



WATER FOOTPRINT

This unit teaches learners that we all have environmental and water footprints, and it is up to us to take responsibility for their impact.

What's covered?

The lessons in this unit:

- Explore human roles in creating and solving environmental problems related to lifestyle choices, such as the products we buy, particularly plastics, and the food we eat.
- Emphasize ways to approach solutions through sustainability concepts and environmentally-friendly decisions.

About these lessons:

Standards: These lessons are aligned to: Next Generation Science Standards, National Council of the Social Studies, Common Core State Standards for English Language Art and Literacy, Framework for 21st Century Learning, Climate Literacy Principles, and Water Literacy Principles. See the **Overview Matrix** for a listing of lessons and the standards to which they are aligned.

Timing: The suggested lesson duration included in the lessons can be used as a guide for how long they should take, as each classroom is different. Depending on the size and length of each class, these lessons can be taught in one sitting or over a few days.

Content: Many of the topics in these lessons can evoke an emotional response from learners. Modify the lessons as needed to ensure they are appropriate for your learners. Anticipate the questions and responses these discussions and activities may elicit.

Essential questions for the unit:

- How does my impact on the world affect me and other people and places?
- How can I take responsibility for my impact?

The learning objectives of these lessons:

- Their actions have an environmental impact
- How their choices are reflected through their carbon and water footprints
- How to reduce their ecological footprints and make more sustainable decisions
- What single-use plastic items are and alternatives for them
- The environmental impact of food choices, related to plant-based vs. animal-based meals
- The 7 R's and how to integrate them in their lives

THE 5 LESSONS:

THE FIVE LESSONS IN THIS UNIT CAN BE TAUGHT AS A COMPLETE SET OR INDIVIDUALLY.

What's My Eco Footprint?

Learners consider their water and carbon footprints and create a diagram to reflect on their current habits and the changes they can make to decrease their impact on the Earth.

Herbivore vs. Omnivore Diet

Learners learn about the difference between plant-based and animal-based diets, and how the foods they choose to eat impact the environment.

Do You Know the 7 R's

Learners review the three R's (reduce, reuse, recycle) and discuss why we need four more R's (refuse, repurpose, repair, rot). They generate different ways to practice the 7 R's.

Break the Plastic Habit

Learners consider how they use plastic each day and their behaviors impact on the environment. They leave the lesson with practical solutions and ideas to reduce their daily use of plastic and are challenged to help others reduce their own plastic use.

Microplastics: Tiny Trouble

Learners research microplastics and their environmental impact, while considering positive actions they can take for the Earth.

Website suggestions:

Encyclopedia.com www.encyclopedia.com/environment/energy-government-and-defense-magazines/carbon-footprint

Marine Safe www.marinesafe.org/the-problem/single-use-plastic/

Plastic Free Challenge www.plasticfreechallenge.org/what-is-single-use-plastic

The National Ocean Service, National Oceanic and Atmospheric Administration oceanservice.noaa.gov/facts/microplastics.html

The Recycling Partnership, Solving for Circularity recyclingpartnership.org/recycling-101/

The Vegetarian Society www.vegsoc.org/info-hub/why-go-veggie/environment/

UNIT 1: WATER FOOTPRINT



Lesson 1: What's my Eco Footprint?

Next Generation Science Standards (NGSS)

5-ESS3-1. MS-ESS3-3.

National Council for the Social Studies

D2.Eco.1.3-5.

Common Core State Standards for English Language Arts & Literacy (ELA)

CCSS.ELA-LITERACY.SL.4.4, 5.4, 6.4, 7.4, 8.4

Framework for 21st Century Learning

Environmental Literacy

Water Literacy Principles

Water Connects All Earth Systems Water is a Natural Resource

Climate Literacy Principles

Human Activities are impacting the climate system. Climate change will have consequences for the Earth's systems and human lives.

Lesson 2: Herbivore vs Omnivore Diet

Next Generation Science Standards (NGSS)

5-ESS3-1 MS-ESS3-3

Common Core State Standards for English Language Art and Literacy (ELA)

CCSS.ELA-LITERACY.W.4.7, 5.7, 6.7

Climate Literacy Principles

Human activities are impacting the climate system Climate Change will have consequences for the Earth's systems and human lives.

Framework for 21st Century Learning

Global Awareness

Health Literacy

Water Literacy Principles

Water is Essential for All Life to Exist

Water Connects All Earth Systems

Water is a Natural Resource

Water Resources Exist within Social Constructs

Lesson 3: Do you know the 7 R's?

Next Generation Science Standards (NGSS)

5-ESS3-1.

MS-ESS3-3.

Framework for 21st Century Learning

Environmental Literacy

Global Awareness

Lesson 4: Break the Plastic Habit

Next Generation Science Standards (NGSS)

5-ESS3-1.

MS-ESS3-3.

National Council of the Social Studies (NCSS)

D2.Eco.1.3-5.

Common Core State Standards for English Language Art and Literacy (ELA)

CCSS.ELA LITERACY.SL.4.4, 5.4, 6.4

Water Literacy Principles

Water Connects All Earth Systems

Framework for 21st Century Learning

Environmental Literacy

Global Awareness

Lesson 5: Microplastics, Tiny Trouble

Next Generation Science Standards (NGSS)

5-ESS3-1.

Common Core State Standards for English Language Art and Literacy (ELA)

CCSS.ELA LITERACY.W.4.1, 5.1, 6.1, 7.1, 8.1

Framework for 21st Century Learning

Environmental Literacy

Global Awareness



UNIT 1: WATER FOOTPRINT



Lesson 1: What's my Eco Footprint?

Science Standards

3.ESS.1 3.ESS.2 3.ESS.3 4.LS.1

ELA Standards

W.3.2 W.3.8 W.4.2 W.4.8 W.5.9

Social Studies Standards

4th Grade Geography 12: People have modified the environment throughout history resulting in both positive and negative consequences in Ohio and the United States.

4th Grade Economics 20: Tables and charts organize data in a variety of formats to help individuals understand information and issues.

5th Grade Economics 14: The choices made by individuals and governments have both present and future consequences.

6th Grade Economics 12: The choices made by individuals and governments have both present and future consequences. The evaluation of choices is relative and may differ across individuals and societies.

8th Grade Government 20: Active participation in social and civic groups can lead to the attainment of individual and public goals.

Lesson 2: Herbivore vs. Omnivore Diet

Science Standards

3.ESS.2 3.ESS.3 3.LS.3 4.LS.1 5.LS.1 6.LS.4 7.LS.1 7.LS.2 8.LS.1

ELA Standards

W.3.8 W.4.2 W.5.9 W.6.1

Lesson 3: Do you know the 7 R's?

Science Standards

3.ESS.1 3.ESS.2 3.ESS.3

ELA Standards

W.3.8 W.4.2 W.5.9

Social Studies Standards

6th Grade Economics 12: The choices made by individuals and governments have both present and future consequences. The evaluation of choices is relative and may differ across individuals and societies.

8th Grade Government 20: Active participation in social and civic groups can lead to the attainment of individual and public goals.

Lesson 4: Break the Plastic Habit

Science Standards

3.ESS.1 3.ESS.2 3.ESS.3 7.ESS.1

ELA Standards

W.3.2 W.3.8 W.4.2 W.4.8 W.5.9

Social Studies Standards

4th Grade Economics 20: Tables and charts organize data in a variety of formats to help individuals understand information and issues.

5th Grade Economics 14: The choices made by individuals and governments have both present and future consequences.

8th Grade Government 20: Active participation in social and civic groups can lead to the attainment of individual and public goals.

