

CONSERVATION AT SCHOOL & BEYOND / INSTRUCTOR INFO

Summary

This lesson includes vocabulary, content, examples, and activities to help students learn and understand the importance of conservation. Students will learn about different types of conservation by introducing the concepts of reducing, reusing, and recycling. Using their knowledge of conservation and real-life data collected from the OCEARCH Global Shark Tracker™, students will be able to brainstorm different ideas for helping sharks. Students will create an action plan to help the school and classroom become good stewards of our oceans and help to save sharks!

Part 1. Introduction & Brainstorming

Part 2. Reducing Waste

Part 3. Recycling

Part 4. Reusing

Activity 1. Cleaning Up Our Oceans

Activity 2. Create a Plan of Action

Goals & Objectives

The students will:

- Recognize the concepts of reduce, reuse, and recycle;
- Understand why conservation is important;
- Apply their knowledge of conservation to help the environment;
- Participate in group activities and class discussions;
- And develop research skills and use their knowledge of conservation to complete a conservation action plan for their classroom.

// STANDARDS

This lesson aligns with the following TEKS:

Kindergarten Science: 1C, 3A, 3C

Grade 1 Science: 1C, 3A, 3B

Grade 2 Science: 1C, 2E, 2F, 3A

STEM

Sharks are amazing apex predators. Different parts of their body are designed to have different functions, just like humans. From their gills to their caudal fin, each part has an important role to play that will ensure the survival of the species. When students study the anatomy of a shark, they are one step closer to understanding shark behavior, their habitat, and gaining understanding of the role sharks play in the health of the ocean.

This lesson aligns with the following Next Generation Science Standards:

K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.*

[Clarification Statement: Examples of human impact on the land could include cutting trees to produce paper and using resources to produce bottles. Examples of solutions could include reusing paper and recycling cans and bottles.]

Science and Engineering Practices

Obtaining, Evaluating and Communicating Information

- Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas. (K-ESS3-3)

Disciplinary Core Ideas

ESS3.C: Human Impacts on Earth Systems

- Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things. (K-ESS3-3)

Helpful Tips

1. The content in this lesson is based on the conservation work of OCEARCH™ and the Global Shark Tracker™. Spend a few minutes getting familiar with the website and the tracker if you have not done so already. The Global Shark Tracker™ is also available as an app for iPhone and android.
2. This lesson plan is designed to be adaptable to suit your specific needs. Use the entire lesson plan or just parts of it. This material can be expanded to be an entire unit or condensed for just one day in the classroom.
3. Vocabulary words will be underlined as they first appear in the lesson plan. A complete list of vocabulary words is included as well.
4. Answers to questions and prompts for discussions will appear in italics.
5. Optional activities and content (side notes) will appear in a box. Use these to enhance your lesson and adapt it to suit your needs!

6. Have questions for M/V OCEARCH Expedition Leader, Chris Fischer? Email in-fo@OCEARCH.org to schedule a Skype session and let your students/child talk directly to Chris and the M/V OCEARCH crew!
7. Email all questions about this lesson to info@OCEARCH.org.

Vocabulary

Conservation: Preservation, protection, or restoration of the natural environment, natural ecosystems, vegetation, and wildlife.

Environment: The surroundings or conditions in which a person, animal, or plant lives or operates.

Garbage: Discarded or useless material including food waste.

Pollution: The presence in or introduction into the environment of a substance or thing that has harmful or poisonous effects.

Recycle: To process (as liquid body waste, glass, or cans) in order to regain materials for human use.

Reduce: To make smaller in size, amount, or number.

Reuse: To use again or more than once.

CONSERVATION AT SCHOOL & BEYOND / PRE-LESSON ASSESSMENT

Use the following true/false and multiple-choice questions as an introduction/warm-up to the lesson topics. You can do this in a verbal or written format, as a game, individually, or as a whole class! A handout is provided if you wish to hand the questions out in a quiz format.

The questions do not need to be graded. They are intended to give the students an idea of what they will be learning and to see what they already know.

