

Whitney Lab Online

Module Title: Conservation Station

This module covers the various types and causes of water pollution, as well as several concepts learners can implement in their everyday life to prevent pollution and waste, as well as help aquatic environments.

Learning Objectives

After engaging in this activity, students will be able to:

- Summarize water pollution and its effects
- Describe types and causes of water pollution
- Identify practical ways to help aquatic environments

Lesson 1: Introduction

#	Media	Content	Dev Notes
1	Video/Text Layout Saltwater estuary alt: video of aerial view of a saltwater estuary	Welcome Junior Conservationists! Did you know that our actions can have a great impact on the environment? We are responsible for caring for our natural bodies of water and safeguarding our aquatic environments, like the Mantanzas River and estuary. Yet some of our everyday practices are contaminating our water.	
2	Video/text layout Use “water pollution” getty video Alt tag: video of dirty water with trash floating on the surface	What is Water Pollution? Water pollution is caused when waste materials (trash, oil, chemicals) enter a body of water. All forms of life on earth need water to survive, so taking care of our water and preventing water pollution is very important [Did You Know?: About 70% of the earth is covered by water] Use image earth.jpg Alt tag: image of the whole Earth at a distance showing land and water	Fun fact/Did you know?

Lesson 2: Water Pollution Overview

#	Media	Content	Dev Notes
3	<p>Under the surface: use Getty video on “Conservation Station” board: “contaminated weed algae green lake water in summer”</p> <p>Alt tag: video of green contaminated weed algae on a lake</p> <p>On the surface: surface.jpg Alt tag: image of oil on the water’s surface</p> <p>In the ground: underground.jpg Alt tag: a ground pipe with water flowing into a stream</p>	<p>Types of Water Pollution</p> <p>Water can be affected by pollution in different ways. Click on each image to learn more.</p> <ul style="list-style-type: none"> • Under the surface. High amounts of fertilizers and sewage can enter waterways and support the growth of harmful weeds and algae. • On the surface. Artificial chemicals like insecticides, pesticides, and runoff from farms can mix with the surface water. • In the ground. Artificial chemicals can also negatively affect our underground pure water supply, like Florida’s aquifer system that supplies our drinking water. <p>[Did You Know?: Approximately 4 billion pounds of trash enter the ocean each year.]</p> <p>Use image: plastic waste.jpg Alt tag: floating plastic trash on the surface of the ocean</p>	<p>Did you Know Source: https://www.rubicon.com/blog/ocean-pollution-facts/</p>

#	Media	Content	Dev Notes
4	<p>Video/text layout Use Getty video from board “sewer pipes at shore, stain of oil...”</p> <p>Accordion component to read the text under the bulleted heading</p>	<p>What Causes Water Pollution? Most of the waste we produce on land eventually reaches the oceans. This happens in many ways, including:</p> <ul style="list-style-type: none"> • Toxic chemicals • Factories, mines, and other industries dump chemical wastes into water sources. • Sewage • Our sewage is treated in water treatment plants and the waste that contains harmful bacteria and chemicals is often disposed of into the sea. • Garbage • Our garbage ends up in the water when people litter or when it is dumped into the oceans by waste management companies. • Oil spills • Oil spills occur when oil companies accidentally spill oil into in the oceans. • Air pollutants • When companies coal and other fossil fuels – the pollution in the air mixes with water vapor resulting in acid rain that returns to bodies of water. • Agricultural runoff • When rain flows through farms that use harmful fertilizers and pesticides, the rain carries these chemicals into rivers, canals, and underground water reservoirs • Urban and suburban runoff <p>When it rains in cities and towns, the rain carries fertilizers and pesticides from lawns; oil, grease, and other toxic chemicals from cars and trucks; dirt and sand; and other pollutants into streams and rivers (and eventually estuaries and the ocean).</p> <p>[Did You Know?: Plastic waste, including water bottles, washes into the ocean and kills 1.1 million marine creatures annually.]</p> <p>Use image water bottles.jpg Alt tag: an image of plastic cups and bottles floating at the surface of the water</p>	

