

Giant Garbage Patches: Ocean Gyres

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Grade Level 1-2
Duration 3 class periods

National Standards

**GEOGRAPHY
ELEMENT 5:
Environment and
Society**

14. How human actions modify the physical environment

AZ Standards

ELA

Writing

Text Types and Purposes

1.W.1 Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure.

1.W.2 Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.

2.W.1 Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section.

2.W.2 Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.

SCIENCE

Life Science Standards

1.L2U2.7 Develop and use models about how living things use resources to grow and survive; design and evaluate habitats for organisms using earth materials.

1.L4U3.11 Ask questions and explain how factors can cause species to go extinct.

Arizona Social Science Standards

GEOGRAPHY

Human-environment interactions are essential aspects of human life in all societies.

1.G2.1 Compare how human activities affect culture and the environment now and in the past. Such as agriculture, industrialization, urbanization, and human migration.

2.G1.2 Describe how human activities affect the communities and the environment of places or regions.

SIOP Elements		
<p>Preparation</p> <p>Adapting content</p> <p>Linking to background</p> <p>Linking to past learning</p> <p>Strategies used</p>	<p>Scaffolding</p> <p>Modeling</p> <p>Guided practice</p> <p>Independent practice</p> <p>Comprehensible input</p>	<p>Grouping Option</p> <p>Whole class</p> <p>Small groups</p> <p>Partners</p> <p>Independent</p>

Integrating Processes Reading Writing Speaking Listening	Application Hands on Meaningful Linked to objectives Promotes engagement	Assessment Individual Group Written Oral
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Arizona English Language Proficiency Standards

Basic Level
Writing
Standard 3 By the end of each language proficiency level, an English learner can speak and write about grade appropriate complex literary and informational texts and topics.
B-1: communicate simple messages about a variety of topics, experiences, or events.
B-2: add appropriate drawings or other visual displays to clarify thoughts and feelings about a variety of topics, experiences, or events.

Overview

There is an estimate of 5 trillion pieces of plastic garbage floating in the world’s ocean gyres. Students should realize that humans have caused this problem and the plastic is harmful to the environment.

Purpose

In this lesson students will learn about how plastic in the oceans is harmful and how the problem can be solved. They will then generate ideas for cleaning up the ocean and think of ways that plastic can be recycled. This lesson contains strategies for diverse learners (ELLs).

Materials

- LDC projection device/internet/computer
- Colored pencils, markers, paper
- 2 bowls, water, small amount of newspaper, 2 plastic lids
- What Happens When Plastic Goes into the Ocean? Worksheet
- I Have an Idea! worksheet
- Fixing the Problem worksheet
- Giant Garbage Patches PowerPoint
- What is your idea on what we can do to clean up our oceans? drawing paper
- What do you know about plastic in the ocean? How can we fix this problem? writing assignment
- Scoring Guide for Writing
- Storyboard (optional assessment)
- Vocabulary cards

Objectives

The student will be able to:

1. explain what happens when plastics are dumped in the ocean.
2. describe a solution to this problem.

Procedures

Note: The videos may begin with an advertisement. You may want to preview the sites before playing to make sure the advertisements are appropriate for the age level of the audience. Also, the videos use lots of big numbers. Deal with this as you wish.

Prior to the lesson: Add water to two large mixing bowls and tear up a small amount of newspaper and gather 2 or 3 plastic lids.

