

Digestion

Lesson Description

Students learn about the major organs in the digestive system and observe an experiment to illustrate how food is broken down and used in their bodies. Students learn about the importance of drinking water each day. Students explore how much of fruit is composed of water by weighing fresh and dried fruits.

- Time required: 60 minutes
- Location of lesson: Classroom

Learning Objectives

- Measure the water composition of fruit.
- Learn the importance of drinking 6-8 cups of water each day.
- Discuss ways to drink more water during the day.
- Explore the digestive system and describe what happens in each major organ during the digestive process (mouth, stomach, small intestine, large intestine).

Attitude and Behavior Goal

- Drink 6-8 cups of water a day.

Materials and Preparation

- Fresh and dried fruits for weighing (examples: grapes/raisins, fresh apricots/dried apricots)
- Balance scale
- Ziplock bags, 2
- Crackers, 2-3 (Saltine type)
- Water, about 1 Tablespoon
- Orange juice, about 1 Tablespoon
- 1 long strip of construction paper or other type of paper
- Pantyhose, 1
- Cooked instant oatmeal, 1 packet or about 1 cup
- Small plastic container or bucket
-  **Water Weights**
-  **My Water Goal**
-  **Your Food's Journey Through Your Body**
- Prepared vegetable snack of the week – 1 for each student

- Water to drink during the Class Warm-up – water dispenser in the classroom and 1 cup or a water bottle for each student

Class Warm-up: Champion Cheer and Veggie Taste Test (5-10 minutes)

- Give each student a cup of water or ensure that they have a filled water bottle in front of them.
- Give each student the prepared veggie snack of the day.
- Lead the students in enthusiastically reciting the  **Champion Cheer**.
- At the end of the cheer, drink water and eat the veggie snack together.
- Have students complete their  **Taste Test Observations** about the vegetable snack of the week.

Review of Last Lesson (2-3 minutes)

- Review the evaluation questions from last week’s lesson. Evaluation questions from all lessons are listed at the end of the workbook .

Class Discussion (10 minutes)

Have you ever thought about what happens to food in your body after you put it in your mouth? Just think, how does the Vitamin A in carrots travel to your eyes?? Digestion is the process by which our body breaks down the food we eat and takes out the nutrients it needs. Can anyone name some of the important organs (or parts of the body) that are involved in digesting food? (Answer: mouth, esophagus, stomach, small intestine, large intestine) Today, we’ll explore digestion.

We’ll also be talking a lot today about water. Water is very important in the process of digestion. All living things are largely made up of water. Water is essential for life. If we don’t get enough water, our bodies don’t work properly. How many cups of water should we drink each day? (Answer: 6-8 cups) How many cups have you had so far today?

Our first activity is to look at water in food. Have you ever eaten dried fruit like a raisin? Dried fruit is fruit with its water removed.

Activities (40 minutes)

-  **“Water in our Food” (10 minutes):** Students weigh fresh fruits and their dried fruit equivalents to discover how much water is in food.
 1. Refer students to the workbook page,  **Water Weights**.
 2. Place the balance scale on a table in the front of the room.
 3. Select 5 grapes. Have students guess how much of the 5 grapes’ weight is water. Record their predictions on the board.
 4. Weigh 5 grapes.