#	Media	Content	Dev Notes
5	<p>Flip Cards Dead fish.jpg</p> <p>Alt tag: image of dead fish floating in dirty water near the shore and a bird standing nearby</p> <p>Oil spill.jpg</p> <p>Alt tag: image of an oil spill and a starfish covered in oil floating at the surface</p> <p>Sea turtle in trash.jpg</p> <p>Alt tag: image of sea turtle swimming in the ocean with a plastic bag wrapped around its neck</p> <p>Polluted canal.jpg</p> <p>Alt tag: image of a filthy water canal between two rows of houses</p>	<p>How Does Water Pollution Harm the Environment?</p> <p>You might already be able to imagine how pollution hurts aquatic ecosystems. Select each image to learn more about how water pollution harms the environment and the animals:</p> <ul style="list-style-type: none"> • When water pollution poisons one animal in an ecosystem, it hurts the whole food chain • Oil spills can leave a huge section of the ocean completely lifeless and further harm wildlife on the shore who depend on these marine animals for their food • Marine animals can get injured by eating or getting caught in trash • Polluted water can hurt people by transmitting bacteria and disease <p>[Did You Know?: The average hamburger takes 2,400 liters, or 630 gallons, of water to produce!]</p> <p>Use image: hamburger.jpg alt tag: image of a hamburger</p>	<p>Did you know source: https://www.nationalgeographic.com/environment/freshwater/freshwater-crisis/#close</p>

Lesson 4: Making a Difference

#	Media	Content	Dev Notes
6	<p>Single image/text layout 2 column</p> <p>Carbon footprint.jpg</p> <p>Alt tag: image of the planet Earth covered with a trail of black bootprints</p>	<p>Your Carbon Footprint</p> <p>When we turn on a light, use the computer, or watch a movie, we are using energy that is powered by fossil fuels. Every time we use energy that comes from fossil fuels, we release carbon dioxide (CO₂) as waste into the air. CO₂ is a greenhouse gas and many scientists believe that greenhouse gases are causing global warming.</p> <p>Your carbon footprint is the total amount of CO₂ you alone create. The electricity you use in your home creates the biggest part of your carbon footprint. Do you think you want to make a big carbon footprint or a small carbon footprint?</p> <p>Fossil fuels are things like oil, coal, and gas that were formed millions of years ago and are buried deep underground.</p>	<p>New vocab word</p>
7	<p>Single image/text layout</p> <p>Kids_recycling.jpg</p> <p>Alt tag: three children standing in front of recycling bins with superhero-inspired masks and capes and the reduce, reuse, recycle symbol on their shirts.</p>	<p>How Can You Help?</p> <p>All of this might seem overwhelming to you when thinking about how you can make a difference. You might feel helpless and think that your efforts are small compared to a big problem. But the good news is, even small efforts can make a big difference!</p> <p>[Did You Know?: The U.S. recycling rate is around 34.5%. If we're able to get the rate to 75%, the effect will be like removing 50 million passenger cars from U.S. roads!]</p> <p>Use kids recycling2.jpg Alt tag: a family shown picking up trash and putting recyclables into a bin</p>	<p>Did you know source: https://www.rubicon.com/blog/statistics-trash-recycling/</p>

#	Media	Content	Dev Notes
8	<p>Text/Video layout</p> <p>Video should not run on its own here. Student should control it.</p>	<p>Efforts at Whitney Lab</p> <p>Here at Whitney Lab, we are involved in multiple projects to help marine life and protect natural habitats. One example is the work we are doing down at the Indian River Lagoon, 90 miles south of here. Nutrient pollution from fertilizer and storm water is leading to toxic algae blooms and killing off sea grasses and marine life that live in the lagoon. In response, Whitney Lab has started a clam restoration project. We raise millions of clams here at the lab and then return them to the lagoon. Clams naturally clean the water. The hope is that if we make clearer, cleaner water, the grasses can grow again, the marine animals can survive, and balance can be restored.</p> <p>Watch the video to learn more about this project.</p>	<p>Video source https://www.facebook.com/watch/?v=375097630112272</p>
9	<p>Multiple grid images</p> <p>Kids_recycling3.jpg Alt tag: a group of kids volunteering and recycling trash</p> <p>Girls_plantingtreetree.jpg Alt tag: two girls planting a tree</p> <p>Kids_cleaningbeach.jpg Alt tag: two children picking up trash on the beach</p> <p>Kids_volunteer.jpg Alt tag: three girls signing up to volunteer at a sign up table</p>	<p>What Should You Do?</p> <p>There is so much you can do to help as well. Let's see how well you do in these conservation scenarios.</p> <p>[Button "Start"]</p>	<p>Intro screen to scenario series. Emphasis on Start button to begin scenarios.</p>