Lesson 5: Microplastics, Tiny Trouble

Science Standards

3.ESS.1 3.ESS.2 3.ESS.3 7.ESS.1

ELA Standards

W.3.2 W.3.8 W.4.2 W.4.8 W.5.9

Social Studies Standards

4th Grade Economics 20: Tables and charts organize data in a variety of formats to help individuals understand information and issues.

5th Grade Economics 14: The choices made by individuals and governments have both present and future consequences.

8th Grade Government 20: Active participation in social and civic groups can lead to the attainment of individual and public goals.





Unit 1, Lesson 1

WHAT'S MY ECO FOOTPRINT?

GRADE LEVEL: 4-8 | SUBJECT: SCIENCE, SOCIAL STUDIES | LENGTH OF LESSON: 45 MINUTES

Summary: Learners consider their water and carbon footprints and create a diagram to reflect on their current habits and the changes they can make to decrease their impact on the Earth.

Drink Local Drink Tap Connection: At DLDT, we do our part to be as sustainable an organization as possible. We avoid single-use products at our events and presentations. We ensure that our large events are low-to-minimal waste and that recycling and composting options are readily available.

Learning Objectives

Learners will:

- Discuss how carbon dioxide impacts the Earth's atmosphere
- Discuss the difference between a high and low water and carbon footprint
- List actions that contribute to high and low water and carbon footprints
- Create a visual representation of their current water and carbon footprints
- List and discuss actions they can take to reduce their water and carbon footprint

Background

The decisions we make, no matter how big or small, have an environmental impact.

A carbon footprint is the amount of greenhouse gases, primarily carbon dioxide (CO₂), released into the atmosphere by a particular human activity. The products we use, foods we eat, and transportation we take are all part of our carbon footprint. A carbon footprint is a measure that can be applied to the actions of an individual, a family, an event, an organization, or even an entire nation. It is usually measured as tons of CO₂ emitted per year, a number that can be supplemented by tons of CO₂-equivalent gases, including methane, nitrous oxide, and other greenhouse gases.

It's important to reduce our carbon footprints because CO₂ and other greenhouse gases contribute to climate change, which negatively impacts the future of the planet and our descendants. An increasing carbon footprint also affects water and aquatic life. The burning of fossil fuels like coal, oil, and gas for electricity, heat, and transportation is the primary source of human-generated emissions. A second major source is deforestation, which releases sequestered carbon into the air.

When considering our carbon footprint, knowing that we can make small changes to decrease our impact is very powerful. Positive changes can be as small as drinking from a reusable water bottle, or bigger, such as installing solar panels on your home. The key is to understand our impact so we know where to make changes in our lives.

For more information and additional lessons related to this topic, see DLDT's lesson plans in our Climate Change and Water Unit: The Problem with Greenhouse Gases and Climate Change Where We Live.

VOCABULARY

Carbon Footprint: the total amount of greenhouse gases, specifically carbon dioxide, emitted to produce, transport and dispose of goods or services used by an individual, community or made by a business.

Ecological (Eco) Footprint: measures the natural resources required by an individual, community or activity.

Greenhouse Gas: a gas that contributes to warming the planet by absorbing infrared radiation, e.g., carbon dioxide and chlorofluorocarbons.

Water Footprint: the total amount of fresh water used to produce, transport and dispose of goods or services used by an individual, community or made by a business.



ACTIVITY **LENGTH OF ACTIVITY: 45 MINUTES**

SUPPLIES

- Posterboard for each learner
- Writing implements (markers, pencils, crayons, etc)
- White board and markers
- Wavemaker Question Sheets (included, make copies)
- Online carbon footprint calculator
<http://www.parkcitygreen.org/Calculators/Kids-Calculator.aspx>
<https://www.watercalculator.org/>

ACTIVITY STEPS

1. Discussion: (5 min)

On the board, write out the words **ecological footprint**, **water footprint**, and **carbon footprint**. Open the discussion by modeling how to question an unfamiliar term. Have your learners determine what both terms mean by using their knowledge of the words to come up with a definition for each item on the board.

These footprints exist because of human needs and lifestyles. Human energy needs include: transportation, electricity, food, clothing, and other goods. These all require energy, which results in the release of CO2 into the Earth's atmosphere. Many of them require the use of water. Our daily choices can make a difference in how much carbon is produced and released into the Earth's atmosphere, and how much water is used.

Explain that carbon dioxide (CO2) is a greenhouse gas and define this term (see vocabulary). Explain that the greenhouse gas (GHG) emissions humans generate are the leading cause of the Earth's rapidly changing climate. They cause the atmosphere to warm, which leads to climate changes, causing many severe impacts to the planet, its systems and life.

2. Share Ideas: (10 min)

WRITE THE FOLLOWING CATEGORIES ON THE BOARD:	HAVE LEARNERS LIST CHOICES AND BEHAVIORS THAT INCREASE OR DECREASE CARBON AND/OR WATER FOOTPRINTS.	
<i>Create your own list, but here are some examples.</i>		
TRANSPORTATION	<ul style="list-style-type: none"> • Drive a car vs. carpool • Take a bus or a train 	<ul style="list-style-type: none"> • Walk or ride your bike
ELECTRICITY	<ul style="list-style-type: none"> • Use regular light bulbs vs. LED light bulbs • Leave the lights on when you leave the house 	<ul style="list-style-type: none"> • Have lights on a timer • Sleep with the hallway light on or have a nightlight
FOOD	<ul style="list-style-type: none"> • Cooking at home • Buy vegetables from a farmers market • Throw out your leftovers 	<ul style="list-style-type: none"> • Shop online and having food delivered • Eat only packaged food items
CLOTHING	<ul style="list-style-type: none"> • Buy new clothes • Share clothes with your siblings 	<ul style="list-style-type: none"> • Donate old clothes to Goodwill • Buy or sell from online marketplaces
WATER	<ul style="list-style-type: none"> • Use a reusable water bottle • Turn the water off when brushing your teeth 	<ul style="list-style-type: none"> • Drink a bottle of soda everyday • Order a straw with your dinner/skip the straw

- Learners should try to have a low eco footprint, as the environment is negatively impacted by high eco footprints, and we should all try to reduce our impact on the Earth's resources.
- Carbon dioxide (CO2) is a greenhouse gas (GHG). The GHG emissions humans generate are the leading cause of the earth's rapidly changing climate.
- GHG emissions cause the atmosphere to warm, which leads to climate changes, resulting in severe impacts to the planet, its systems and life.
- Clean fresh water is a limited resource that is depleted when we overuse it or don't clean it properly. Climate change impacts the availability of freshwater.



ACTIVITY CONTINUED...

3. Create: (25 min)

Hand out a sheet of posterboard to each learner. Have learners partner up and help each other trace their footprint onto the piece of paper. Using the color blue, have learners write down a few of the things they do on a regular basis in each of the categories above. Have them label whether they think the main impact is related to carbon or water.

Using the color green, have learners write down at least one thing they will do in each category to decrease their carbon and/or water footprints. Learners should design and color their footprint(s) according to their current and anticipated future actions, and share what this means for their lives and impact on the planet.

4. Wrap up: (5 min)

Have learners respond to the questions in the Wavemaker Question Sheets.

5. Exit slip: (5 min)

Have learners write and share with a partner what they will try for one week to decrease their carbon and water footprints, and why this matters.

6. Homework:

For homework, have each learner fill out online footprint calculators. This should help inspire them to think about what they can do over the next week to decrease their carbon and water footprints.

