

**Outline of Lesson
Growing with Water
Unit 2, Lesson 5
Grade 4-5**

Lesson Time: 55 – 60 Minutes

Lesson Outline:

- 1. The Importance of Water**
 - Function of water in the body
 - Function of water in plants
 - Sources of water
- 2. Experiential Learning: Gardening**
 - Planting peas in the indoor garden
- 3. Physical Activity**
 - Food Group Twister Game

Student Learning Objectives:

By the end of this lesson students will:

- Be able to identify signs of dehydration.
- Discuss the function and importance of water in the body, and sources of water.
- Discuss how much physical activity they need each day.
- Demonstrate watering and planting methods that produce healthy plants.


References:

- Kite, L. Patricia. Gardening Wizardry for Kids. Reprinted by arrangement with Barron's Educational Series, Inc., 1999.
- Duyff, Roberta L. Complete Food and Nutrition Guide. John Wiley & Sons, Inc., 2002.
- Kitsap County Food \$ense Program. Nutrition in Me (Level 2 / Lesson 3). Washington State University Extension, 2004.
- Evers, Connie Liakos. How to Teach Nutrition to Kids. 24 Carrot Press, 1995.
- Valtin, Heinz. "Drink at least eight glasses of water a day." Really? Is there scientific evidence for 8x8? *Am J Physiol Regul Integr Comp Physiology*. (2002) 283:993-1004.

This material funded in part by USDA-Food Stamp Program, state and local government agencies. *Basic Food* assistance helps people with low incomes. Cooperative Extension programs and employment are available to all without discrimination. Evidence of noncompliance may be reported through your local Cooperative Extension office.

Growing with Water

Overview (for Teacher)

Pre-Class Preparation	None
Teacher Involvement During Class 	<ul style="list-style-type: none">• Gardening and Writing Activity• Assist in behavior management of students• Twister Game
Post-Class Teacher Responsibilities	<ul style="list-style-type: none">• Serve Snack: Apple sections• Monitor and water indoor plants
Vocabulary	<p>Dehydration- when you do not have enough water in your body.</p> <p>Digestive Tract- a tube-like passage that connects your mouth, esophagus, stomach, intestines and anus, where food is broken down and nutrients are absorbed into the blood.</p> <p>Drought- a long spell of very dry weather.</p> <p>Cycle- events that are repeated over and over again.</p> <p>Physical Activity- body movements such as riding a bike, walking up stairs and playing at recess that keep you fit and healthy.</p>
Critical Thinking Activity	Discussion: “If you couldn’t eat or drink anything, which would you die from first: starvation or dehydration?” (Dehydration) AND “If there was a drought, what would happen to plants?” (they would die of dehydration)
Supplementary Activities	Writing Question, Health Benefits of Drinking Water
Web Resources	Water and Dehydration in Kids: http://kidshealth.org/kid/watch/er/dehydration.html
Suggested Books for Reading in the Classroom	None

Growing with Water

EALR & GLE Alignment

EALR	GLE	Lesson Applications
<p>Science 1.1 Understand how properties are used to identify, describe, and categorize substances, materials, and objects and how characteristics are used to categorize living things 1.2 Understand how components, structures, organizations, and interconnections describe systems</p>	<p>1.1.1 Understand how to use properties to sort natural and manufactured materials and objects 1.2.1 Analyze how the parts of a system go together and how these parts depend on each other</p>	<ul style="list-style-type: none"> • Physical Activity: Food Group Twister • Importance of Water: Digestive System
<p>Health and Fitness 1.4 Understand the relationship of nutrition and food nutrients to physical performance and body composition 2.1 Recognize patterns of growth and development</p>	<p>1.4.1 Identify how bodily functions and physical performance are affected by food consumption 2.1.1 Describe the structure and function of human body systems</p>	<p>The following apply to all Health and Fitness GLEs:</p> <ul style="list-style-type: none"> • Importance of Water
<p>Communication 1.1 Focus attention 1.2 Listen and observe to gain and interpret information 3.2 Word cooperatively as a member of a group</p>	<p>*GLE not available at this time</p>	<p>The following apply to all Communication EALRs:</p> <ul style="list-style-type: none"> • Experiential Learning: Gardening • Physical Activity: Food Group Twister
<p>Writing 1.3 Apply writing conventions 2.3 Write in a variety of forms</p>	<p>*GLE not available at this time</p>	<p>The following apply to all Writing EALRs:</p> <ul style="list-style-type: none"> • Supplemental Activities: Writing Question, Student Assessment
<p>Reading 1.3 Build vocabulary through wide reading 2.1 Demonstrate evidence of reading comprehension</p>	<p>1.3.2 Understand and apply content/academic vocabulary critical to the meaning of the text 2.1.3 Apply comprehension monitoring strategies before, during, and after reading</p>	<p>The following apply to all Reading GLEs:</p> <ul style="list-style-type: none"> • Importance of Water: Sports Drink Label

