

WATER FOR ME, PLEASE!



Feeling thirsty? Why not have a big glass of cold water? Water is free and it's essential to our survival. When we make water our main drink of choice, we satisfy our thirst and feel good. But water alone is not the only way to stay hydrated: many different beverages and foods contain a percentage of water, and they can be tasty and just as refreshing!

Curriculum Links

- Health and Physical Education: Healthy Living
- Science and Technology: Life Systems
- Science and Technology: Earth and Space Systems

Learning Objectives

- Understand that we need water to survive
- Discover why our bodies lose water and how to rehydrate
- Realize that water is also found in other drinks and foods

Learning Methods

- Estimating the quantity of water on the Earth
- Estimating the quantity of water in the human body
- Estimating how much water a human being needs



Materials

- Copies of the **Water for Me, Please!** activity sheet below (1 per student)
- Blue crayons or pens (1 per student)
- Supplies for 4 water estimating stations

Pre-activity: Set Up Water Estimating Stations

Before beginning the activity, assemble the supplies needed and set up the four water estimating stations on tables or desks. Position the stations around the classroom. Use transparent, disposable plastic glasses (250 ml size).

Station 1

- Globe (Earth)
- 4 glasses:
 - 1 empty glass
 - 1 glass of water, one-quarter full and labelled 25%
 - 1 glass of water, one-half full and labelled 50%
 - 1 glass of water, three-quarters full and labelled 75%
- A piece of cardboard indicating the number of the station, its name and the question for students to consider at this station:

Station 1: Water on Earth

Question: How much water is there on the Earth?

Station 2

- 4 glasses:
 - 1 empty glass
 - 1 glass of water, one-half full and labelled 50%
 - 1 glass of water, two-thirds full and labelled 65%
 - 1 glass of water, three-quarters full and labelled 75%
- A piece of cardboard indicating the number of the station, its name and the question for students to consider at this station:

Station 2: Water in my body

Question: How much water is there in my body?

Station 3

- A piece of cardboard indicating the number of the station, its name and the question for students to consider at this station:

Station 3: Time to take a sip!

Question: When should I drink water?

Station 4

- Pictures of the following items:

- Green coconut
- Raisins
- Cashews
- Cup of milk
- Bowl of soup/broth
- Watermelon
- Smoothie
- Meat jerky
- Cucumber
- Dried pasta

- A piece of cardboard indicating the number of the station, its name and the question for students to consider at this station:

Station 4: Water is everywhere!

Question: Which of these food items contain water?

Instructions**Introduction**

1. On the board, write the words Water, Food, and Oxygen. Read the words out loud and ask students to identify which of these three elements is the most important for the human body. Carry out a survey. Read each of the words out loud, asking students to vote for each one by raising their hands.
2. Explain that all three of these elements are vital for humans: we need them all at the same time to survive and to feel good. Oxygen is the most important element. We can survive for only a few minutes without oxygen. Water is the second most important element. We can survive for only a few days without water. Because we lose water every day through normal activities, it's important to keep replacing it. Food is the third most important element. We can survive for only a few weeks without food.

Water Estimating Stations

1. Explain to students that through this activity they will find out why water is important and how to get enough water every day. To do this, they will visit four water stations.

2. Give each student a copy of the **Water for Me, Please!** activity sheet and tell them they are responsible for recording their answers in the appropriate spaces. Divide the class into four groups.
3. Before beginning the activity, explain what they will be doing at each station.

Station 1: Water on Earth

Question: How much water is there on the Earth?

Using the globe, explain that blue represents the water on the Earth. Each glass represents the Earth. Students must choose the glass they think represents how much of the Earth's surface is covered with water. If they think that half the Earth is covered with water, then they should choose the glass that's half full. Students then record their estimates on the activity sheet and colour in blue the part of the Earth they think is covered with water.



Station 2: Water in My Body

Question: How much water is there in my body?

Explain that each glass represents a child's body. Students must choose the glass they think represents the proportion or amount of water in their bodies. For example, a student who thinks that half the human body is made up of water would choose the half-full glass. They should record their estimates on the activity sheet and colour in blue the part of the human body they think is made up of water.

Station 3: Time to Take a Sip!

Question: When should I drink water?

Ask students to reflect on and brainstorm about when it is that they feel thirsty and need to take a drink. What is the weather like? What activities are they doing? Ask them to write their answers on the activity sheet.

Station 4: Water is Everywhere!

Question: Which of these food items contain water?

