Where Does Food Go?

Overview: *Students will take a walk through the digestive system to see how food passes through the body.*

Materials

- twin-size white bedsheet
- transparency of The Digestive System (page 32)
- copy of Food Travelogue (page 33)
- various colored permanent pens
- measuring tape
- string and thick yarn

Lesson Preparation

- Pin the bedsheet to a wall and project the transparency of The Digestive System. Trace the picture with pencil and then lay the sheet on a table. Trace over drawing and labels with colored felt pens.
- Cut a length of string eight yards (7.2 meters) long. Measure two yards (1.8 meters) of thick yarn. Use tape to label it the "Large Intestine." Tape the yarn to the string and measure seven yards (6.3 meters) from where they join. This part is to be labeled "Small Intestine." The remaining string is the distance from the mouth through the stomach and into the small intestine.

Activity

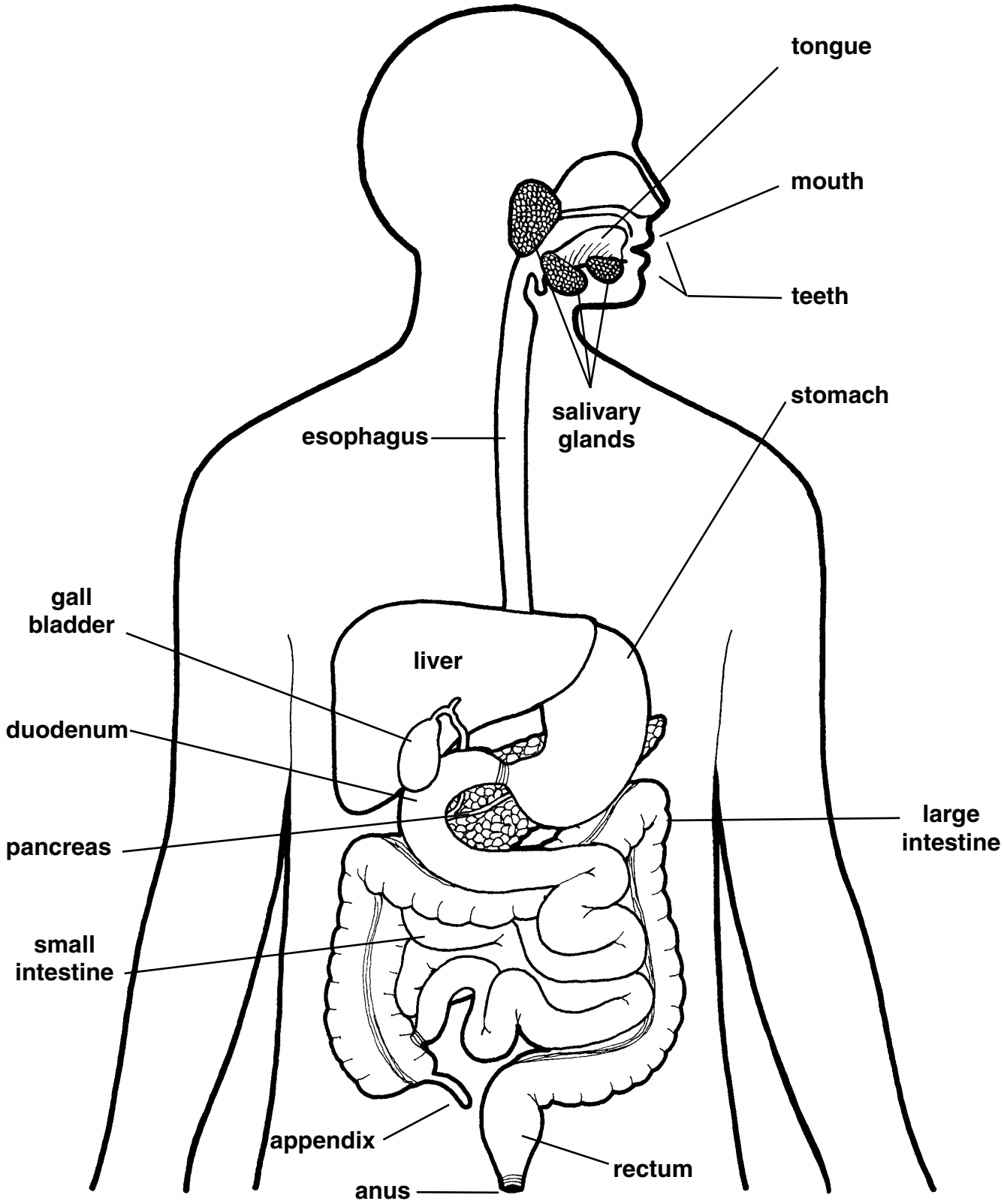
1. Conduct this lesson following lunch. Give each child unlined paper to draw where they think their lunch goes after it is swallowed. Have them begin their drawings at the mouth and show its journey to the point where it leaves the body. (*Do not give any information since this is a pretest*.)
2. Tell students they will journey through the digestive system to follow food through the body. Lay the bedsheet on the floor to see the parts of the digestive system. Ask for a volunteer to walk through the body as you read the script. The underlined terms in the script are the labels found on the drawing. Point these out as the student moves through the digestive system.
3. Ask students how long they think the entire digestive system is from mouth to anus in an adult. Say you are going to walk from the front of the room and they are to hold up a hand when they think you have gone as far as the digestive system would stretch. Begin moving slowly and stop when most hands are up.
4. Let a volunteer hold the "mouth" end of the string and begin to stretch it out. Stop to show the distance to the stomach and then the small intestine. Let students update predictions on the length of the digestive system by having a volunteer stand at the point they think you will reach when all string is unwound. Unwind the string and show students the full length of the system. Explain that this is what would be found inside a six-foot person; their digestive systems would be shorter since they are smaller.
5. Have them look at the small and large intestine and explain how they got their names. (*The small intestine is longer but thinner than the large intestine*.)