Growing with Water

Preparation Outline

Activity Supplies

⊗ *Items marked with this symbol may not be purchased using FSNE funding, nor included as part of cost share.*

Introduction

- 1 bottle of water

Importance of water

- 2 clear jars
- 2 cups of apple juice (1 cup per jar)
- 1 clear plastic container (big enough to hold 8 cups of water)
- 1 cup measure

Water in Foods

- 5-6 food models of fruits and vegetables

Indoor Gardening

- ⊗ Pea seeds soaked overnight to speed up sprouting
- ⊗ Popsicle sticks
- ⊗ Marker
- ⊗ 1 greenhouse seed tray (flat seed tray with clear plastic lid)
- ⊗ Potting soil
- ⊗ Watering can

Food Group Twister

- Food Group Twister game

Healthy Snack

- 4 apples
- 1 apple corer per class

Review

- Water bottle
- Classroom Tasting Challenge checklist

Overheads

- Digestive tract
- Sports Drink label

Student Handouts

Note taking template

Teacher Handouts

- Health Benefits of Drinking Water
- Student Assessment

Changes for K and ELL Classes

None

Rainy Day Activity Supplies

None

Growing with Water

Outline

Content

Introduction and Lesson Overview (5 Min)

- **Digestive Tract overhead**
- **Water bottle**

For the next few lessons we will talk about digestion and what we need in order to digest our food properly.

- There are lots of organs inside our bodies that are used for digestion and we will learn more about them next week. **Show digestive tract overhead if time.** But there are two things that aren't inside our bodies that we need to get the most out of the food we eat.
- **WATER & FIBER:** In the next three classes we will answer these questions:
 - 1) Why is water important to health?
 - 2) How does fiber affect digestion?
 - 3) How do water and fiber keep our bodies clean?
- **Hold up a water bottle.** Water is what we will talk about today. Drinking water keeps us washed out and clean by helping our food move through our digestive tract.
- **Ask the students:** How do you get water into your body? (drink water, eating fruits and vegetables) How do you lose water? (sweating, respiration, urination, elimination)

The Importance of Water (20 Min)

- **Role and function of water in the body**
- **Critical Thinking Activity**

- Did you know that your body is more than half water?
- Every cell, tissue, and organ and almost every life-sustaining body process needs water to function. In fact, water is the nutrient your body needs most of.
- Water washes out your mouth, throat and other digestive organs, keeping the whole system clean and running smoothly.
- Water helps your eyes stay moist so you can blink.
- Water protects your joints, organs, and tissues.
- Water transports nutrients and oxygen to your body cells and carries waste products away.
- Water also helps regulate body temperature. Have you ever felt too hot when playing outside? Do you notice that you feel wet? That is sweat, or water from inside your body that comes through your skin to cool you off.
- If our bodies don't get enough water, we become "dehydrated." Dehydration is really dangerous; we can become tired, our muscles can cramp, or we can get a bad headache.
- **Ask the students to discuss in their learning teams for 1 minute:** "If you couldn't eat or drink anything, which would you die from first: starvation or

- **Show apple juice and add water**
- **How much water do we need?**
- **Sources of water**