Explain that, from these images of various food items they'll recognize, they must select which foods contain water. They should list the water-containing foods on their worksheet.

4. Assign each group to one station. Rotate the groups through all four stations at five-minute intervals.

5. With students back at their desks, discuss their estimates and answers, using the information below if necessary.

Station 1: Water on Earth

Approximately 70% of the Earth's surface is covered with water. Show the appropriate glass.

- 97% — or almost all — of the Earth's water is found in seas and oceans. It is salt water and is not potable, which means it is not drinking water. Pour almost all the water from the glass into a bowl, so that about 3% of the water remains in the glass.
- Only 3% of the Earth's water is freshwater. This type of water is found in lakes and rivers, in glaciers, and underground. Humans, other animals, and plants cannot survive without freshwater. It is very precious and we must not waste it.
- Ask students to share their estimates. How many of them guessed correctly?

Station 2: Water in My Body

The amount of water in the human body varies depending on a person's age. At birth, our bodies contain a lot of water: 75% of a baby's body is made up of water. Show the glass of water that is three-quarters full. As people get older, their bodies contain less water. Only 50% of an elderly person's body is made up of water. Indicate the glass one-half full of water. Finally, show the glass that is two-thirds full of water. Explain to students that approximately 65% of the body of someone their age is made up of water. This is because a young person's body still contains a lot of water. The goal of drinking water is to stay **hydrated**. What does "hydrated" mean? If we are hydrated it means we have enough water in our bodies. To be dehydrated means to not have enough water.

- Water is essential to all animal and plant life.
- We need water to survive because our bodies are made up mostly of water.
- Our bodies need water to function.
- Our blood consists mostly of water.
- Water is transparent. It has no odour or taste.
- Ask students to share their estimates. How many of them guessed correctly?

Station 3: Time to Take a Sip!

The amount of water we need to take in every day depends on our age, the weather, our activity level, and our health.

- We lose water every day through sweating and breathing, and when we go to the washroom. We need to replace this water every day by eating and drinking.

- We need to drink more water when we are active or hot.
 - Our bodies control their temperature by releasing water in the form of perspiration, or sweat. As sweat evaporates, our bodies cool down and our body temperature drops. We need to replace the water lost through sweating.
 - We need to drink water before, during, and after taking part in moderate or vigorous physical activity.
- We particularly need to drink more water when we are physically active for a long time, for example, during a soccer tournament.
- Instead of waiting till we're thirsty and then gulping down larger amounts of water, it's better to sip water throughout the day, even when we don't feel thirsty. We will stay hydrated and our bodies will do a better job of retaining the water.
- We also need to drink more water when the weather is very hot and humid or dry.
- Feeling thirsty is one way that our bodies tell us we need more water. You may have heard that we need to drink 8 cups of water every day, but, while we all need to drink water every day, each person needs a different amount. Some people need 8 cups, some need more, and others need less. What's important is that we listen to our bodies and drink when we are thirsty.
- When we're sick, it's especially important to sip on water. Food and drink such as chicken noodle soup and hot tea contain a lot of water. These may be easier and tastier to take in when we're sick and don't have much of an appetite.
- The signs of dehydration are:
 - a feeling of thirst
 - tiredness
 - a headache
 - a lack of concentration
- Ask students to share their estimates. How many of them guessed correctly?

Station 4: Water is Everywhere!

Water can be found in many different drinks and foods. Consuming these can help keep us hydrated and also count towards the amount of water we take in each day.

- Drinks, such as milk, plant-based (soy or oat) beverages, and juices contain water and can help us to rehydrate.
- All fresh vegetables and fruits, such as watermelon, cucumbers, green coconuts, celery, berries, and many, many others contain water.

- Dishes that we prepare, such as soups and smoothies, often include water or liquids that contain water (like milk and juice). Dried foods, like nuts, raisins, and other dried fruits, have had the water taken out of them so they can last longer. Similarly, meat jerky is dried, and doesn't contain water.
- Some dried foods, before we eat them, need water put back into them! In their dried form, pasta, rice, beans, and grains last longer in our pantries. We add water to cook them.
- Ask students to share their answers. How many of them guessed correctly?



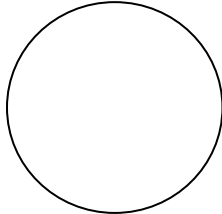
Name: _____

Date: _____

WATER FOR ME, PLEASE!

Station 1: Water on Earth

Question: How much water is there on the Earth?