1. True or False

Pollution is not a problem for animals living in the ocean

Answer: False

2. True or False

Reducing waste or garbage is one way to help the environment

Answer: True

3. True or False

Ocean animals, like sharks, can be hurt by ocean pollution

Answer: True

4. Using an item again instead of throwing it away is called _____.

- a. Garbage
- b. Reusing
- c. Recycling
- d. Reducing
- e. Pollution

Answer: b

5. Which of these items can be recycled?

- a. Glass
- b. Plastic
- c. Paper
- d. Cans
- e. All of the above

Answer: e

Name: _____

Date: _____

Pre-Lesson Assessment

Select the correct answer(s) to each of the following questions.

1. True or False Pollution is not a problem for animals living in the ocean.
2. True or False Reducing waste or garbage is one way to help the environment.
3. True or False Ocean animals, like sharks, can be hurt by ocean pollution.
4. Using an item again instead of throwing it away is called _____.
 - a. Garbage
 - b. Reusing
 - c. Recycling
 - d. Reducing
 - e. Pollution
5. Which of these items can be recycled?
 - a. Glass
 - b. Plastic
 - c. Paper
 - d. Cans
 - e. All of the above

CONSERVATION AT SCHOOL & BEYOND / LESSON PLAN

PART 1. INTRODUCTION & BRAINSTORMING 5-10 mins

Ask the students what they already know about garbage and where it goes when it is thrown away.

Humans are responsible for creating millions of tons of garbage every day. Most of the garbage you throw away goes to a landfill or dump. The garbage that we throw away can remain on the earth for thousands of years. In fact, the dumps and landfills are not always enough to contain our garbage. Some of it spills over and becomes pollution in our environment!

Pollution is a substance that has harmful effects on the environment it is introduced to. *Ask the students what kinds of pollution from a dump or landfill could end up in our oceans? Write several students' answers on the board.*

Here are a few examples of how pollution could hurt ocean animals:

- Sea Turtles could mistake a plastic bag for a jellyfish and eat it.
- Sharks could become tangled in floating trash with no way to get out.
- Fish could eat small pieces of garbage mistaking it for food like plankton.

Humans and animals depend on the earth's precious resources. By using these resources to create trash, we are hurting the environment. Conservation is the preservation, protection, or restoration of the natural environment. It is important to take care of our planet by working together to stop pollution from happening.

PART 2. REDUCING WASTE 10-20 mins

One of the easiest ways to reduce the amount of pollution going into our environment is to reduce the amount of garbage we are creating. Reducing waste means to make smaller in size, amount, or number. By creating less waste, there is less garbage that needs to go to the landfill or recycling center. There are many ways to reduce the amount of waste we create. By turning off the water when you brush your teeth, you are creating less wastewater that goes down the drain that must be treated.

By using larger containers of products instead of individual packages, you can greatly reduce the amount of garbage going to the landfills.

Class Demonstration (5 – 10 minutes)

Demonstration materials: (Keep in mind any students food allergies or special needs!)

- Gallon jug of water

- Up to six small bottles of water
- Large package of snacks (chips, crackers, popcorn, candies, etc.)
- Up to six individual packages of same snack
- Recyclable plastic cups

Present the gallon jug and small bottles of water to the class. *Ask the students which of these holds the most water but uses the least amount of plastic.* The large jug holds the most water and uses less plastic than the bottles of water. This means that the jug would create less waste than drinking the same amount of water from the small bottles.

Distribute water to the students using recyclable plastic cups. The students should keep the cups to use in the next discussion.

Present the large packaged snack and the individual packaged snacks to the class. *Ask the students which package would be the smart choice for reducing waste.* The larger package can be divided into smaller portions without using extra packages. This means that the larger package creates less waste.

Distribute snacks to the students to enjoy during the following discussion.

Class Demonstration (5 – 10 minutes)

Ask the students to come up with different examples of how to reduce waste. Write several students' answers on the board.