- dehydration?” (Dehydration)
- Have one student from each learning team report their group’s conclusion.
 - **Then ask the students to discuss in their learning teams for 1 minute:** “If there was a drought, what would happen to plants?” (They would die of dehydration)
 - Have one student from each learning team report their group’s conclusion.
 - Did you know that by the time you feel thirsty, your body is already dehydrated? This is a good reason to drink water before you feel thirsty, especially if you know you are going to be physically active, such as before going out to recess.
 - When water is finished doing its job in our bodies, we let go of it into the toilet. You can look at the color of your pee, also called urine, and see if you are getting enough water. If it looks like lemonade, or lighter, then you have enough water in your body for your body to do its job. If your urine looks dark like apple juice, then you need more water. (**show students the two jars of apple juice**) Gradually add water to one jar in order to lighten the liquid – demonstrating the effect of adequate water in our system).
 - **Hold up a clear plastic container of water containing 8 cups of water.** We need 6 to 8 cups of fluids a day, and more if it is hot out or if you are very physically active - that means running around and playing a lot.
 - **Some other signs of dehydration include:**
 - Decreased urination
 - Increased fatigue (feeling of tiredness)
 - Muscle cramps
 - Headache
 - If you play sports or play outside a lot, it is important to make sure you drink water before, during and after those activities so that you don’t get dehydrated.
 - It’s a fact that without water there would be no people, plants or animals on earth. So, how do we get water into our bodies? And where does water come from?

Sources of water in our diet

- Water can come from fluids that we drink, and from foods that we eat.
- Some healthy examples of fluids that have water are
 - Water
 - Milk

- **Sports drink label**

- 100% fruit juice
- Healthy examples of foods that have water include “juicy” fruits and vegetables such as:
 - Lettuce
 - Oranges
 - Tomatoes
 - Berries
 - Chard
 - And many more!
- Have students think about the effects of Sports drinks.
- Put the Sports drink label on the overhead. Have students identify the ingredients. Ask: What are some ingredients in this drink that might be unhealthy for your body? Discuss the extra ingredients that your body doesn’t need.
- There are other fluids that have water in them, that are ok to drink sometimes, but should be chosen less often because they have ingredients (such as added sugars and food coloring) that can be unhealthy for our bodies. Some examples are:
 - Soda pop
 - Fruit flavored drinks
 - Sports drinks
- Ask students to tell you which drink they think is healthiest for them to choose most often. (Water)
- Some suggestions for making water more palatable for those who say they don’t like the flavor: add lemon or lime, dilute juice with extra water.

**Experiential Learning:
Gardening (20-30 Min)**

- **Split class into two groups**
- **Introduce Physical Activity**



- We are going to split into two groups and take turns planting and then playing a game that includes physical activity. When we move our bodies around, by exercising, playing or working, we are physically active.
- Ask the students what they think the words “physical activity” mean. Explain that physical activity is body movement such as riding a bike, walking up stairs and playing at recess that keeps you fit and healthy. Ask the students how much physical activity they think they need each day. Explain that they need at least 1 hour of physical activity each day to stay fit and healthy.
- Being physically active is an important part of being healthy. When we use our bodies, we help them to grow well. When we garden we are physically active.
- Teacher divides students into two groups: one will work with the CHANGE educator and the other will play

Food Group Twister.

Planting Peas - Indoor Gardening

Work with students planting:

- Students make a hole that is 1/2 inch deep
- Plant a seed, cover with soil
- Label seeds
- Gently water then cover flat with the plastic cover, and place under the grow lights
- Planting into the flats with plastic covers will allow your class to see the water cycle in action as water condenses and collects on the plastic cover, and then returns to the soil.

LESSON LINK: Garden and Nutrition

While students are planting, walk around and discuss the importance of water to their plants.

- Remind them that all food comes from soil but the soil must have enough water in it for the plants to absorb through their roots. Because just like people, plants can get dehydrated and sick if they don't get enough clean water to drink. People are dehydrated if:
 - You don't pee at least 4 times a day.
 - Your pee looks dark, like apple juice.
 - You feel thirsty or tired.
 - You have muscle cramps and/or a headache.
- Plants can also get dehydrated if their soil is too dry. Have students squeeze a pinch of soil in their fingers to show them:
 - If the soil is loose and falls away it is too dry.
 - If the soil sticks together then it probably has enough water in it.
 - If water drops come out when you squeeze then there is too much water in the soil and not enough air.