<https://www.watercalculator.org/> <http://www.parkcitygreen.org/Calculators/Kids-Calculator.aspx>

Have learners recount to the class how their changes impact their daily lives and using relevant facts to support their choices. Incorporate multimedia visuals if appropriate.

ENRICHMENT ACTIVITY

Make a working class list of behaviors learners will try and keep it hanging in the room. Check in every morning with the class and update the working list so that everyone is aware of the changes happening each day.

TAKE ACTION

Have learners create posters, use their multimedia visuals and/or make school announcements to educate other grades about little things they can do to decrease their carbon and water footprints.

Talk with school administrators to see what, if any, changes can be made school-wide.

Sources:

NASA Climate Kids: <https://climatekids.nasa.gov/review/how-to-help/>

Water Footprint Calculator: <https://www.watercalculator.org/>



NAME:

DATE:



HEY WAVEMAKER, WE'VE GOT SOME QUESTIONS FOR YOU.



Answer the questions below using some of the terms you have heard today.

1. What's an eco footprint?

2. Describe a carbon footprint.

3. Write down what you do that makes your carbon footprint larger or smaller.

4. Describe a water footprint.

5. Why does the size of your footprint matter?

6. What will you do to decrease your carbon and water footprints?

7. How can you teach other learners or make changes at your school to decrease your carbon and water footprints?



Unit 1, Lesson 2

HERBIVORE VS. OMNIVORE

GRADE LEVEL: 4-6 | SUBJECT: SCIENCE, HEALTH, NUTRITION | LENGTH OF LESSON: 60 MINUTES

Summary: Learners learn about the difference between plant-based and animal-based diets, and how the foods they choose to eat impact the environment.

Drink Local Drink Tap Connection: At DLDT, we ensure the food at our events is plant-based. We use each event as an opportunity to educate our guests about how much water we are saving by serving plant-based meals. One meal per person at an event can save a lot! It can save one animal life, 11 pounds of CO₂, and 1,000 or more gallons of water! In addition, we do our best to buy local food when possible and support local farmers and restaurants.

Learning Objectives

Learners will:

- Discuss the difference between a herbivore and an omnivore
- Calculate the water footprint for their favorite foods
- Investigate the water footprint differences between plant-based and animal-based diets
- Research the amount of water needed for their favorite meal

Background

We are what we eat, and what we eat has a profound impact on the planet. It is important to consider both how food is produced (local, organic) and what we choose to eat.

Animal-based foods are generally more resource-intensive, so their production impacts the environment more than plant-based foods. Beef is extremely inefficient to produce since cattle consume a huge amount of calories and protein to yield a relatively small amount of calories and protein for human consumption.

Vegetarian and vegan (plant-based) diets have the least harmful environmental impact. The average American can cut the environmental impact of their diet by nearly one half just by eating less meat and dairy.

VOCABULARY

- **Herbivore:** a person or animal that feeds on plants.
- **Omnivore:** an animal or person that eats food originating from both plants and animals.
- **Plant-Based:** food that comes from plants and doesn't include ingredients from animals such as meat, milk, eggs, or honey.
- **Vegan:** a person who does not eat or use animal products.
- **Vegetarian:** someone who does not eat any meat, poultry, game, fish, or shellfish. The inclusion of dairy and eggs depends on the type of diet followed.



ACTIVITY

LENGTH OF ACTIVITY: 45 MINUTES

SUPPLIES

- Computers or tablets with access to the internet for research
- Gallon or liter container
- Wavemaker Question Sheets
- Background Infographic
- The Water We Eat: <https://thewaterweeat.com/>
- Websites that calculate the water footprint of food items
<https://waterfootprint.org>
<https://www.watercalculator.org/wfc2/q/household/%20>
<https://thevegancalculator.com/#calculator>

ACTIVITY STEPS

1. Introduction: (10 min)

As learners enter the classroom, have either words or pictures of different foods on the board (e.g. pizza, sushi, salad, burritos, macaroni and cheese, etc). Spend a few minutes asking learners to share what their favorite foods are and why. After everyone has shared, have the learners take out a piece of paper and write down their favorite meal. Ensure they include each ingredient they think the meal requires (ex. Pizza--cheese, bread, tomato sauce, pepperoni). As learners are doing this, you can erase the board and write down the words “omnivore (meat-based diet) and herbivore (vegetarian diet)” on the board.

2. Intro to plant vs. meat diet: (10 min)

Once learners finish, ask the class if they know the difference between an omnivore and a herbivore. If they do, have a few learners explain the difference between the two. If they don't, use the definitions provided to explain the difference to them. Once explained, have learners share what their favorite meal is and if it should go in the omnivore or herbivore category. As they are sharing, write down the meal under the appropriate category. If there are no vegetarians in the class, make sure to add a few meals to the herbivore diet column for comparative purposes. Once everyone has shared, spend a few minutes discussing the results.

Some questions to consider:

- Are there more animal-based meals or vegetarian-based meals?
- What patterns do you see in the list?
- Are there any foods you have never heard of or had before?

3. Food and water connection: (30 min)

Explain to the learners that they are going to research how much water it takes to make their favorite meal. Remind them that, in many parts of the world, water is not readily available. Ask the class if they have considered how much water goes into making their food. Hold up a gallon or liter container and have the learners estimate how many gallons/liters of water they think it takes to make their favorite meal. Have learners tell you their estimate and write it on the board next to their favorite meal.

Use an online food and water calculator (see supply list for suggestions) to have learners research how much water it takes to make their favorite meal. They can also explore the infographic for The Water We Eat: <https://thewaterweeat.com/>

Depending on the calculator used, they will need to be able to translate between liters and gallons. Once they determine their favorite meal's water footprint, have them come to the board to write the volume next to their estimate so everyone can compare the differences.

As they are researching, have them answer the questions on the Wavemaker Question Sheets.

4. Conclusion

Use the following questions on the Learner Wavemaker Question Sheets to help guide your classroom's discussion.

1. What are your initial reactions to the amount of water it takes to make your favorite meal?
2. Why does the water footprint matter?
3. Do you notice any patterns in different types of food footprints?
4. What do you notice about the foods that contain animal products?
5. What do you notice about the foods that don't contain animal products?
6. How does what you're learning make you feel?
7. When choosing what foods to eat, have you previously thought about the water that goes into making them?
8. How do our choices make a difference at the individual, family, and event levels? Why does this matter?
9. How will this activity make you think differently in the future?
10. What are highlights from what you learned today?



ACTIVITY CONTINUED...

4. Exit slip:

In class or for homework, have the learners come up with plant-based options for some of their favorite animal-based meals. Encourage them to go meat-free one day a week for the next week(s) and check every morning to see who did and how it felt. If learners are already eating a plant-based diet, pair them with other learners so they can help with suggestions.

**Depending on the age of the learners and/or their family dynamics, this may not be possible.*

ENRICHMENT ACTIVITY

To dive deeper into our food's footprint, you can look at the miles it took for certain foods to get to you and what impact that has on the environment and climate change.

- Calculate your family's water footprint if you eat vegetarian 2 days/week.
- Expand the "footprint" focus from the individual to regions and countries. Investigate water footprints for the US and other countries in Africa, Asia, Europe, and/or South America. Compare and discuss possible reasons for the differences.
- Conduct a research project that investigates how the Amazon Rainforest is impacted by beef production.
- Find a local vegetarian or vegan restaurant and invite the chef and/or owner to talk to the class to talk about their restaurant's food focus.
- Make vegetarian and/or vegan recipes in class or have learners make them at home and bring in to share.

TAKE ACTION

Have learners create posters, use their multimedia visuals and/or make school announcements to educate other grades about little things they can do to decrease their carbon and water footprints.

