

My nature connection

WATER FILTERS

GRADES: 1+
TIME: 60-90 min.

THINK ABOUT WATER

Where can we find water?
Think about how many times you use water throughout the day (drinking, showering, watering plants, etc.) Why is water so important to us?

ACTIVITY

INTRODUCTION

What is pollution?
Pollution is unnatural or harmful substances that get into our air and waterways.

What happens to water when it is polluted?
When water is polluted, it can hurt animal and plant species and humans. It is important to keep our water clean and healthy.

What is a water filter?
Filtering is the process of removing matter from a liquid. A water filter can help us to get rid of toxic chemicals and keep our water clean.

In this activity, we will try use homemade water filters to filter out the pollution from the mixtures we made.

WHAT YOU'LL NEED

Activity 1:

3 small cups/ containers
Pollution materials-
Examples: Dirt, Snow, Food Coloring, Bits of leaves and grass, Ripped paper

Activity 2:

Plastic water bottle (alt: funnel)
Cotton Balls
Coffee Filter
Gravel/ Sand
Charcoal (if available)

Students will:

1. Learn about pollution and the importance of keeping water clean.
2. Create their own water filter and experiment using water from the local environment and homemade "pollution mixture".

SETTING
Indoors
and
Outdoors

1. CREATE YOUR OWN POLLUTION MIXTURE

First, make 3 different "pollutants" (you can choose which based on time and materials).

1. Create a pollution mixture choosing any of the suggested materials below. You can use other materials too. Get creative with it!

- mud or dirt
- snow or rain water
- food coloring
- bits of leaves and grass
- salad dressing
- tooth paste
- water collected from kitchen sink
- water collected from outside



2. Mix pollutants and water together in a small cup or container. Repeat three times so that you have three different pollution mixtures.

3. Using a separate sheet of paper or a nature journal, write down your observations of each pollution mixture using the questions below.

Pollution mixture 1:
Pollutant materials include:
What does the mixture smell like?:
What does the mixture feel like?:
What does the mixture look like? (write or draw)

Pollution mixture 2:
Pollutant materials include:
What does the mixture smell like?:
What does the mixture feel like?:
What does the mixture look like? (write or draw)

Pollution mixture 3:
Pollutant materials include:
What does the mixture smell like?:
What does the mixture feel like?:
What does the mixture look like? (write or draw)

CONNECTING WITH QUESTIONS

How did you come up with your pollutant mixture?

What did you observe happen to the water after you added in the pollution?

How do you think pollutants like these and others get into our lakes, streams, and oceans?

Why is it important to keep our water clean and safe?

How can we protect our waterways?

2. MAKE A WATER FILTER

1. First, cut the water bottle in half. Keep the cap screwed on, but poke a small hole in the top with a pair of scissors (parents or guardians can help with this).

2. To create the water filter, flip the top half of the water bottle upside down and set it onto the bottom half of the water bottle, drinking spout facing down. See diagram below for a visual.

3. Begin by taking a cotton ball and placing it into the drinking spout. From here, students will design their own filters by layering different materials over the cotton ball. We recommend using cotton balls, coffee filters, sand, and some small rocks. Parents or guardians can support their students in creating the filters.

Don't forget to poke a hole in the cap so water can drain!



REMINDER:

Just because the water may look completely filtered, it is still not safe to drink it.

3. EXPERIMENT AND TEST

Once your filters have been built, you can begin testing your first pollutant. Pour the pollution mixture over the filter and watch it drain into the cup below. If nothing is draining, pour more water (as necessary) into the funnel. Watch the water slowly fill up the cup. Once it has filtered completely, clear out any pollutants hanging around. Repeat for each pollution mixture.

Go ahead and write down your observations in a nature journal as you filter each pollution mixture.

What does the water look like now?

3. Using a separate sheet of paper or a nature journal, write down your observations of each pollution mixture using the questions below.

Pollution mixture 1:

Pollutant materials include:

What does the mixture smell like?:

What does the mixture feel like?:

What does the mixture look like? (write or draw)

Pollution mixture 2:

Pollutant materials include:

What does the mixture smell like?:

What does the mixture feel like?:

What does the mixture look like? (write or draw)

Pollution mixture 3:

Pollutant materials include:

What does the mixture smell like?:

What does the mixture feel like?:

What does the mixture look like? (write or draw)



CONNECTING WITH QUESTIONS

Which pollutant was the easiest to filter? Why?

What pollutants were you unable to filter?

What do you think you can do to try to prevent pollutants from entering our waterways? Brainstorm a list with your family of how you can work together to reduce your pollution and save water.

Share your commitments with the class and compile a list of how everyone will do their part to take care of our earth and waterways.

ADDITIONAL RESOURCES

Water Pollution 101
<https://youtu.be?MEb7nnMLcaA>

Keeping Water Clean
https://youtu.be/4j4_OV-ChL0

TELL US WHAT YOU THINK!

take a short survey at: campfiremn.org/mynatureconnection

or here: Kids Survey - [click here](#) | Teachers/Parents Survey - [click here](#)

EDUCATION STANDARDS

Social Emotional Learning Competency: Social Awareness, Responsible Decision-Making

Grade Level

Science Education Standard

Grade 1

1.2.1 Students will be able to design and conduct investigations in the classroom, laboratory, and/or field to test students' ideas and questions and will organize and collect data to provide evidence to support claims the students make about phenomena.

Grade 2

1.2.1 Students will be able to design and conduct investigations in the classroom, laboratory, and/or field to test students' ideas and questions and will organize and collect data to provide evidence to support claims the students make about phenomena.

Grade 3

1.2.1 Students will be able to design and conduct investigations in the classroom, laboratory, and/or field to test students' ideas and questions and will organize and collect data to provide evidence to support claims the students make about phenomena.

Grade 4

1.2.1 Students will be able to design and conduct investigations in the classroom, laboratory, and/or field to test students' ideas and questions and will organize and collect data to provide evidence to support claims the students make about phenomena.

Grade 5

1.2.1 Students will be able to design and conduct investigations in the classroom, laboratory, and/or field to test students' ideas and questions and will organize and collect data to provide evidence to support claims the students make about phenomena.

Grade 6

2.1.1 Students will be able to represent observations and data in order to recognize patterns in the data, the meaning of those patterns, and possible relationships between variables.

Grade 7

2.1.1 Students will be able to represent observations and data in order to recognize patterns in the data, the meaning of those patterns, and possible relationships between variables.

Grade 8

3.1.1 Students will be able to develop, revise, and use models to represent their understanding of phenomena or systems as they develop questions, predictions and/or explanations and communicate ideas to others.

Grades 9-12

3.2.2. Students will be able to use their understanding of scientific principles and the engineering design process to design solutions that meet established criteria and constraints.