- **Wash Hands**

Hand Washing

Remind students that they need to wash their hands after gardening. Each student should wash his or her hands with warm water and soap for 20-25 seconds.

**Physical Activity
(in conjunction with
Gardening)**

Food Group Twister

- CHANGE educators will bring a Food Group Twister game. Other classrooms using CHANGE curriculum can adapt a regular Twister game by taping food group pictures on the colored dots or making laminated pictures to tape on the floor.
- One student spins the dial and calls out the food that the dial lands on. Participating students put their feet

	<p>or hands onto the appropriate spot that matches the food group of that food.</p>
<p>Healthy Snack: Apple slices</p>	<p>Leave 3 to 4 apples & 1 apple corer per class. Tell students that apples are 84% water. Tell students that they need to remind their teacher to give them the healthy snack of apples that is high in water. Students should wash hands before eating the snack.</p>
<p>Review and Reflection</p> <ul style="list-style-type: none"> • Water Review • Classroom Tasting Challenge 	<ul style="list-style-type: none"> • Show your water bottle. In this lesson we talked about water. Why is water good for us? <ul style="list-style-type: none"> • Keeps us hydrated • Keeps your digestive tract clean • Transports nutrients to all parts of the body • Regulates body temperature • Removes waste from the body • Classroom Tasting Challenge: After tasting the <u>Apple Slices</u>, ask students to raise their hands to show you how many students tasted, liked or did not like the snack. Record the number of students who raise their hands in the appropriate column on your Classroom Tasting Challenge checklist, out of the total number of students in class that day.