Examples to discuss with the class:

1. Not using plastic bags when shopping for only one or two items.
2. Taking shorter showers or using less water in the tub for a bath.
3. Writing on both sides of a paper.
4. Using dishes and silverware instead of plastic or paper.

PART 3. RECYCLING 10-20 mins

Ask the students what they already know about recycling.

Recycling means to process used items into new materials that can be used again.

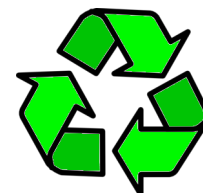
Ask the students to come up with types of items that can be recycled. Write down several students' answers on the board.

Many items can be recycled to create a new or different item for human use. For example, plastic bottles can be recycled to either create new plastic bottles or turned into a different type of plastic item like a pen or toy. Other items that can be recycled include glass, cans, and paper.

Recycling Symbols (5 – 10 minutes)

How do you know if an item can be recycled? The easiest way to tell if an item like a plastic bottle can be recycled is to look for the recycling symbol on the bottle.

Display the recycling symbol for the students to see, or draw one on the board.



Many items will have this symbol stamped on it to indicate that it should be recycled rather than thrown away.

Ask the students to find the recycling symbol stamped on their water cup from the previous class discussion.

Have you ever wondered what happens to the items that get recycled before they become something different? When recycling plastic, glass, or aluminum cans, the materials are usually sorted and melted down in a large factory. The melted materials can then be reshaped into a new item. Recycled paper is ground up with water to create paper pulp, which resembles oatmeal. The pulp is then cleaned and dried to make new paper products.

Class Discussion (5 – 10 minutes)

What kinds of recyclable items can be found in a classroom?

Have the class look around the classroom for items that can be recycled. Create a list on the board or have the students write them in their notebooks.

Examples include:

- Paper
- Plastic bottles
- Cardboard
- Plastic toys
- Workbooks

Now have the class come up with some examples of items in their home that can be recycled.

Examples include:

- Newspaper
- Glass jars
- Plastic grocery bags
- Soda cans

PART 4. REUSING 10-20 mins

Along with reducing and recycling, reusing items is an excellent way to help the environment! Reusing an item means to use the item over and over. An example of a reusing is to use a lunchbox every day instead of a paper or plastic bag.

One benefit of reusing items is that it reduces the need to create more. An example of this would be getting items from a yard sale or resale shop instead of purchasing new ones from a store. *Ask the class if anyone had ever been to a yard sale or donated clothing to charity.*

Many items can be reused in ways that might be different from their original purpose. You can use a jar to store pencils and pens or save paper towel tubes for arts and crafts.

Ask the class what other items they can think of that can be reused for something different. Write several students' answers on the board.

PART 5. SAVING OUR OCEANS 10-20 mins

There is more ocean than land in the world, so it would make sense to think of our oceans when talking about conservation. All water on earth is connected to the oceans in some way. A piece of litter on the ground can be washed away by the rain into a creek or stream. Streams and creeks connect to rivers, which then connect to the ocean. It is possible for that one piece of litter to make it all the way to the ocean!

Litter and trash in our oceans is becoming a big problem! There are some parts of the Pacific Ocean that have areas of floating trash the size of Texas. *Use a map or globe to show the students how large the state of Texas is and how much area that takes up in the Pacific Ocean. See Figure 1. on the following page.*

Did you know?

Approximately 80% of trash in the oceans comes from human activities. And an estimated 1.4 billion pounds of trash is dumped into the ocean every year! There are some parts of the Pacific Ocean that have areas of floating trash the size of Texas. (Figure1).