Talk with school administrators to see what, if any, changes can be made school-wide.

Ex: Meatless Mondays

Sources:

WaterFootprint: www.waterfootprint.org

Water Calculator: www.watercalculator.org

The Water We Eat: <https://thewaterweeat.com/>



NAME:

DATE:



HEY WAVEMAKER, WE'VE GOT SOME QUESTIONS FOR YOU.



Answer the questions below using some of the terms you have heard today.

1. What are your initial reactions to the amount of water it takes to make your favorite meal?
2. Why does our water footprint matter?
3. Do you notice any patterns in different types of food footprints?
4. What do you notice about the foods that contain animal products vs. the foods that don't contain animal products?
5. How does what you're learning make you feel?
6. When choosing what foods to eat, have you previously thought about the water that goes into making them?
7. How do our choices make a difference at the individual, family, and earth levels? Why does this matter?
8. How will this activity make you think differently in the future?
9. What are highlights from what you learned today?

GET THE FACTS: MICROPLASTICS

MICROPLASTICS

Microplastics are small pieces of plastic, less than 5 mm (0.2 inch) in length. Microplastics include broken pieces of plastic, microfibers, resin pellets from manufacturing, and microbeads. Microfibers are small fibers from cloth spun from petroleum based plastic polymers. Microbeads are very small pieces of plastic often found in cosmetic and hygiene products (also see our Fact Sheet on microbeads).

WHY ARE THEY DANGEROUS?

Since the 1950s, humans have produced more than 8 billion tons of plastic with less than ten percent being recycled. These plastics break down into smaller and smaller pieces as they pass through our environment and eventually make their way into our lakes, rivers and oceans.

Humans consume tens of thousands of microplastic particles each year. They are found in our drinking water, in animals we consume and food packaging. Many plastics are toxic and attract or combine with other toxins. The accumulation of these particles can damage the intestinal tract and the lungs, cause reproductive and organ harm, and developmental delays in children.



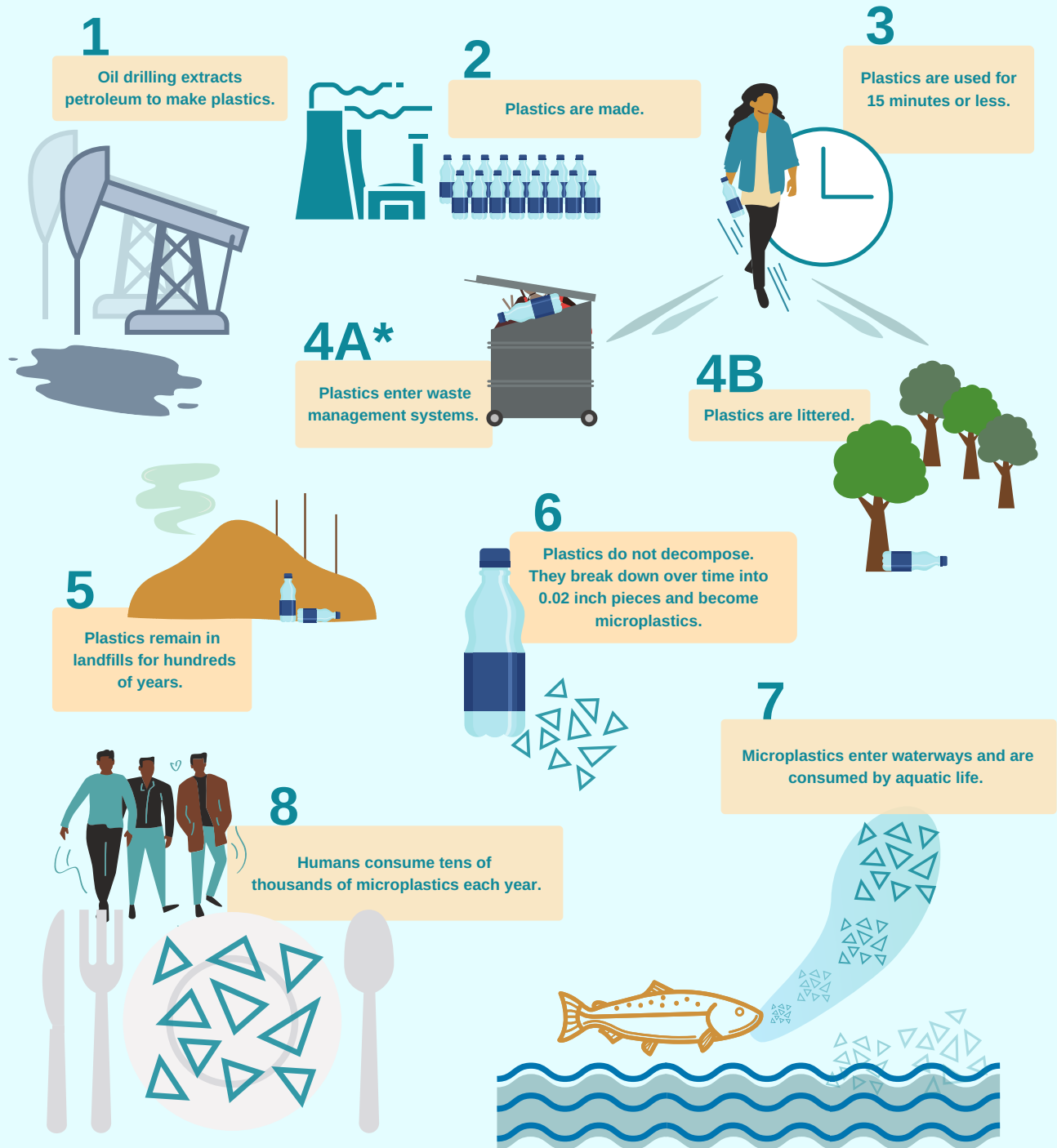
IMAGE SOURCE
nationalgeographic.com/magazine/2019/05/microplastics-impact-on-fish-shown-in-pictures/

microplastics include:

- ➔ plastic pieces
- ➔ microfibers
- ➔ resin pellets
- ➔ microbeads

A dollop of surface water from the English Channel contains a shrimp-like krill, about a third of an inch long; a smaller decapod crustacean; and an orange sea star just emerging from its filmy floating larval stage. The white chip and the fraying red fiber on the right are polyethylene—but to a young fish they too may look like food. Three percent of the larval fish caught for a 2017 study by researchers at Plymouth Marine Laboratory and the University of Plymouth had eaten microplastic fibers.

The Lifecycle of Microplastics



4A* This diagram doesn't include recycling because recycling is not a viable option in microplastics reduction.

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Illustrator: Joanna Levin

Encyclopedia Britannica, [britannica.com/technology/microplastic](https://www.britannica.com/technology/microplastic)

National Geographic, [nationalgeographic.com/news/2018/05/plastics-facts-infographics-ocean-pollution/](https://www.nationalgeographic.com/news/2018/05/plastics-facts-infographics-ocean-pollution/)

National Geographic: Human Micro-plastic Consumption, [nationalgeographic.com/environment/2019/06/you-eat-thousands-of-bits-of-plastic-every-year/](https://www.nationalgeographic.com/environment/2019/06/you-eat-thousands-of-bits-of-plastic-every-year/)

National Oceanic & Atmospheric Administration: Microplastics, oceanservice.noaa.gov/facts/microplastics.html

Oregon State, agsci.oregonstate.edu/article/baby-fish-have-started-eating-plastic-we-haven-t-yet-seen-consequences



WHAT WE CAN DO

Drink water from your tap, if it is clean and safe. This is recommended because the bottles that result from consumption of bottled water have nearly doubled microplastic levels in the environment.