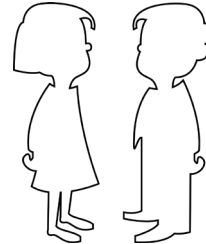


Colour in blue the part of the Earth you think is covered with water.

What percentage is indicated on the glass you have chosen?

Station 2: Water in my body

Question: How much water is there in my body?



Colour in blue the part of the human body you think is made up of water.

What percentage is indicated on the glass you have chosen?

Station 3: Time to take a sip!

Question: When should I drink water?

Write down the times when you need to drink more water.

Weather: Hot or cold? _____

Activities: _____

Station 4: Water is everywhere!

Question: Which of these food items contain water?

DROUGHT OR DROWNING EXPERIMENT

Plants need four elements to survive: sunlight, soil, air, and water. In this experiment, students observe the effects of water on plants.

Curriculum Link

- Science and Technology: Life Systems

Learning Objectives

- Learn about the effects of water on plant growth and development
- Understand that water is vital to plant life
- Realize that plants, just like humans, need water to survive and stay healthy

Learning Methods

- Performing an experiment to compare the growth and development of three groups of plants receiving different quantities of water
- Establishing and verifying hypotheses
- Compiling and analyzing data



Materials

- 3 plants
- Labels and markers
- Watering cans
- Measuring cups
- Copies of the Drought or Drowning activity sheets (1 set for each student)

Pre-activity: Set Up Water Estimating Stations

1. Take three plants of the same type and age. Bean plants that have been germinated in a pot on the windowsill can be used. Make sure that the plants are approximately the same size.
2. Label the first plant **Plant A**. Students will water this plant every day.
3. Label the second plant **Plant B**. Students will water this plant every Monday and Thursday.
4. Label the third plant **Plant C**. Students will never water this plant.

Instructions

1. Discuss the needs of plants with students. Explain that, just like humans, plants need air and water. They also need sunlight and soil. Why do plants need sunlight? They use sunlight to manufacture food. Ask students to explain how plants manufacture their own food. Depending on the age of students, go over what happens during photosynthesis, as follows.

During photosynthesis, plants use the sun's energy to transform water (absorbed by their roots) and carbon dioxide (absorbed by their leaves) into glucose, which is a form of sugar. As a by-product, plants give off oxygen into the air.

Explain that plants use the sun's energy to manufacture their food: a sugar called glucose. Plants use this food to build their parts such as leaves, roots, flowers, and tubers. These plant parts then become food for other organisms. If there were no plants to transform the sun's energy into chemical energy in the form of sugar, there would be no food for humans and other organisms.

Plants need soil to anchor their roots. What do they absorb from the soil through their roots? Water and nutrients such as minerals. Plants need water and nutrients to grow and make food.

2. Explain to students that they will be conducting an experiment to study the effects of water on plants. To do this, they must pretend to be scientists. Just like scientists, they will set out hypotheses and make observations. Distribute the Drought or Drowning activity sheets. Ask students to fill out the hypotheses pages by predicting what will happen to the plants.
3. Keep the three plants together, in a sunny spot where they will each receive the same amount of sunlight.
4. At the outset, depending on the size of the plants and the size of the pots, identify a quantity of water to be given to the plants. Put a container under the pots to catch any spillage.

5. Have students record their observations. Which of the plants grows best and fastest? Does anything happen to the structure and appearance of the plants? Have the students take a photo of the three plants from the same position every day. Every few days, have them compare the photos. What differences can they see.
6. At the end of the two-week period, ask students to compare what they predicted with what actually happened.
7. Discuss the results of the experiment, as follows.

Plant A has drowned.

A plant's roots need air. In slightly moist soil, there are small air pockets that let the roots breathe. In waterlogged soil, the roots can no longer breathe. They get sick and begin to rot. Plant A could no longer absorb nutrients and so it eventually died.

Plant B is healthy.

Plant B received the right amount of water to grow and develop normally.

Plant C has died from drought.

Plants sweat. They lose water every day through transpiration, just as humans lose water through perspiration! Transpiration allows plants to control their temperature and to manufacture food (photosynthesis: energy from the sun + water absorbed from the roots + carbon dioxide from the air = sugar and oxygen). Without water, Plant C became dehydrated and died of thirst and hunger.

Suggestions

For Grade 1 students, predict the results of the experiment and set out the hypotheses as a group. Write the hypotheses on the board or on a large sheet of paper that all students can view together. Record students' observations on the board or on the paper. Students can also draw the plants at the beginning and at the end of the experiment and compare the drawings. Use the drawings to compile the data in the Table of Observations.