Lesson Materials

Growing with Water

- **Sports Drink Label**
- **The Digestive Tract**
- **Note Taking Template**

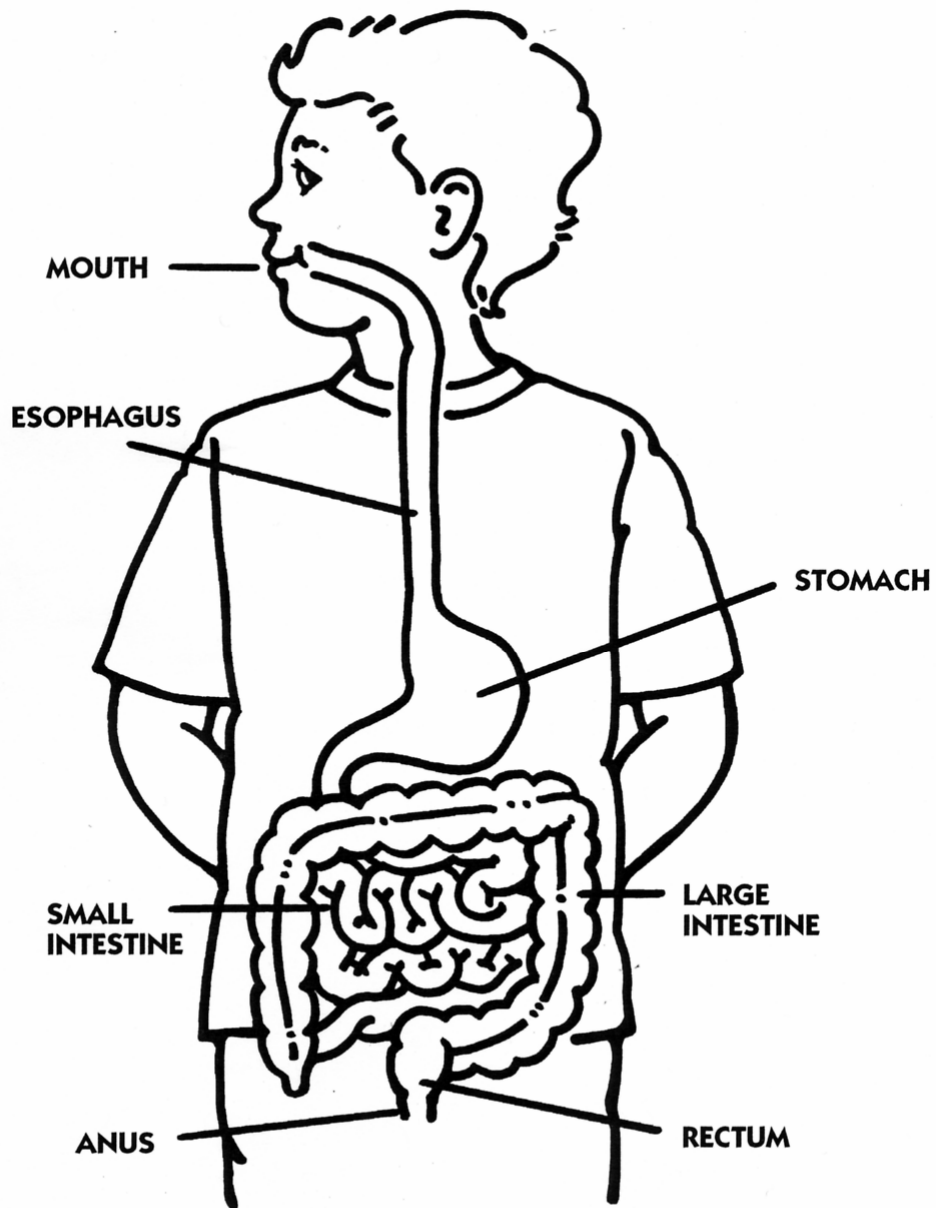
Supplementary Activities

- **Student Assessment**
- **Assessment Answer Key**
- **Writing Question: Health Benefits of Drinking Water**

Sports Drink Label

Nutrition Facts			
Serving size: 1 cup (180g)			
Servings Per Recipe 3			
Amount Per Serving			
Calories 45	Cal. from Fat 0		
% Daily Value*			
Total Fat 0g			0%
Saturated Fat 0g			0%
Cholesterol 0mg			0%
Sodium 72mg			4%
Total Carbohydrate 11g			4%
Dietary Fiber 0g			0%
Sugars 11g			
Protein 0g			
Vitamin A 0%	Vitamin C		0%
Calcium 0%	Iron		0%
* Percent Daily Values is based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.			

DIGESTIVE DIAGRAM



Enlarge and reproduce for educational use.

Growing with Water
Note Taking Template

Name: _____

Define the following vocabulary terms:

Dehydration:

Digestive System:

Name two things our bodies do not make that we need to get from food.

Name two ways to get water into your body.

List all the ways your body loses water.

List ways that water helps our bodies.

What are two foods that contain a lot of water?

Growing with Water

Name: _____ Date: _____

1. How many cups of water does every kid need each day? _____
2. What are two ways for you to get water besides drinking plain water?
 1. _____
 2. _____
3. Why do our bodies need water?

4. What happens when you don't drink enough water?

5. If you drink 2 cups of water in the morning, 2 in the afternoon, 1 before dinner, and 1 with your dinner, how many cups of water did you drink all together? _____

*Mind Bender

6. How many cups are in a gallon? _____

Clues to Use

**4 cups=1 quart
4 quarts=1 gallon**

Growing with Water

1. How many cups of water does every kid need each day? 6-8
2. What are two ways for you to get water besides drinking plain water?
 1. Eat food with water in it (such as fruit or vegetables)
 2. Drink other beverages with water in them (such as juice with water, milk, water with lemon)
3. Why do our bodies need water? any of the following: to keep our digestive system clean, to get nutrients and oxygen to all body cells, to keep us from getting dehydrated, because our bodies are mostly made of water
4. What happens when you don't drink enough water? You get dehydrated (this could make you sick)
5. If you drink 2 cups of water in the morning, 2 in the afternoon, 1 before dinner, and 1 with your dinner, how many cups of water did you drink all together? 6

*Mind Bender

6. How many cups are in a gallon? 16

Clues to Use

**4 cups=1 quart
4 quarts=1 gallon**