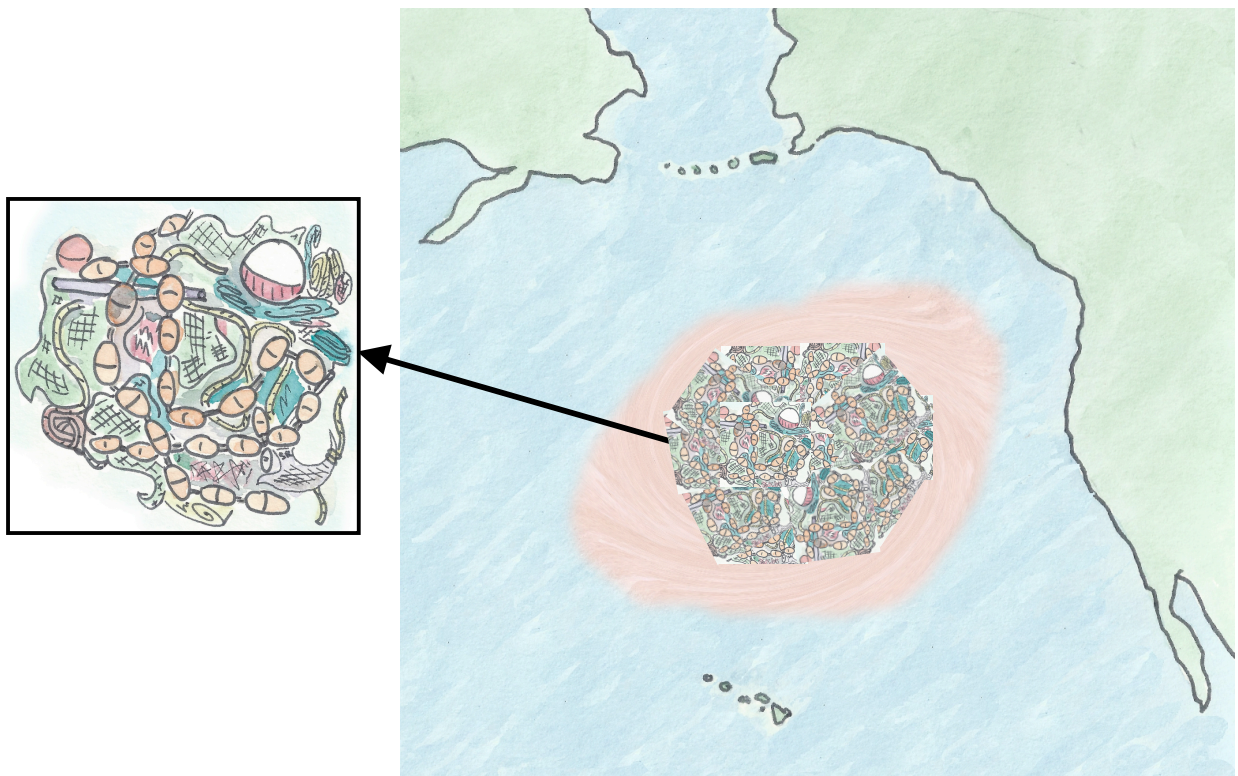


Figure 1. Massive amounts of trash collect in the center of the north Pacific gyre, located off the west coast of the United States.

Illustration Credit: Sarah Rich – Landry's Downtown Aquarium

The pollution in our oceans can hurt the different animals that live there. Many animals including, fish, birds, sea turtles, and sharks will eat the garbage, mistaking it for food. Some types of pollution like string, nets, and ropes will tangle around the animals, making movement impossible!

A lot of the trash that has ended up in our oceans could have been prevented by conservation. Much of the garbage polluting the oceans could be recycled or reused!

ACTIVITY 1. CLEANING UP OUR OCEANS 30-60 mins or take-home

Introduction

With the goal of better conservation for our oceans, students will invent or design a way to clear the trash from the oceans. Students will then brainstorm ideas to reuse and recycle foreign objects removed from the oceans. The completed project can be presented to the class or posted on a wall or bulletin board to share with other students. This can be a project completed in class or taken home.