Refuse and reduce plastic use, avoid packaged foods, use laundry balls that attract tiny plastics and microfibers before they are rinsed out into waterways from your laundry cycle, and avoid products that contain microbeads. Lastly, conduct cleanups in your community to keep larger plastics from breaking down in the environment.



IMAGE SOURCE
agsci.oregonstate.edu/article/baby-fish-have-started-eating-plastic-we-haven't-yet-seen-consequences

SOURCES:

[washingtonpost.com/health/youre-literally-eating-microplastics-how-you-can-cut-down-exposure-to-them/2019/10/04/22ebdfb6-e17a-11e9-8dc8-498eabc129a0_story.html](https://www.washingtonpost.com/health/youre-literally-eating-microplastics-how-you-can-cut-down-exposure-to-them/2019/10/04/22ebdfb6-e17a-11e9-8dc8-498eabc129a0_story.html)
[britannica.com/technology/microplastic](https://www.britannica.com/technology/microplastic)
[nationalgeographic.com/news/2018/05/plastics-facts-infographics-ocean-pollution/](https://www.nationalgeographic.com/news/2018/05/plastics-facts-infographics-ocean-pollution/)
[nationalgeographic.com/environment/2019/06/you-eat-thousands-of-bits-of-plastic-every-year/](https://www.nationalgeographic.com/environment/2019/06/you-eat-thousands-of-bits-of-plastic-every-year/)
agsci.oregonstate.edu/article/baby-fish-have-started-eating-plastic-we-haven't-yet-seen-consequences
oceanservice.noaa.gov/facts/microplastics.html

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Unit 1, Lesson 3

DO YOU KNOW THE 7 R'S?

GRADE LEVEL: 4-6 | SUBJECT: SCIENCE, SOCIAL STUDIES, ART | LENGTH OF LESSON: 60+ MINUTES

(Section 4: Saagala Kaveera can either be done during the initial lesson or as a follow up lesson the next day)

Summary: Learners review the three R's (reduce, reuse, recycle) and discuss why we need four more R's (refuse, repurpose, repair, rot). They generate different ways to practice the 7 R's.

Drink Local Drink Tap Connection: We practice the 7 R's because we feel it is important to decrease our impact on the environment. One of the ways we do so is by ensuring our events are low waste, and that most of what we use can either be recycled or composted. We strive to reuse all of our materials and, when we can no longer use them, we find a way to repurpose them.

Learning Objectives

Learners will:

- Discuss and consider the importance of the 3 R's (reduce, reuse, recycle) and the 4 "new" R's (refuse, repurpose, repair, rot)
- Brainstorm ways to repurpose household items
- Discuss the impact of plastic bags on the environment, using an example from Uganda
- Repurpose an old t-shirt, using their own designs or by following an example

Background

While reducing, reusing, and recycling reduces our environmental impact, we can do more by rethinking our choices. Refusing, repairing and repurposing result in more responsible buying habits and consideration of the different ways we can use one item.

The term "rot" refers to composting food and yard waste. Food scraps and yard waste together currently make up more than 28 percent of what we throw away, and should be composted instead. Compost is organic material that can be added to soil to help plants grow. Making compost keeps these materials out of landfills where they take up space and release methane, a potent greenhouse gas.

VOCABULARY

Saagala Kaveera ('Sa-gata Ka-ver-a'): "I don't want a plastic bag" in Lugandan, a language spoken in Uganda.

Reduce: Using less items to lower the amount of waste you are creating.

Reuse: To use an item multiple times instead of just once.

Recycle: The process of collecting items that would be thrown away as trash and turning them into new products.

Refuse: To say no in purchasing single-use products that are harmful to the environment and lowering your environmental impact.

Repurpose: To give new use to something for a different purpose than the one for which it was originally intended.

Repair: To restore an item that was broken so it can be used again.

Rot: The process of allowing natural materials to decompose (break down) due of natural chemical reactions or be aided by fungi, bacteria and insects.

**ACTIVITY****LENGTH OF ACTIVITY: 60 MINUTES****SUPPLIES**

- Old t-shirts
- Scissors
- Paint (only if you want to have the learners paint their old shirts/new bags)
- Jack Johnson's The 3 R's
https://www.youtube.com/watch?v=USo_vH1Jz7E
- 50-second video clip of a DLDT staff member in Uganda at a shop purchasing something and saying "Saagala Kaveera"
<https://www.youtube.com/watch?v=cNdYUJRWP8>
- Links for how to make a t-shirt bag
<https://www.youtube.com/watch?v=zgpaM3u2zng>
<https://www.youtube.com/watch?v=DesGx5lpMWQ>
- Directions for making the reusable bag
<https://momypotamus.com/no-sew-t-shirt-tote-bag-tutorial/>

ACTIVITY STEPS**1. Pre-lesson activity/homework:**

For homework the night before the lesson, have learners bring in an item from their room/home that they used to play with or use often. Don't give any specifics about what it will be used for, but reassure them that they will get to bring the item home the next day and that it won't be harmed. With that said, tell them not to bring in anything that is valuable (from a monetary standpoint) or a family heirloom, just in case!

2. Introduction: (15 min)

Once learners are in their seats and class has started, play them the song by the musician Jack Johnson called "The 3 R's". If you have access to a projector you can use this version so they can see the words too: https://www.youtube.com/watch?v=USo_vH1Jz7E

After they listen to the song, have one of the learners remind the class what the 3 R's are: reduce, reuse and recycle. That learner (or another learner) can come up to the board to write down the words. Spend a few minutes reviewing what each of the 3 R's mean and, if time permits, have learners share how they reduce, reuse and recycle. Ask the class if they know there are four other R's on which they should also focus. Spend a few minutes allowing the learners to guess what the other four R's could be. Then write "refuse, repurpose, repair, rot" on the board and ask the learners to explain what they mean.

3. Household items: (15 min)

Give the learners a minute or two to take out the items they brought in for homework and put them on their desks. One at a time, have the learners stand and explain what their item is and what it is used for. Have the rest of the class come up with ways that they could reuse, repurpose, or repair this item. It could also be repaired, if necessary, or re-gifted to someone in need. Encourage creativity and thinking outside of the box in their answers. Remind them that they can't repurpose the items into anything dangerous, but that they should be as creative as possible. Make sure everyone has a chance to share her/his item. Conclude the discussion by encouraging learners to repurpose the items, as appropriate and tell them they will repurpose something during class.

4. DLDT Connection–Saagala Kaveera: (10 min)

Show the Saagala Kaveera video clip of a DLDT staff member buying something at a local Ugandan store and saying, "Saagala Kaveera", and explain why they don't use plastic bags. Ask the learners to guess what "Saagala Kaveera" means. If no one guesses correctly, explain that it means "I don't want a plastic bag" in Lugandan. Use this opportunity to talk about plastic bags, their impact on the environment, and brainstorm what alternatives there are to transport items from a store. They can share examples of things they have previously used when refusing plastic bags or any ideas of what items could be repurposed to become bags.

If time permits, have learners research and discuss plastic bag bans enacted in many places across the US. You can also discuss the work Drink Local Drink Tap does locally in Northeast Ohio and internationally in Uganda.

5. Repurposed t-shirts: (30 min)

Distribute an old t-shirt to each learner. Ask them to think of ways the t-shirt could be repurposed. Consider household rags, washcloth, hand towels, headbands, etc. Tell the class that you are going to teach them how to make the t-shirt into a reusable bag. Have learners consider different ways to make the t-shirt into a bag. They can use their own ideas to make a bag or another useful item, or have them follow along as you show them how to cut up and tie the shirt (see video links in 'Supplies'). When finished, they can paint, decorate, and design their new bags however they would like. If there are extra shirts you can have them make more or repurpose them another way.