#	Media	Content	Dev Notes
10	<p>Series of scenarios. Each one will have an accompanying getty video from Conservation Station board.</p> <p>Multiple choice, single answer</p>	<p>Scenario 1 You just spent an afternoon at the beach. While you visited, you ate a picnic lunch and you have some trash. Now that you are ready to leave, what should you do with the trash?</p> <p>A. Leave it on the beach. Someone will clean it up. B. Take it with you. Trash in, trash out.</p>	<p>Use Getty video: “food and picnic basket on blanket on beach”</p> <p>Alt tag: video of a picnic blanket with a picnic basket and food on the beach</p>
	<p>Multiple choice, multiple answer</p>	<p>Scenario 2 You have decided to reduce your use of plastics to help the environment. Which of the following are best practices that you can do? Select all that apply.</p> <p>A. Use a reusable water bottle whenever possible. B. When you shop at the store, use reusable bags. C. Choose to use a paper straw or not to use a straw at all in your drinks.</p>	<p>Use Getty video: “dirt plastic tableware in the bin”</p> <p>Alt tag: video of plastic trash in a trash bin</p>
	<p>Multiple choice, multiple answer</p>	<p>Scenario 3 You are visiting a friend who recently bought a compost can to fill with food waste and use for the garden soil. You just finished lunch and you have some trash to throw away. Which of the following can be composted rather than thrown in the trash can? Select all that apply.</p> <p>A. Potato chip bag B. Orange peel C. Egg shells D. Soda can</p>	<p>Use Getty video: “close up of woman making compost from vegetable”</p> <p>Alt tag: video of a woman putting fruit and vegetable waste into a compost can</p> <p>Vocab word link for “compost”: a mix of organic matter regarded as trash (fruit and vegetable peels, yard waste, and other natural scraps) that can be decomposed and recycled to become a nutrient-rich fertilizer.</p>

#	Media	Content	Dev Notes
	Multiple choice, multiple answer	<p>Scenario 4 Your older brother just made bacon for breakfast. There is some leftover oil in the pan and it is time to clean up. What is the best way to dispose of the oil?</p> <p>A. Pour the oil down the sink once it cools down a bit</p> <p>B. Let the oil cool and then pour it into a disposable container. It can either be reused later or thrown in the trash.</p>	<p>Use: “bacon slice frying on pan in sunflower oil”</p> <p>Alt tag: video of bacon frying in a pan of oil</p>
	Multiple choice, multiple answer	<p>Scenario 5 You want to start conserving water when you use it. This means only using what you need. Which of the following are good practices to start? Select all that apply.</p> <p>A. When you are brushing your teeth, turn off the water while you brush rather than leave it running the whole time.</p> <p>B. If you notice a drip in the sink, let an adult know.</p> <p>C. Do not take long showers. Time yourself to see how well you do.</p>	<p>Use “water down a sink drain”</p> <p>Alt tag: video of a faucet with running water down a sink drain</p>
	Multiple choice, multiple answer	<p>Scenario 6 You want to improve at conserving energy and reduce your carbon footprint. Which of the following are best practices that you can do? Select all that apply.</p> <p>A. When you leave a room, turn off the light</p> <p>B. Turn off the TV and other electronics when you are not using them</p> <p>C. Replace light bulbs with energy efficient bulbs</p> <p>D. Choose to read a book or play outside rather than use electronics</p>	<p>Use “saving energy”</p> <p>Alt tag: a grid of 9 videos, each showing an electronic device being shut off.</p>

#	Media	Content	Dev Notes
	<p>Multiple choice, multiple answer</p>	<p>Scenario 7 You and your family want to make some changes to make a difference and contribute to a healthier environment. What are some things that you can do? Select all that apply.</p> <p>A. Choose organic foods that come from farms that do not use harmful pesticides (or plant your own garden!) B. Plant a tree or volunteer at a creek cleanup organization in your area C. Carpool or ride a bike when possible D. Recycle</p>	<p>Use Getty video: “scaled up look on kids taking care of local park”</p> <p>Alt tag: video of kids cleaning up trash in a park</p>
11	<p>Single image/text layout</p> <p>Kids picking up trash.jpg Alt tag: a group of people picking up trash on a beach</p>	<p>Conclusion Now that you know all the ways you can help, you can put what you learned into action. Good luck young conservationists! The waters and marine life thank you.</p>	