



AIR AND WATER IN THE ENVIRONMENT

Grade 2, Science and Technology

Source: Adapted from *Air and Water in the Environment*, EcoMentors, Earth Day Canada

DESCRIPTION

In this lesson, students will explore the properties of air and water and investigate how both are polluted by humans. Students will then think critically about how we waste water and ways we can conserve water.

CURRICULUM LINKS – SCIENCE & TECHNOLOGY, GRADE 2

Understanding Matter & Energy – Properties of Liquids and Solids

Overall Expectation: 1

Specific Expectation: 1.1

Understanding Earth & Space Systems –

Air & Water in the Environment

Overall Expectations: 1, 2, 3

Specific Expectations: 1.1, 1.2, 2.1, 2.2, 2.3, 2.5, 3.2, 3.3

PLANNING NOTES

Materials

- Glass of water
- Soil
- GOOS paper
- Cloth
- Bowl

Learning Skills & Work Habits

Collaboration, initiative

Prior Learning

Clean air and water are very important for the health of the environment and of all living things. Both air and water are often spoiled by pollution. It is important to protect our natural resources and conserve them by changing how we use them.

Evaporation occurs when water changes from liquid to gas as part of the water cycle.

Recommended Class Time

- 1-2 periods

TEACHING/LEARNING STRATEGIES

Introduction

1. Begin by asking students to share how they use air and/or water.
2. Take the glass of water over to a sunny or warm spot in the classroom. Dip your finger in the water and put a drop on the warm surface. Ask students: What will happen to the little drop of water? Where does the water go? How long will it take the water to disappear into the air? Write down a tally of how many students say the water will disappear in 15 minutes, 30 minutes, 45 minutes, 1 hour. Remember to check or ask students to check the drop of water every 15 minutes.
3. Continue the class discussion by asking: How can we see water in the air? Is there air in this classroom? Where is it? Is there air outside? How do we know there is air? After sharing ideas, ask students to stand up and take a deep breath of air through their nose and out through their mouth. Ask them to think about what happens when you take a deep breath in winter.
4. Connect the vapour that we see in winter to clouds in the sky by asking: Can you see any clouds in the sky? Are they moving? Take some time to observe the outdoors by either going outside or looking out the classroom window and record observations.

Whole Class Game: Hot and Cold

1. Select one student to go outside to become the water detective for a game of Hot and Cold.
2. Hide the glass of water somewhere in the class (can be out of sight). Ask the water detective to return to the class and as they walk around the room ask the rest of the class to call out “cold,” “warm,” “warmer,” and “hot” as the detective gets closer to the hidden glass. Play the game again with another water detective.
3. After finding the water, discuss that even though we cannot see it, water is actually all around us. Water is used to make the things around us and to help keep the things we see outside alive. Ask students to look around the classroom and find an object that was made with water or needs water to keep it clean. Generate a list.

Whole Class Activity: Clean Water

1. Ask a student to come up to the board and draw a way people make water unclean. The other students will guess what it is. If they guess correctly, they can come up and draw. If you wish to involve more students, have them conduct this activity in pairs or small groups on GOOS paper.
2. Ask students: Why do plants, animals, and people need clean water? What happens if the water we use is dirty? Do you know of any plants, animals, or people that got sick because of unclean water?
3. Continue the conversation by asking students if they know how we make clean drinking water.
4. Put a small amount of soil in the glass of water. Stir the soil into the water. Make sure the water looks dirty before asking the students if they can drink it.
5. Explain that this water is polluted and that you want to make it clean and drinkable. Give students time to discuss ways they can clean the water with a partner and share ideas with the whole class.
6. Demonstrate filtration by putting a cloth over the empty glass. Ensure that the cloth dips into the glass so no water spills out. Slowly pour the “polluted” water into the cloth and show the results. The water may be murky, so ask students what else could be done to clean it. Share that our drinking water is filtered and cleaned by different types of filters that separate the pollution from the water.

Conclusion

1. As a group, go over ways that we use water every day and write them down on GOOS paper. Add them to a bowl with teacher generated ideas about ways we use water.
2. Divide the class in half. Explain to the class that the bowl contains ways that we use water, and that as a team, they need to come up with a solution to conserve water.
3. Start with one team and ask a team member to pull out a piece of paper and read how we use water. Give that team 30 seconds to come up with a way to conserve. If they cannot come up with an answer, give the other team a chance to answer the question. For every right answer each group gets a point. Keep track of the score on the board. Encourage the students to come up with creative answers. More than one answer could be possible for each use of water.
4. Create a class list with all of the different water conservation suggestions.

EXTENSIONS

Design Filtration Experiments: After discussing ways to make polluted water clean and drinkable, ask students to work with a partner or small group to design an experiment to clean the water. Share experiments with the class and gather the materials needed to conduct their experiments. Each group should record their ideas, procedure, observations, and results.

Water Cycle: Ask students to draw a picture of everything that happens with a drop of water. Think about where water goes, how clouds are formed, and what happens to water after it rains. Afterwards, discuss the drawings and summarize a simple water cycle. When appropriate, introduce the terms evaporation, condensation, and precipitation.