ACTIVITY CONTINUED...

6. Diagram: (10 min)

As you finish repurposing your item, draw a diagram that shows people practicing as many of the 7 R's as possible.

7. Exit slip: (10 min)

Have learners share what they learned about the 7 R's and why the four "new" ones are so important.

TAKE ACTION

Encourage their families to stop using plastic bags when shopping.

Repurpose old t-shirts into reusable bags and sell them at school as a fundraiser. Refer to our Educator Kit for details on hosting a fundraiser at your school.

If they live in a state or county that still uses plastic bags, they can write a letter to their legislators and/or specific stores encouraging them to ban plastic bags.

DRINK LOCAL DRINK TAP SPOTLIGHT

Drink Local Drink Tap's work in Uganda has led staff to meet Ugandan youth activist Leah Namugerwa. She focuses on climate change issues, reducing plastic bag use, and planting trees in Uganda. As a follow up activity, learners can research Leah and the work she does in Uganda to combat plastic use. She is an example that people of any age can make big changes in communities. Refer to our website for information about our work in Uganda.



Sources:

EPA <https://www.epa.gov/recycle/composting-home>

zerowasteXchange <https://zerowastexchange.org/551/the-5-rs-of-zero-waste-a-practical-guide>



NAME: _____

DATE: _____



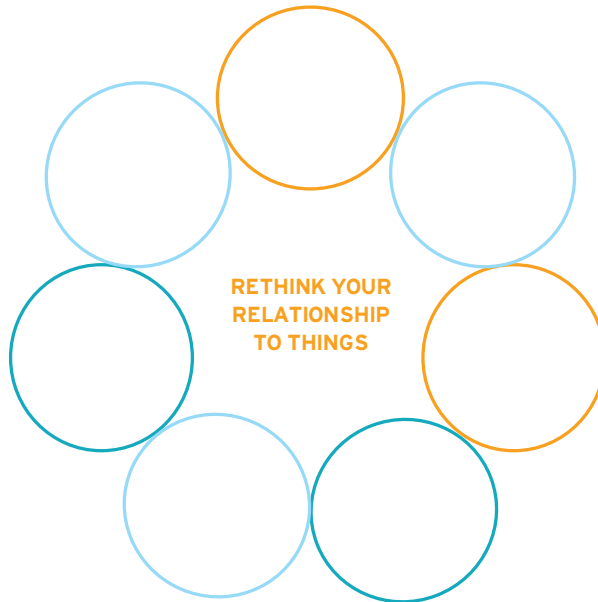
HEY WAVEMAKER, WE'VE GOT SOME QUESTIONS FOR YOU.



Answer the questions below using some of the terms you have heard today.

1. What will you do with the object you brought in from home?

2. Write the 7 R's in the circles to help you remember them all.



3. What have you learned about the 7 R's and why the four "new" ones are so important?

4. How will you use what you learned today in your daily life?

5. On a separate sheet of paper, draw a diagram that shows people practicing as many of the 7 R's as possible. (Label them)



Unit 1, Lesson 4

BREAK THE PLASTIC HABIT

GRADE LEVEL: 4-6 | **SUBJECT: SCIENCE, LANGUAGE ARTS, SOCIAL STUDIES** | **LENGTH OF LESSON: 75 MINUTES**

Summary: Learners consider how they use plastic each day and their behavior’s impact on the environment. They leave the lesson with practical solutions and ideas to reduce their daily use of plastic and are challenged to help others reduce their own plastic use.

Drink Local Drink Tap Connection: We view single-use plastic as a big environmental problem, and we do our best to eliminate single-use from everything we do. We host monthly beach cleanups because we know that plastics are causing a tremendous amount of damage to our lakes, oceans, and aquatic life. Reference the Single-Use Plastics Fact Sheet for more detailed information.

Learning Objectives

Learners will:

- Discuss the lasting impact that plastic has on the Earth, with a focus on aquatic life
- Collect data on their daily use of plastic
- Brainstorm solutions to reduce their plastic consumption
- Develop a project to help others reduce their own plastic use

Background

Single-use plastics are also called disposable plastics. They are commonly used for plastic packaging, utensils, bags, bottles, cups, straws and other items intended to be used just once before they are thrown away or recycled. For more detail needed for this lesson, use the Single-Use Plastic Fact Sheet.

Remote Learning Lesson

This lesson can be done as a remote learning activity. Here are the steps:

1. Start with a group video call to share and discuss the plastic items learners have been using and tracking in the “Plastic Use Log”. Discuss alternatives to these items and why this matters.
2. Have learners read the Single-Use Plastic Fact Sheet independently.
3. Learners fill out the plastic reduction pledge and work with a family member or friend to do the same. Explain that pledges help us make behavior changes.
4. Close with a group video call so each learner can share their own pledge and discuss what it was like to ask someone else to make a pledge to reduce single-use plastic.

VOCABULARY

- **Single-Use Plastics:** Single-use, or disposable, plastics are used only once before they are thrown away or recycled. Examples include plastic bags, straws, coffee stirrers, soda/water bottles, and most food packaging
- **Microplastics:** Extremely small pieces of plastic debris in the environment that result from the disposal and breakdown of consumer products and industrial waste.
- **BPA:** BPA stands for bisphenol A, which is an industrial chemical that has been used to make certain plastics and resins since the 1960s. BPA is found in polycarbonate plastics and epoxy resins. Polycarbonate plastics are often used in containers that store food and beverages, such as water bottles.

**ACTIVITY****LENGTH OF ACTIVITY: 75 MINUTES****SUPPLIES**

- **Single-Use Plastics Fact Sheet**
- **Images of marine life, single-use plastics, landfills, etc.**
- **Wavemaker Question Sheets: Daily plastic tracking log for plastic use and Pledge form**

ACTIVITY STEPS**1. Pre-lesson activity/homework:**

The week before the lesson, have learners keep a daily log of their plastic usage. They should try to keep track of all the times they use and/or see plastic everyday. Plastic tracking log is included in the Wavemaker Question Sheet.

2. Introduction: (10 min)

When learners arrive, have them take out their daily Plastic Tracking Logs. Instruct them to partner up and read their logs to each other to compare and contrast where and when they used plastic. While learners are sharing with their partners, write the following categories on the board: food, drink, household items, other.

3. Group sharing: (5-10 min)

Have each group share one example they found from each category and add their responses to the main list on the board. Ensure the learners know when an example is said aloud that they can repeat responses to understand which are the most frequently used and seen plastic items. Rotate around the room until all examples have been shared and the board is filled with examples of plastic usage.

4. Why plastics are harmful: (15 min)

Have learners read the accompanying Fact Sheet. Discuss the ways that plastic is harming our environment. Make sure to talk about single-use plastic items.

5. What we can do: (10 min)

Using the lists that the class created, discuss alternatives to each item to minimize plastic usage.

6. Clean-Ups: (10 min)

As an example of how to help with the problems plastic creates, explain what Drink Local Drink Tap (DLDT) does during their monthly beach clean-ups. Ask learners to talk about their experiences with beach, park or neighborhood clean-ups.

From 2010-2022, DLDT's volunteers picked up over 15,000 pounds of trash at one single beach! Kids going through the DLDT Wavemaker Program often have taken action to make a difference, even as young as 5 years old. Learners have gone from picking up litter at the beach, to actively recruiting friends and family to use less plastic.

