



UNITED NATIONS ASSOCIATION
OF THE UNITED STATES OF AMERICA



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Unit Title: UNSDG #14 - Life Below Water
Lesson Day(s) #: 3-4 Day Lesson

Results

<p>Learning Goals (know's, do's, understanding, vocabulary)</p>	<p>K: UN Sustainable Development Goal 14 - Life Below Water</p> <p>U: Challenges currently facing our oceans including pollution, garbage patches, and microplastics.</p> <p>D: Become a resident expert on a certain topic of marine conservation and present to class, build a device that can remove pollutants to the ocean but avoid by catch.</p>
<p>Topical Question(s):</p>	
<p>Lesson Question(s):</p>	<p>What types of pollutants are in the ocean and what is a garbage patch? How can we remove pollutants from the ocean without harming marine life?</p>

Evidence

<p>Assessment of learning (may include more than one assessment):</p>	<p>Typed Reflections Mini group presentation on marine debris Device to Save the Ocean construction</p>
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Plan

Series of learning activities to include assessment for learning, activator and closure:

Day 1

[Life Below Water Google Slideshow](#)

[Trash Talk Videos](#)

[Trash Talk Graphic Organizer](#)

Activator

- Students complete quick write, answering two questions and share out responses.
 - When you think about the ocean, what is the first thing that comes to mind?
 - When you think about challenges facing marine life, what topic do you feel you know the most about? What do you think you could comment on?

What... is a Garbage Patch? [General Information video](#)

- Teacher shares quick facts about garbage patches.
 - Large areas of the ocean where litter, fishing gear, and other debris - known as marine debris - collects
 - Formed by rotating ocean currents called “gyres” (basically big whirlpools that pull objects in)
 - 5 gyres in the world: 1 in the Indian Ocean, 2 in the Atlantic Ocean, and 2 in the Pacific Ocean
 - “Patch” is a misleading word because it implies that these are islands of trash. Instead, debris is spread across the surface of the water and from the surface all the way to the ocean floor. Debris can range from large abandoned fishing nets to microplastics
- Students are split as evenly as possible into 6 separate groups and assigned a research question. Students watch a 2-ish minute video excerpt from the video [Trash Talk](#) within their group and prepare a mini presentation to share with the rest of the class as “resident experts.”
- Students practice active listening by jotting down notes in the graphic organizer for each question as they listen to mini-presentations.

Days 2–4

[Reflection Questions](#)

Warm Up: Students study four photos of marine life trapped in ocean debris and caption 2 of them as if they were a journalist.

Activator

- Teacher scrolls through [Sculptures of Sea Creatures Made from Ocean Trash](#) article on the board and class engages in discussion of what they see, how it makes them feel, what it makes them wonder about, etc.

Design a Device to Save the Ocean

- Students watch ~5 minute [video on Mr. Trash Wheel in Baltimore](#). While watching, teacher will periodically pause video to prompt students.
 - What do you think the design process looked like for Mr. Trash Wheel?
 - What challenges did the inventors face?
 - How do you think trial and error played a role in designing Mr. Trash Wheel?

- What is Bycatch?
 - Bycatch: accidental capture of non-target species such as dolphins, marine turtles, and seabirds
 - Difficult (nearly impossible) to remove large amounts of debris from the ocean without disturbing ocean life
 - Removing slowly, piece by piece, takes too long and is incredibly expensive
- Students read article from Smithsonian Magazine: [This New Installation Pulled 20,000 Pounds of Plastic from the Great Pacific Garbage Patch](#)
- Designing a Device
 - Teacher will have placed at the front of the room a bucket or large container filled with water and “marine debris”. Debris will appear as beads, plastic bottles and bags, cans, trash, fishing lines, and other small items to represent pollutants. The water will also contain plastic fish to represent marine life.
 - Using upcycled/crafting materials, students will design a device to remove debris from the water without disturbing the “ocean life.”
 - Students are split into pairs/small groups and discuss the problem and then create a blueprint sketch.
 - Using materials, students build their device.
- Testing the Device
 - After completion of construction, groups come up one by one to test their devices using the makeshift ocean.
 - The device should...
 - Pick up debris, but leave behind any marine life
 - Leave behind as much water as possible
 - After initial testing, as time allows, students may make adjustments to their device and then retest.

Reflection

[Question Handout \(if desired\)](#)

- Students consider reflection questions and engage in class discussion.
 - What were some challenges you faced while designing your device? What were some things you needed to consider before you began constructing your design?
 - How did your work group together?
 - Did you find this activity challenging? Why or why not?
 - Why do you think it would be more challenging to clean up our waters on a global scale? What barriers exist that would make this such a difficult task to accomplish?

Additional Resources

[NOAA Podcast: What is a Garbage Patch?](#)

[What are Garbage Patches? & Tips to Save the Ocean Handout](#)

[What We Know About Garbage Patches Poster](#)

[What is Bycatch?](#)

[How Finding Nemo Ruined an Ecosystem](#)

[This New Installation Pulled 20,000 Pounds of Plastic from the Great Pacific Garbage Patch](#)

Needed Materials

- [Trash Talk Graphic Organizer](#)

- For STEM Challenge

- Pony beads, plastic cups and/or other small items to represent pollutants
- Rubber fish or objects that represent marine life
- Small container, bucket or inflatable pool
- Water
- Upcycling and crafting materials that can be used to create inventions (more may be added if the group decides)
 - Plastic cups solo (2 per group)
 - String
 - Hot glue
 - Popsicle sticks
 - Pipe cleaners
 - Plastic wrap
 - Aluminum foil
 - Plastic coat hangers (1 per group)
 - Scissors
 - Glue