiful's Plastic Bottle Cap Art Competitions** <http://www.keepoklahomabeautiful.com/end-litter-5th-grade-elementary-contest>
- **Keep Louisiana Beautiful Website** <http://keeplouisianabeautiful.org/>
- **Keep America Beautiful Website** <https://www.kab.org/>
- **Background information taken from Keep America Beautiful, Waste in Place Curriculum, Lesson: Plastics By the Numbers.**