THE DIGESTIVE SYSTEM

#3454

OPEN-CAPTIONED
UNITED LEARNING
1997
Grade Levels: 6-12
21 minutes

DESCRIPTION

Presents the entire process of digestion from the first bite to the elimination of solid waste, describing and explaining the function of each part of the system. Begins with the importance and use of food for body maintenance. Defines digestion and discusses the body's use of proteins, carbohydrates, fats, vitamins, minerals, fiber, and water. Emphasizes the need for a balanced diet and concludes with a quiz.

ACADEMIC STANDARDS

Subject Area: Health

- Standard: Standard: Knows how to maintain and promote personal health
  - Benchmark: Knows the basic structure and functions of the human body systems (e.g., how they are interrelated; how they function to fight disease) (See Instructional Goals #1 and #3)
  - Benchmark: Benchmark: Understands the impact of personal health behaviors on the functioning of body systems (See Instructional Goals #2 and #4)

INSTRUCTIONAL GOALS

1. To identify the main parts of the digestive system.
2. To list the six types of substances needed by the body and give examples of each.
3. To describe the function of the digestive system.
4. To explain the importance of a balanced diet.

VOCABULARY

1. bolus
2. calorie
3. chyme
4. cholesterol
5. enzyme
6. pancreas
7. peristalsis
8. saturated
9. unsaturated
10. villi

BEFORE SHOWING

1. Obtain several packages of food. Read the number of calories on each and discuss what this means.
2. Display two lunch menus, one consisting of junk food and one consisting of healthy foods.
   a. Determine which menu is preferred by the majority of the class.
   b. Using a food calorie chart, total up the calories of both menus and compare.
3. Write the number 100 trillion on the board.
   a. Write it in both standard form and scientific notation.
   b. Explain that that there are 100 trillion cells in the human body and they all require energy.
   c. Digestion is the process that provides energy for all 100 trillion cells.

DURING SHOWING

Discussion Items and Questions

1. View the video more than once, with one showing uninterrupted.
2. Pause at the section showing how much water humans need every day. Discuss other sources of water.
3. Pause at the section about calories. Differentiate between *calorie* and *Calorie*.
4. Pause at the section discussing sodium bicarbonate. Display a box of baking soda and discuss its use as an antacid.
5. Pause at the scene showing the tennis court. Explain surface area and how the total surface area of the millions of villi can be so large.

AFTER SHOWING

Discussion Items and Questions

1. Why is water important to humans?
2. What are *proteins* and why are they important?
3. List some foods that are high in proteins.
4. Why are carbohydrates important?
5. List some foods that are high in carbohydrates.
6. What are the two groups of fats and what are examples of each?
7. Why are fats important?
8. What is *cholesterol*?
9. As vitamins, minerals, and fiber contain no energy, why are they included in a balanced diet?
10. List some examples of vitamins, minerals, and fiber.
11. What is a *calorie*?
12. What happens to calories that are not used as energy?
13. What are two forms of digestion?
14. What is the function of each of the following: teeth, tongue, saliva, and epiglottis?
15. What is the ball of food that is swallowed called?
16. How long does it take the food to move down the esophagus?
17. How are astronauts able to swallow their food, even though there is no gravity in space?
18. What two chemicals in the stomach help break down proteins in the food?
19. How does the stomach protect itself from acid?
20. What is the soft, water-form of food that enters the small intestine called?
21. How long is the small intestine?
22. What two organs send juices to the small intestine to aid in digestion?
23. What role does bile play in the digestive process?
24. What is the sodium bicarbonate produced by the pancreas used for?
25. What are proteins, carbohydrates, and fats broken down to in the small intestine called?
26. What is the function of the villi in the small intestine?
27. What is the suspected function of the appendix?
28. How long is the large intestine?
29. What takes place in the large intestine?
30. What two vitamins do the bacteria in the large intestine produce?
31. What happens to materials not absorbed in the small intestine?
32. Where is waste stored before it is eliminated?