Discuss items found on the beach and the damage those items can cause. Brainstorm ways and other locations where learners can help. Instead of organizing a beach clean-up, you can also organize a park/school/neighborhood clean-up.

7. Change starts now: (10 min)

Have learners fill out the pledge form in the Wavemaker Question Sheets. Go around the room and have each learner share one thing she/he will do to decrease plastic use in the following week. While it's not easy to change behaviors, making a pledge out loud to others is a powerful tool to increase the likelihood of a behavior change. Let learners know they can post their actions on social media and use the hashtag #Waves4Change to encourage others to minimize daily plastic use.



TAKE ACTION

Learners can encourage a friend or family member to fill out the pledge form to commit to an action they will take to reduce single-use plastic pollution.

Have learners consider ways to reduce plastic use in the school. Learners can survey the use of single-use plastic items in the school and then speak to an administrator about the items' environmental impact and what alternatives exist for them.

Learners can teach other classes within their school about the dangers of plastic and encourage schoolmates to work toward minimizing plastic use and/or holding plastic free days at school.

Conduct a class clean-up in the neighborhood or at a nearby beach. Record data on what you find and discuss what it means.

ENRICHMENT ACTIVITY

A week after the lesson, take 15 minutes of class time to review how it felt to reduce single-use plastic. Have learners share how changing their habits affected them and their families. How hard or easy was it to make this change? Challenge learners to continue to do their part in reducing plastic consumption.

DRINK LOCAL DRINK TAP SPOTLIGHT

Introduce Drink Local Drink Tap's #Waves4Change campaign and encourage learners to start making changes in their daily lives. When people take a positive action for the planet, they can take a picture of it and/or just write about it and post it to social media with the hashtag #Waves4Change.



NAME:

DATE:



PLEDGE FORM



1. What change will you commit to making to reduce your plastic use?

<p>REDUCE PLASTIC USE PLEDGE CARD</p>	<p>I HEREBY PLEDGE TO TAKE THE FOLLOWING ACTION TO REDUCE PLASTIC ON PLANET EARTH:</p>
	<p>_____</p> <p>SIGNATURE</p>

2. How will you encourage other people in your life to reduce their plastic use? Get someone in your life to fill out this pledge form.

<p>REDUCE PLASTIC USE PLEDGE CARD</p>	<p>I HEREBY PLEDGE TO TAKE THE FOLLOWING ACTION TO REDUCE PLASTIC ON PLANET EARTH:</p>
	<p>_____</p> <p>SIGNATURE</p>

GET THE FACTS: SINGLE-USE PLASTICS

SINGLE-USE PLASTICS

Single-use plastics are designed to be used just once. They are most commonly used for packaging and include: bottles, wrappers, straws, bags, utensils and carry-out containers.

WHY ARE THEY DANGEROUS? PLASTIC IS FOREVER.

Since the 1950s, humans have produced more than 8 billion tons of plastic with less than ten percent being recycled. This plastic is in our environment in one form or another.

Environmental

Single-use plastics find their way into the natural environment. They clog waterways, sewage drains and are ingested by wildlife.

Human

Plastics leach toxic chemicals into the environment as they degrade, which is then absorbed by our crops and eaten by animals. This is how it enters our food supply. These toxic chemicals are concentrated as they move up the food chain, where they are eventually consumed by humans.

Economic

Studies indicate that plastics damage the world's marine ecosystems and this causes an economic impact of at least \$13 billion every year.



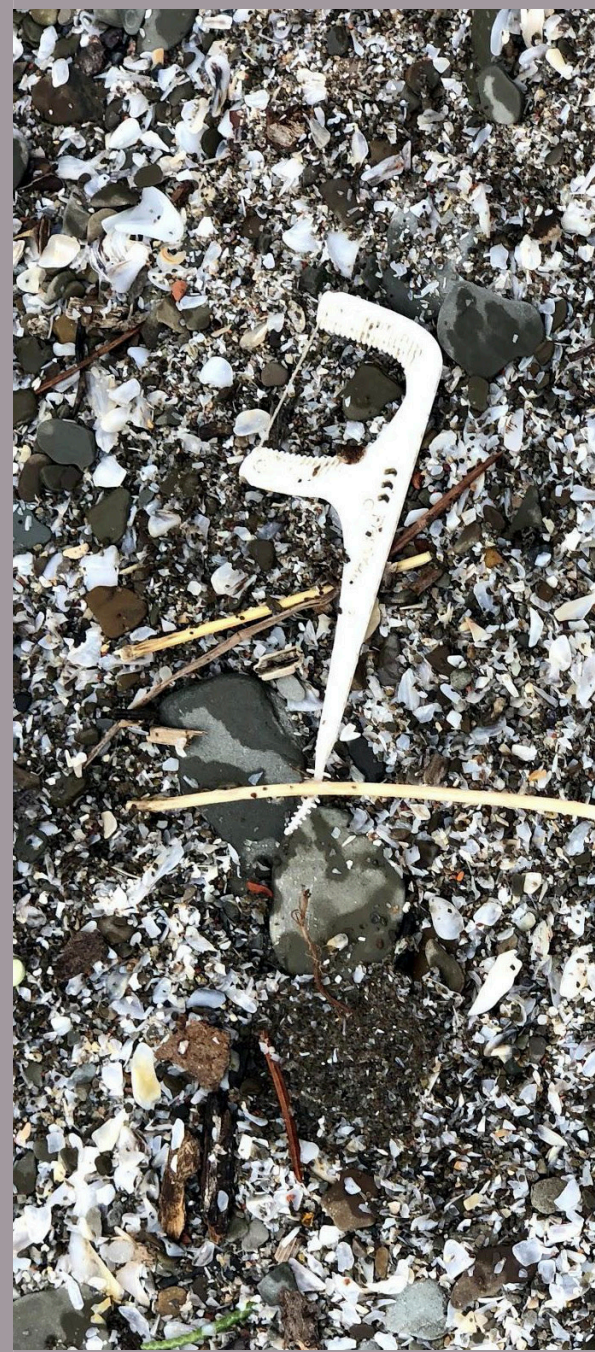
PREVENTION IS KEY.

REFUSE ➔ REDUCE ➔ REUSE ➔ REPURPOSE ➔ RECYCLE

Single use plastics are a unique threat due to their sheer volume, which only worsens the crisis of plastic pollution. For example, every year up to 3 trillion plastic bags are used around the world. The average American family alone uses, on average, 1,500 plastic bags a year and 99% of plastic bags are buried in landfills or pollute the natural environment.

Every bit of plastic ever manufactured still exists.

Refusing Single-Use Plastic is a vital way to help the planet.



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Illustrator: Joanna Levin

Natural Resources Defense Council, [nrdc.org/stories/single-use-plastics-101#what](https://www.nrdc.org/stories/single-use-plastics-101#what)
Sustainability Forum, [sustainabilityforum.com/infographic-how-to-reduce-single-use-swaps-infographic](https://www.sustainabilityforum.com/infographic-how-to-reduce-single-use-swaps-infographic)
Reuse This Bag, [reusethisbag.com/articles/the-truth-about-paper-bags](https://www.reusethisbag.com/articles/the-truth-about-paper-bags)

WHAT WE CAN DO

Prevention is key. You can refuse, reduce, reuse, repurpose, and then recycle, in that order. For example: refuse plastic bags for 1-2 item purchases and bring usable bags for shopping. Refuse a straw. Refuse to use plastic bags for produce. Reduce purchasing food packaged in plastic.