SESSION ONE

1. Begin the lesson by having students point out objects in the room that are made of plastic. (tote trays, rulers, etc.). Now ask, “What happens to one of those plastic items when it is no longer needed?” **(Preparation: Linking to Past Background)**
2. Now ask, “What would happen to that item if you were on a ship in the ocean? Do you think somebody might decide to just throw it in the water?” What other ways might plastic get into the ocean? (cities near the ocean might dump their trash there, people on the beach leave trash there and the ocean washes it into the water, etc.) Post the Vocabulary Cards on Word Wall so students can refer to them if needed. **(Scaffolding: Comprehensible input)**
3. Show the video: How much trash is in the ocean? <http://news.discovery.com/earth/videos/how-much-trash-is-in-the-ocean-video.htm> **(Integrated Processes: Listening)**
4. Distribute the What Happens When Plastic Goes into the Ocean? Worksheet. Using the left side of

the worksheet, explain what a big problem this. Have students draw illustrations for the concepts on the right side. When they are done drawing, they can fill in the sentence blanks. **(Scaffolding: Guided Practice)**

5. Conclude the session with taking 2 bowls of water and adding some cut up newspaper (or just paper) to one bowl and some plastic lids (bottle or container tops) to the other bowl.

6. Have students take turns stirring the water with their hands. Continue having them stir the bowls of paper and plastic for the next several sessions so they can see what is happening to the paper versus the plastic. **(Application: Promotes engagement, Scaffolding: Comprehensible input)**

SESSION TWO and THREE

1. Show the Giant Garbage Patches PowerPoint to remind students of the problem of throwing plastic in the ocean. **(Integrated Processes: Listening)**

2. Stop at slide 10. Distribute the I Have an Idea worksheet.

3. Give students 10 minutes to draw their idea of a solution to the problem of having plastic in the ocean. **(Application: Hands on, Promotes engagement)**

4. Show slides 11-17. As each new slide appears, have students who thought of that idea raise their hands. At slide 17, let students explain their ideas that were not given in the PowerPoint. **(Application: Promotes engagement)**

5. Distribute Fixing the Problem worksheet. Explain the writing assignment (slide 18) or storyboard assignment as an optional way to assess this lesson. The storyboard includes a top space for a drawing and a bottom space for any words they might write. It is your choice on whether to give them the previous worksheets/drawings completed. **(Assessment: Individual or Group, Written)**

6. Conclude the lesson with a child holding a plastic lid from the one bowl and another child trying to hold the paper from the other bowl. The comparison questioning should point out that the paper dissolved but the plastic is still the same. **(Application: Promotes engagement, Scaffolding: Comprehensible input)**

Assessment

ELA and Geography:

The Fixing the Problem assignment can be graded for geography content and writing skills. Students

will score 80% or higher on the Scoring Guide for Writing to be considered mastery.

Storyboard (Optional Assessment)

Students should have at least one drawing in each of the boxes in the Storyboard and these drawings should reflect the topic studied. Mastery will be considered 4 drawings as accurately reflecting the topic.

Extensions

Bring up the idea of innovativeness and tell them the story of Boyan Slat (see YouTube below <https://www.youtube.com/watch?v=ROW9F-c0kIQ>) who is only 19 years old when he begins his quest to clean up the ocean and invents an idea that uses little power and works to round up the plastic in the ocean.

Sources

How Much Trash is in the Ocean?

<http://news.discovery.com/earth/videos/how-much-trash-is-in-the-ocean-video.htm>

What is a Gyre?

<https://www.youtube.com/watch?v=h6i16Crl8ss>

Adidas' new shoes are made from ocean waste and retrieved gill nets.

<http://www.takepart.com/article/2015/12/12/adidas-ocean-plastic>

Sustainable Plastic Furniture at Dwell on Design

<https://www.plasticmakeitpossible.com/plastics-at-home/home-garden/interior-design-decor/sustainable-plastic-furniture-at-dwell-on-design/> (very short and worth playing the video)

TED: How the oceans can clean themselves: Boyan Slat at TEDxDelft

<https://www.youtube.com/watch?v=ROW9F-c0kIQ>
Published on Oct 24, 2012 19-year-old Boyan Slat combines environmentalism, entrepreneurship and technology to tackle global issues of sustainability. After diving in Greece, and coming across more plastic bags than fish, he wondered; "why can't we clean this up?" (It is a little long and complicated for K-3 students but great background information for the teacher and completing the Extension above.)