- a. Have a student volunteer help read the weight on the balance. All students record the weight of the fresh fruit in their workbook.
 5. Weigh 5 raisins.
 - a. Have students record the weight of the dried fruit in their workbook.
 6. Subtract the weight of the raisins from the weight of the grapes to find the difference in weight (how much water is in the grapes.)
 - a. $\text{Weight of Grapes} - \text{weight of raisins} = \text{water weight in fresh grapes.}$
 7. Repeat with the apricots.
 8. Discuss:
 - a. *Fruit is largely made up of water, just like our own bodies are largely made up of water. It is very important to drink water.*
 - b. Refer students to their workbook page,  **My Water Goal**. Brainstorm ways to drink more water during the day together as a class. Write their suggestions on the board. Have students fill in the workbook page.
 - i. Some example suggestions: drink a glass of water when you wake up or with breakfast, go to the drinking fountain between classes, drink water instead of soda with lunch, drink water with dinner, always bring a water bottle when you go to play outside, etc.
-  **“Digestion: Food’s Journey Through Our Bodies” (20 minutes):** Students complete a workbook page in which they trace the journey of food through the digestive tract.
 1. Refer students to their workbook page  **Your Food’s Journey Through Your Body**.
 2. *We are going to take our pencils and trace the path food takes as it travels through your body.*
 3. Have students trace the path as you discuss:
 - a. *Food starts in the mouth where we chew it up with our teeth. When we swallow the food, it travels down our esophagus into the stomach. Food in the stomach is broken down into liquid with digestive juices. Next, food travels through the small intestine- a long and windy tube. The small intestine is very important because this is where many of the nutrients are absorbed by your body and travel via your bloodstream to all the body parts –like muscles, bones, eyes, skin, etc.-that need them. Finally, food travels through the large intestine where water is extracted and now that your body has taken everything it needs out of your food, the waste exits your body – like when you go to the bathroom.*

- **“Digestion Demonstration” (10 minutes):** Students observe an experiment that illustrates the processes of the digestive system.
 1. This demonstration may be performed by the teacher alone, but you may also consider having a student volunteer come up and assist with each step.
 2. Place 2-3 crackers inside one Ziploc bag and mash it up with fingers. *This is the mouth part of digestion.*
 - a. Add water into the bag to show how saliva makes the cracker mushy enough for the tongue to push it back into the esophagus.
 3. Place the bag with mushy crackers inside another Ziploc bag and add the orange juice to the cracker mush. *This is the stomach part of digestion.*
 - a. *The extra bag is the mucous lining of the stomach and the orange juice is the stomach acid.* Continue kneading the bag to show the muscle action of the stomach until the mixture is nearly all liquid.
 4. *Where does the liquid go next? The small intestine.* Why is the small intestine so long and folded up inside of us?
 - a. To demonstrate, take a long piece of construction paper and accordion fold it into a small square. *Nutrients are absorbed by cells on the surface of the small intestine. To absorb lots of nutrients, we need lots of surface area of small intestine, but we don’t have unlimited space inside the body. Our small intestine is folded up inside of us to grab lots of nutrients from our food.*
 5. *Where does the liquid go next? The large intestine.* Once all of the nutrients are absorbed by the small intestine all that is left is a watery mass of waste. *The body is mostly water and needs to keep that water. The large intestine’s job is to suck the water back into the body.*
 - a. To demonstrate, take the prepared oatmeal and place it into the pantyhose. Using your hands, squeeze out as much water as possible into the plastic container. *Then you’re only left with waste that gets eliminated through the rectum.*

Evaluation Questions (5 minutes)

1. *Where does the breakdown of food begin? (Answer: in the mouth)*
2. *What happens in the stomach? Small intestine? Large intestine? (Answer: the juices in the stomach break down food until it’s a liquid. In the small intestine, nutrients are absorbed. The large intestine sucks the water out of food.)*
3. *True or False: Fruit is made up largely of water. (Answer: True)*
4. *What are 3 ways you can drink more water? (Answer: drink water with meals, snacks, bring water bottle, etc.)*
5. *How much water should you drink every day? (Answer: at least 6 cups of water a day)*

6. *How many fruits and vegetables should you eat every day?* (Answer: at least 5 fruits and vegetables a day)
7. *Does gardening connect you to your culture and help you learn new words in your language?* (Answer: yes)

Preparation for Future Lessons – Reminder for the Instructor

- Review the materials and preparation needed for the next lesson.
- Remember that an Elder guest instructor is needed for these Spring lessons: lesson 1 (Eating a Rainbow), lesson 4 (Conserving Water: A Renewable Resource), and lesson 9 (Plant Parts: Flowers and Pollination).

Notes