SOURCES:

wedocs.unep.org/bitstream/handle/20.500.11822/25496/singleUsePlastic_sustainability.pdf?isAllowed=y&sequence=1
biologicaldiversity.org/programs/population_and_sustainability/sustainability/plastic_bag_facts.html
marketplace.org/2019/04/22/single-use-plastic-pollution-problem/



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Unit 1, Lesson 5

MICROPLASTICS: TINY TROUBLE

GRADE LEVEL: 4-6 | SUBJECT: SCIENCE, LANGUAGE ARTS, SOCIAL STUDIES | LENGTH OF LESSON: 60+ MINUTES

Summary: Learners research microplastics and their environmental impact, while considering positive actions they can take for the Earth.

Drink Local Drink Tap Connection: At DLDLT we help volunteers organize and host beach clean-ups which remove trash, including plastic. When we remove larger pieces of plastic, this ensures they don't break down into smaller plastic pieces at the beach that can get into our waterways.

Learning Objectives

Learners will:

- Define what they know and want to know about microplastics
- Research microplastics and their impact on animal and human lives through text, images and by creating a diagram
- Reflect on their own environmental impact
- Brainstorm solutions and actions to help the Earth

Background

Microplastics come from a variety of sources, including broken-down remnants of larger pieces of plastic. Glitter is an example of a microplastic. Microfibers are a type of microplastic that comes from polyester clothing. Microplastics called “microbeads” can also be manufactured from polyethylene plastic and added to health and beauty products. In the United States, the ‘Microbead Ban’ was passed in 2015.

Microplastics are tiny but their impact on the environment and our food chain is large. These plastics are so small that they are sometimes invisible to the naked eye. They are ingested by wildlife and, as smaller animals are eaten by larger animals, these plastic pieces accumulate up the food chain. For example, if these plastics were eaten by fish and then we ate those fish, we would ingest the plastics too. Before they are eaten, plastics can attract heavy metals and chemicals, which make them even more dangerous for animals and humans to consume.

We can reduce microplastics by not purchasing products that contain them, using a device to catch microfibers when we wash fleece, and cleaning up plastic trash before it breaks down into smaller pieces.

Stay informed of positive actions like the ‘Microbead Ban,’ so you and your learners can share and support these good decisions for the environment.

Remote Learning Lesson

This lesson can be done as a remote learning activity. Here are the steps:

1. Provide your classroom with the Wavemaker Question Sheet and have them fill out the Know, Want to Know Sections of the KWL Sheet.
2. Send learners the video link and article to watch and read independently.
3. Learners draw the diagram and share a photo of it or discuss it in the group discussion (next step).
4. Hold a group video discussion to discuss questions in section 4.
5. Send the learners the Fact Sheet to read, and have them complete the “Learned” section of the KWL sheet.
6. They can watch and discuss the Story of Stuff video as follow-up and discuss how they can take responsibility for their eco-impact on the world.

VOCABULARY

- **Microplastics:** extremely small pieces of plastic debris (less than 5 millimeters) in the environment that result from the disposal and breakdown of consumer products and industrial waste.
- **Microbeads:** small, solid, manufactured plastic particles that are less than 5mm and don't degrade or dissolve in water.
- **Marine Debris:** any persistent solid material that is manufactured or processed and is then directly or indirectly, intentionally or unintentionally, disposed of or abandoned into a marine environment (e.g. the Great Lakes).

**ACTIVITY****LENGTH OF ACTIVITY: 60+ MINUTES****SUPPLIES**

- NOAA video: <https://oceanservice.noaa.gov/facts/microplastics.html>
- The Story of Stuff video: <https://storyofstuff.org/movies/story-of-stuff/>
- National Geographic article: <https://www.nationalgeographic.org/encyclopedia/great-pacific-garbage-patch/>
- Wavemaker Question Sheets: K-W-L form and Group Questions
- Microplastics Fact Sheet

ACTIVITY STEPS**1. Introduction: (5 min)**

To begin the lesson, have the whole class fill out a K-W-L chart on microplastics found in the Wavemaker Question Sheet below. Fill out the first two sections by listing what they already know and what they want to learn. At the conclusion of the lesson they will fill out what they learned.

2. Video: (10 min)

Watch the following video from NOAA on microplastics. <https://oceanservice.noaa.gov/facts/microplastics.html>

Show these pictures from National Geographic and briefly summarize the different garbage patches in our waterways. Have learners read the article, if time allows: <https://www.nationalgeographic.org/encyclopedia/great-pacific-garbage-patch/>

3. Diagram: (10 min)

With a partner, create a drawing that shows at least two ways microplastics get into waterways. Label your drawing and share it with another pair of learners.

4. Group sharing: (10 min)

Working in small groups, have your learners discuss and answer the following questions on the Wavemaker Question Sheets.

- a. What are microplastics?
- b. Why are microplastics such a big problem?
- c. How do microplastics get into our waterways?
- d. How do you feel when you see the pictures of the garbage in our water?
- e. What is one thing you can do individually to stop creating microplastics?

After everyone in the group has had a chance to answer the questions, take time to read through the accompanying Microplastics Fact Sheet and identify one or two new things that you learned.

5. K-W-L Conclusion: (5 min)

As a class, have learners take turns filling out the last section of the K-W-L chart on what they learned about microplastics. After the chart is complete, if time permits, they can brainstorm ways to reduce their plastic use, both as individuals and within the school.

6. Video connection: (20 MIN)

As a class, or for homework, have learners watch the Story of Stuff video: <https://storyofstuff.org/movies/story-of-stuff/>. Afterward, talk about why plastics and microplastics are so harmful to the environment. As a class, research what products are the most harmful and identify alternatives to using those products. Review and discuss the essential question for this unit, “How does my impact on the world affect other people/places, and how can I take responsibility for my impact?”



ACTIVITY CONTINUED...

7. EVALUATION/EXIT SLIP: (5 MIN)

Have learners take a few minutes to silently write answers to the following questions. They can choose to write their name or complete it anonymously, but need to turn it in as they exit the room:

- a. List 3 facts about microplastics and why they are a problem.
- b. How did today's lesson make you feel?
- c. What will you do to decrease your plastic consumption?
- d. What can we do as a school to reduce our plastic use?

TAKE ACTION

You can conduct a neighborhood or beach clean-up with family and friends. By removing trash from the environment, we can prevent pieces of plastic from breaking down into microplastics. We can also ensure wildlife don't accidentally ingest or become entangled in pieces of plastic and other trash in their habitats.

Have learners examine their bathroom medicine cabinets to see if they contain older personal care products that contain microbeads, which are labeled as 'polypropylene or polyethylene.'



NAME:

DATE:



KWL ON MICROPLASTICS



Fill in the "I know", "I want to know", "I learned" columns. (Be prepared to share with the rest of the class.)

I KNOW	I WANT TO KNOW	I LEARNED
•	•	•
•	•	•
•	•	•
•	•	•
•	•	•

Draw a diagram that shows at least 2 ways microplastics get into our waterways.



NAME: _____

DATE: _____



HEY WAVEMAKER, WE'VE GOT SOME QUESTIONS FOR YOU.



Working in small groups, discuss the following questions:

- a. What are microplastics?

- b. Why are microplastics such a big problem?

- c. How do microplastics get into our waterways?

- d. How do you feel when you see the pictures of the garbage in our water?

- e. What is one thing you can do individually to stop creating microplastics?

Working on your own, respond to the following:

1. List 3 facts about microplastics and why they are a problem.
 - a.
 - b.
 - c.
2. How did today's lesson make you feel?
3. What will you do to decrease your plastic consumption?
4. What can we do as a school to reduce our plastic use?