



EARTH DAY BAG PROJECT

2019 LESSON PLAN



Grades: 3-5 | Time: 60 minutes | <http://bit.ly/NEMIEDBP>

PURPOSE: This lesson helps youth explore the impacts of single-use plastics and be part of the solution by raising awareness about the issue and importance of refusing to single use. Choosing to be stewards of our Great Lakes and ocean is a personal decision and should not be forced. However, youth should have opportunities to explore and learn.

OBJECTIVES: Students will be able to...

- Explain multiple ways to be a part of the solution and refuse single-use plastics
- Share their knowledge of the impact of plastics on the Great Lakes and ocean in their community with decorated grocery bags
- Identify ways that plastics are negatively affecting our community, the Great Lakes, and ocean
- Learn more about being a better steward of the Great Lakes and ocean

MATERIALS: Crayons or Markers | Paper grocery bags | Printed Labels | Videos

Google drive link to videos (<http://bit.ly/2018EDBPvideos>)

BACKGROUND INFORMATION:

Oosthoek, S. (March 24, 2017). Deep-sea dump: Trash is collecting on the Arctic seafloor. *Science News for Students*. Retrieved from: <http://bit.ly/trashocean>

Yeager, A. (Dec. 16, 2016). Food-like smell on plastic may lure seabirds to eat it. *Science News for Students*. Retrieved from: <http://bit.ly/seabirdsplastic>

LEADERSHIP FOR THE NORTHEAST MICHIGAN GREAT LAKES STEWARDSHIP INITIATIVE PROVIDED IN PARTNERSHIP BY:



PROCEDURE

*Before launching the lesson, reach out to a local grocery store to partner with you for this effort. You will use paper grocery bags from the store, and once decorated, these bags will return to the grocery store on **Earth Day (4/22)** to raise awareness about the impact of plastic pollution and solutions to this growing problem.*

1. Ask youth - what are single-use plastics?

- Brainstorm where you might find single-use plastics.

2. Ask youth - do you think single-use plastics are a problem for our Great Lakes?

- Quickly ask each student to respond yes or no. Do not comment!
- Then, ask a couple youth, who responded yes, to explain why plastics are a problem.
 - Look for personal connections (e.g. I cut my foot on a piece of plastic at the beach).
- Then, ask a couple youth, who responded no, to explain why plastics are not a problem.
 - Many people do not think about the impact of plastic on our Great Lakes.

3. Today, we are going to explore the impact of single-use plastics on our Great Lakes and ocean.

4. Watch *How Much Plastic is in the Ocean?* (<http://bit.ly/howmuchplasticinocean>) and discuss video referencing the guiding questions below.

- How did plastic animals that were spilled in the Pacific Ocean end up in the British Isles?
 - Ocean currents transport water, nutrients, and plastic pollution all over the earth.
- When trash and plastic enter our storm drains in northeast Michigan, where does it eventually end up?
 - Most of our storm drains flow directly into local streams or rivers and sometimes into the Great Lakes.
 - When trash enters our storm drains, that trash flows into a local stream or river.
 - All but two rivers in Michigan lead to the Great Lakes, and the Great Lakes eventually flow to the ocean.
 - Once in the Great Lakes or ocean, wildlife, like birds and fish, can confuse this plastic as food and eat it.
- What happens when plastic enters our rivers, lakes, and ocean?
 - In the water, plastic breaks down into smaller and smaller pieces when exposed to sunlight and UV radiation. While breaking down, these plastics act like sponges and absorb toxins found in the water, like PAH, DDT, and PCBs. Plastics break into small enough pieces and are commonly mistaken for food by marine life. When plankton or fish eats plastic; the plastic enters the food web.
- Discuss the 6 “R’s”.
 - Reduce, Reuse, Recycle, Rethink, Refuse, Repair
- Where does plastic make sense?
 - Hospital/doctor/medical, longer-use plastics like in vehicles to make them lighter, etc.

5. Watch *The Problem with Plastics* (<http://bit.ly/problemwithplastics>) and discuss video referencing the guiding questions below.

- Ask youth again - Do you think single-use plastics are a problem for our Great Lakes?
- What are the risks to wildlife with plastic pollution?
 - Entanglement, ingestion, death
- How many Great Lakes species of fish had microplastics in them, in their study?
 - All 25 species that were studied had plastics in them
- If plastics are affecting wildlife, do you think they are affecting humans too?
 - Yes, plastics can move up the food chain as we eat animals that have ingested plastics. Recent studies have found microplastics in our drinking water
- What are some ways the Shedd Aquarium is cutting down on plastic use?
 - No straws, no plastic lids, no plastic bags in café and gift shop.

6. Watch *Nature's Child- No More Plastic* (<http://bit.ly/natureschildnomoreplastic>) and discuss video referencing the guiding questions below.

- How does Ray catch our attention and make her point in the video?
 - Allow youth time to share their understanding from the video.
- How many plastic bags do you think you use in a single year?
 - Every time we go shopping and choose to use a plastic bag, that number goes up. Americans use on average 500 plastic bags each year.
- What methods did Ray talk about for reducing our plastic pollution?
 - Skip the straw!
 - Reusable plastic bags
 - Reusable water bottles
- What are a couple of alternative materials for drinks like soda and juice? Why are those better than plastic?
 - Glass and aluminum, they are easily recyclable and reusable and break down in a biodegradable way
- This video was made by an 8 year old and her mom to educate us about plastic pollution.
 - Brainstorm ways we can raise awareness about this issue in our community (e.g. tell family and friends about the harm of plastics on our environment, make posters, decorate paper bags!)

7. Today, we are going to decorate paper bags with messages about the impact of plastic pollution on our Great Lakes and solutions to this problem. These bags will be given out to customers at the local grocery store on Earth Day (4/22), and they will help our community to understand how plastic impacts our Great Lakes and what we can do to refuse to single use.

STANDARDS ALIGNMENT AND BRIEF CONNECTION

The Earth Day Bag Project is a conversation about the changes to our environment due to plastics and how we (our community and students) can be the solution. Plastics in our ocean have impacted wildlife and research on its impact in the Great Lakes is just beginning.

3-LS4-4- Biological Evolution: Unity and Diversity - Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.* | <http://bit.ly/3-LS4-4>

The Earth Day Bag Project is an opportunity to help youth explore the impact of plastics on our Great Lakes ecosystem through a conversation about the organisms that eat plastics and why they mistake plastic for food.

4-LS1-2- Molecules Organisms: Structures and Processes - Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways. | <http://bit.ly/4-LS1-2>

The Earth Day Bag Project may spark a conversation about energy use – otherwise a loose connection as plastic is a petrochemical product (i.e. made from oil).

4-ESS3-1- Earth and Human Activity - Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment. | <http://bit.ly/4-ESS3-1>

The Earth Day Bag Project is a great way for youth to be part of a solution as they explore ways individuals and their communities can work together to protect and preserve our Great Lakes and other natural resources.

5-ESS3-1- Earth and Human Activity - Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. | <http://bit.ly/5-ESS3-1>

As demonstrated in the Plastics 101 video, plastics are changing an aspect of our ecosystem leading to a much broader impact.

5-LS2-1- Ecosystems: Interactions, Energy, and Dynamics - Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. | <http://bit.ly/5-LS2-1>