33. Explain the parts of the food pyramid.

Applications and Activities

1. Reproduce the questions on the Video Quiz. Distribute as a worksheet and complete.
2. Draw a digestion timeline.
   a. Determine what time breakfast was eaten.
   b. Using the information in the video, trace the path of the food and document the time it passed through each part.
3. Make a computer-generated chart of the six substances required by the body. Include the following information:
   a. name of substance
   b. list of foods in which it is found
   c. purpose
   d. daily requirement needed
4. Research photosynthesis and report on the important role that carbohydrates play in the process.
5. Contact the USDA for brochures and posters of the food pyramid.
6. Design a food pyramid poster.
7. Obtain a chart of calories for common foods and a copy of the food pyramid. Select meals for one week that meet the calorie requirements for teenagers.
8. Research daily calorie requirements for other age groups.
9. Report on how a calorimeter works.
10. Display two examples of foods and decide which one has the higher number of calories:
    a. sponge cake bar or carrot
    b. ice cream bar or slice of cheese
    c. pepperoni pizza or sausage pizza
    d. milkshake or can of soda
    e. popcorn or bag of nuts
11. Design a taste test experiment.
    a. Prepare bite-sized portions of potato, apple, lemon, lettuce, sugar, salt, and orange.
    b. Blindfold one person to see if the food can be identified by taste only.
12. Research procedures for determining the water content of fruits and vegetables.
13. Keep a log of foods eaten over a two-day period. Color-code to match with the food pyramid.
14. Report on unusual digestive facts of cows and crayfish.
15. Research unusual foods that are eaten in other countries.
16. Use cuts of meat from the grocery store to show parts of the digestive system:
    a. beef tongue—shows the four types of papillae.
    b. tripe—stomach wall, shows rugae well.
    c. chitlins—velvety lining of the small intestine which shows the villi well.
17. The measurements of the parts of the digestive system were given in mixed metric and English units. Convert the following:
    a. The stomach has a capacity of 2 to 4 liters or ___ to ___ quarts.
    b. The small intestine is 3 centimeters or ___inches in diameter.
    c. The large intestine has a diameter of 6.5 centimeters or ___ inches.
    d. The large intestine is 1.5 meters or ___feet long.
18. Research interesting digestive trivia:
    a. A 150-pound person consumes 50 tons of food in a lifetime.

b. The parts of the digestive system are a total of 30 feet long.

RELATED RESOURCES

Captioned Media Program

- Daily Food Choices for Healthy Living #3115
- Food and Growth (Second Revision) #2174
- Food Machine, The #3464
- Food Pyramid, The #3128

World Wide Web

The following Web sites complement the contents of this guide; they were selected by professionals who have experience in teaching deaf and hard of hearing students. Every effort was made to select accurate, educationally relevant, and "kid-safe" sites. However, teachers should preview them before use. The U.S. Department of Education, the National Association of the Deaf, and the Captioned Media Program do not endorse the sites and are not responsible for their content.

- FOOD ZONE http://kauai.cudenver.edu:3010/

  Serves as an interactive educational site designed for an 8th to 12th grade science classroom. Contains an overview of the digestive system and nutrition. Includes intermediate and advanced lab experiments.

- KIDSHEALTH.ORG: THE REAL DEAL ON THE DIGESTIVE SYSTEM
  http://www.kidshealth.org/kid/somebody/digest.html#mouth

  Details the process of the digestive system with text and illustrations. Animation requires downloading Macromedia Shockwave.

- INNERBODY http://www.innerbody.com/htm/sysselec.html

  Consists of a sophisticated yet simple medical narrative accompanied by click-on interactive pictures.

- THE HUMAN DIGESTIVE SYSTEM http://www.medtropolis.com/vbody/gastro/index.html

  Includes a section where the viewer chooses from a list of organs to view a labeled diagram. Includes a "drag and drop" game called "Organize Your Organs" and a guided tour of the digestive process. Animation requires downloading Macromedia Shockwave.

- DIGESTIVE DISEASE CENTER: TOWARD DIGESTIVE HEALTH http://www.ddc.musc.edu/

  Includes a detailed explanation of the digestive process. Has a description of each organ involved and a list of disorders associated with it.

CAPTIONED MEDIA PROGRAM

PLEASE RETURN LESSON GUIDE WITH VIDEO

Lesson guide also available online at *www.cfv.org*

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