Materials

- White Paper or poster board
- Pencil
- Colored pencils, crayons, or markers

Instructions

1. As a class, students should discuss the kinds of garbage pollution that can be found in the ocean. (Example: plastic bottles, fishing line, garbage bags, tires, nets, ropes, soda cans, Styrofoam, etc.)
2. Students will come up with an invention, machine, or idea for clearing debris out of the ocean.
3. Have the students draw their idea using pencils, markers, colored pencils, or crayons on white paper or poster board.
4. Below the drawing, students should draw examples of garbage pollution being cleaned up by their invention.
5. Each type of garbage pollution item should be labeled with either reduce, reuse, or recycle depending on the best course of action. (Example: bottle - recycle, rope – reuse, garbage bag - reduce)
6. Once completed, have the students take turns presenting their ideas to the class.

Conclusion

This activity is designed to assess the students' knowledge of conservation, and engage their critical thinking and problem solving skills. The students will understand the importance of conserving our oceans and understand concepts of reduce, reuse, and recycle.

ACTIVITY 2. CREATE A PLAN OF ACTION 30-45 mins

Introduction

With the goal of conservation, students will explore their classroom and school in search of ways to reduce, reuse and recycle. The activity will use a scavenger hunt handout or can be added to a notebook. The class will create a plan of action poster using the ideas they came up with on their scavenger hunt.

Materials

- Scavenger hunt handout or notebook
- Journal or notebook
- Pencil
- Poster board or chart paper
- Markers

Instructions

1. Students can work in groups or individually for this activity.
2. Once groups are assigned, hand out the conservation scavenger hunt worksheet. Go over the questions with the class before beginning the activity.
3. Students spend a few minutes exploring the classroom for opportunities to reduce, reuse, or recycle. They should write their ideas on the worksheet or in their notebooks.
4. As a class, go over some of the ideas the students have come up with.
5. Have the students line up as you go for a walk around the school grounds, continuing to look for opportunities to reduce, reuse, and recycle.
6. After returning to the classroom, let the students share what they found while walking around the school grounds.
7. Students should hand in their scavenger hunt worksheet once completed.
8. As a class, use markers on a poster board or chart paper to create an action plan for saving the environment.

Example action plan with suggestions on page below.

Our School's Plan of Action for Conservation!

1) Reduce

- a. We will reduce the amount of water that we use when washing our hands by turning off the water when we aren't using it.
- b. We will reduce the amount of paper we use as a class on worksheets and activities.
- c. We will reduce the amount of trash we throw away.

2) Reuse

- a. We will use reusable water bottles instead of plastic water bottles in class.
- b. We will reuse paper towel tubes by using them for art projects.
- c. We will use fabric bags to carry things in instead of plastic bags.

3) Recycle

- a. We will recycle our paper and plastic used in class.

4) Donate!

- a. We will donate to organizations like OCEARCH that help save our apex predators and our oceans!

5) Educate

- a. We will educate others about reducing the use of plastic and recycling the plastic that we do use.
- b. We will educate others about the importance of sharks as apex predators and balance keepers of the ocean and tell people how plastic affects sharks and our oceans.

6) Inspire

- a. By showing others that we are reducing, reusing, recycling, and educating, we will inspire others to do the same!

7) Enable

- a. By making a plan to reduce, reuse, and recycle, we will enable our school to make a difference and save our oceans!

Conclusion

This activity is designed to assess and apply the students' knowledge of conservation to their surroundings. The students will understand the importance of conserving our environment and understand concepts of reduce, reuse, and recycle. Creating a plan of action encourages students to apply their knowledge to everyday life and share what they have learned with others.

Handout 1. Conservation Scavenger Hunt

Name: _____

Date: _____

Answer the questions as you explore your classroom and school grounds.

Classroom

I found a _____, which can be recycled.

We can reduce the amount of _____ we throw away.

We can reuse _____ instead of throwing them away.

This _____ has a recycle symbol on it!

We can reduce electricity by turning off the _____ when we leave the classroom.

School Grounds

I found a _____, which can be recycled.

We can reduce the amount of _____ we throw away.

We can reuse _____ instead of throwing them away.

We reduce the amount of _____ used in the lunchroom.

We reuse _____ when we do arts and crafts!

I can recycle _____ at school and at home.