Name: _____

Date: _____

DROUGHT OR DROWNING EXPERIMENT

Hypotheses

A hypothesis is an assumption or a prediction made in answer to a question. Without knowing the real answer, we make a guess and predict the answer. We do so using the knowledge we have. We then conduct research or an experiment to determine whether our hypothesis was correct.

Predict the results of the experiment on the plants. Answer the following questions.

Question 1: What will happen to plant A if I water it every day?

Hypothesis: I think _____

because _____

_____.

Question 2: What will happen to the plant B if I water it twice a week?

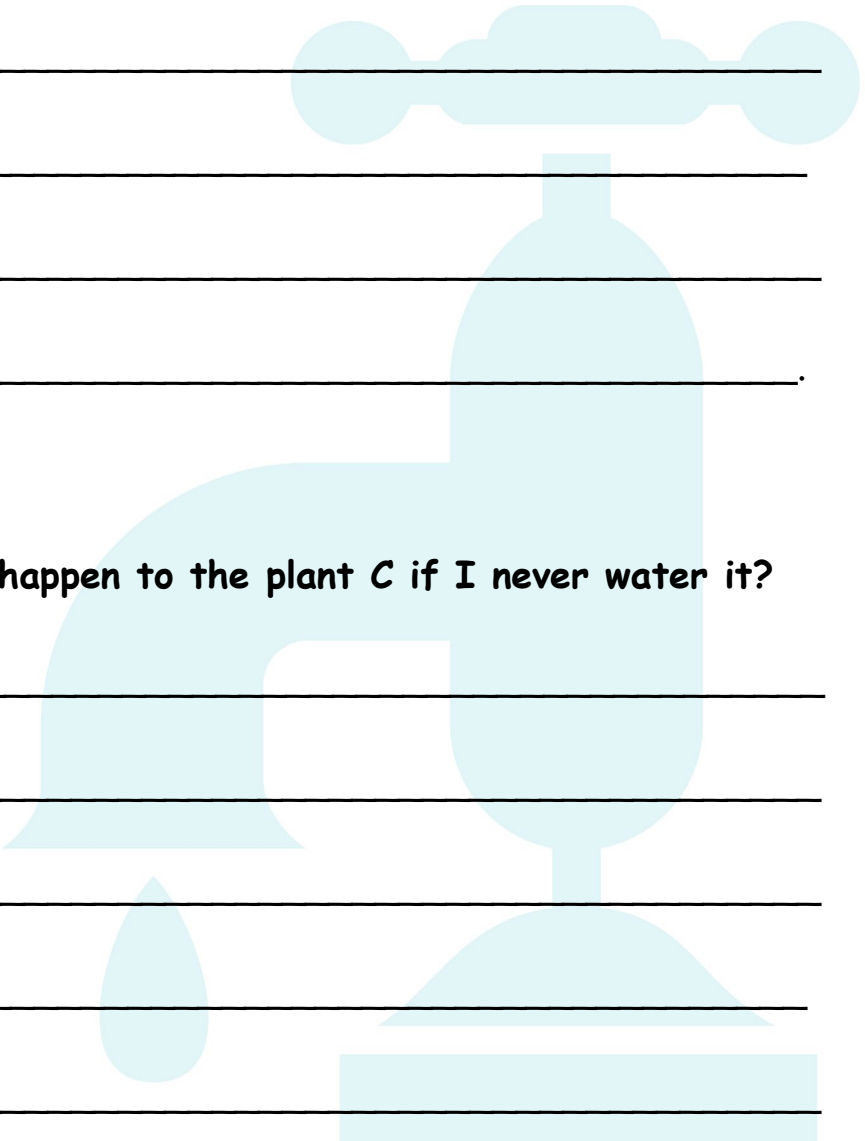
Hypothesis: I think _____

because _____

Question 3: What will happen to the plant C if I never water it?

Hypothesis: I think _____

because _____



Name: _____

Date: _____

DROUGHT OR DROWNING EXPERIMENT

Observation Chart

Record or draw your observations in the chart.

| Date | Plant A (watered every day) Observations | Plant B (watered twice a week) Observations | Plant C (never watered) Observations |
|------|--|---|--|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Name: _____

Date: _____

DROUGHT OR DROWNING EXPERIMENT

Results of the Experiment

Were your hypotheses correct? _____

Why or Why not? _____