Closure

Distribute students' original drawings of the digestive system and let them draw another.

Where Does Food Go? *(cont.)*

The Digestive System



Where Does Food Go? *(cont.)*

Food Travelogue

The tongue and teeth work together, breaking food apart and pushing it around. Saliva pours into the mouth from salivary glands to begin digesting food, softening and lubricating it on its way. The tongue pushes against the roof of the mouth as you swallow, helping push food down the . . .

Esophagus, which is about 10 inches (25.4 cm) long in an adult. It lies behind your windpipe (trachea) and is flattened when empty. As you swallow, you stop breathing for a moment. A trapdoor called the epiglottis automatically closes the opening to your voice box and lungs, and the soft palate at the back of the roof of your mouth swings up to shut off the passage to your nose. If you swallow too fast, the epiglottis may not have time to close, causing you to cough to clear out any food that might enter the trachea. The muscles in the esophagus ripple to push the food into the . . .

Stomach, where gastric juices made of hydrochloric acid and the enzyme pepsin are released to break down protein in food. These acids are strong enough to eat through the wall of the stomach. Normally, these acids are not manufactured until food is in the stomach and a protective mucus coats the stomach. Like a balloon, the stomach expands with food. The muscles which surround it begin to churn the food back and forth. Carbohydrates move out first and then proteins. Fats are the last to leave the stomach. Some food may remain in the stomach for two to five hours. The food is now called *chyme*; it is a thick liquid. The chyme squeezes into the . . .

Duodenum, the first 10 inches of the small intestine where the digestive process will be completed by other juices. Like a large salivary gland, the pancreas produces pancreatic juice. One to two pints (.5–1 liter) of pancreatic juice per day pour into the duodenum to digest carbohydrates, proteins, and fats. Bile is made by the liver and stored in the gall bladder. Bile works like a detergent to break down fats so they can be dissolved in water and absorbed into the body. Pancreatic juices and bile flow into the duodenum through the bile duct. The partly digested food now moves into the . . .

Small Intestine where about five pints (2.1 liters) of digestive juices enter through the walls daily. Completely digested food has been changed to nutrients which can now be absorbed through tiny fingers (*villi*) that line the walls of the small intestine. Tiny blood and lymph vessels are inside the villi. They take in the vitamins, minerals, and other nutrients and carry them to all parts of the body through the blood and lymph systems. The average adult absorbs about 10 quarts (9 liters) of digested food and liquid each day. The journey through the small intestine may take four to eight hours. What remains undigested passes into the . . .

Large Intestine where it spends 10 to 12 hours losing large quantities of water and nutrients. At the end, the solution is fed on by a colony of bacteria which decay the remains (feces). The feces are brown because they contain dead blood cells. What is left of your meal passes to the rectum, ready to leave the body through the opening called the anus. The entire journey lasts about 15 to 48 hours.