

## LESSON 3

### Warm-Up

- 1 Quiz the students.

Ask: *What is the hardest part of your body?*

Answer: The enamel that makes up teeth is the hardest part of the human body. It is even harder than the skull.

### What are the different parts of the digestive system? (pp.27 - 32) Continuation ...

- 2 Teach students about the mouth and the buccal cavity.

Refer students to Figure 7.4 (p.28).

- *Enrichment (Think) (p.28)*

21st Century Skills: *critical thinking, communication*

AO1: *Knowledge with understanding*

Ask: *Why are porridge, soups and purees suitable foods for babies and some elderly people?*

Discuss briefly. Get students to explain the answer.

Answer: Students should be able to identify one common thing between babies and the elderly, i.e. they only have a few teeth or no teeth at all. So, very little physical digestion can take place in the mouth. Thus, soft foods, that do not have to be physically digested in the mouth, are suitable for babies and some elderly people.

- 3 Teach students about the pharynx (p.28).

- *Enrichment (Info) (p.28)*

21st Century Skills: *information literacy*

Have students read about the process of swallowing. Reading this will help students when they do the *Enrichment (Activity)* on p.28.

- *Enrichment (Activity) (p.28)*

21st Century Skills: *communication*

Ask students to place their fingers against their voice box while swallowing their saliva.

Ask: *What kind of movement do you feel on your fingers?*

Answer: Students should be able to feel a quick backward and forward movement of the throat. The backward movement happens when the larynx is pulled up to the epiglottis, closing the passage into the windpipe. The forward movement happens when the larynx goes back to its original position, opening the passage into the windpipe.

- *Enrichment (Think) (p.28)*

21st Century Skills: *critical thinking, communication*

AO1: *Knowledge with understanding*

Ask: (a) *Why is it possible to choke if you eat and talk at the same time?* (b) *What would happen if food particles were not forced out by the trachea by violent coughing?*

Answer: (a) The food can enter the trachea and block the air instead of going into the gut, leading to choking. (b) It could lead to complete obstruction of the trachea and hence breathing, eventually leading to possible death.

- 4 Teach students about the oesophagus (p.29).

- *Link (p.29)*

The diaphragm is mentioned in the main text, as a sheet of muscle separating the thorax from the abdomen. Make students aware that they will learn more about the diaphragm in Chapter 10.

Ask: *What is another important function of the diaphragm?*

Answer: Students may be able to state that the diaphragm plays an important role in respiration.

- *Bio Watch (p.29)*

21st Century Skills: *communication*

Ask students to watch a video to see what it is like inside the gut.

Before watching the video,

Ask: *What do you expect to see or hear when you watch the video? What do you think the inside of the gut looks like? Does it make any sound?*

After watching the video,

Ask: *What kind of movement did you see along the gut walls? What do you think it serves?*

Students' answers may vary. At this stage, it is not necessary to get the precise answer. Tell students that they will learn about the movement of the gut wall next, and will find out the answers.

- 5 Teach students about peristalsis (p.29).

- Explain to students the following concepts about peristalsis:

- Rhythmic, wave-like muscular contractions along the wall of the alimentary canal
- Controlled by the action of antagonistic muscles
- Function of peristalsis for:
  - Mixing of digestive juices with food
  - Propelling food along the gut

- *AR (p.29)*

21st Century Skills: *ICT literacy*

Show the AR clip on peristalsis by projecting on a screen or ask students to watch the AR on their own mobile devices.

- *Enrichment (Activity) (p.29)*

21st Century Skills: *collaboration*

AO1: *Knowledge with understanding*

- Ask students to work in pairs to do the activity. Inform students beforehand to bring a long, clean sock and a tennis ball.
- Ask: *Do liquids move down the oesophagus through peristalsis too?*

Answer: Yes, peristalsis propels food as well as liquids through the gut. Explain to students that the fact that we can still drink lying down tells us that peristalsis moves liquid along the oesophagus.

- Teach students about the stomach and its role in chemical digestion (p. 30).

- **Support** the lower English-language-proficiency students using *Word Alert* (p.30) to highlight the terms *distensible* and *distended*. These are useful words to use when describing the stomach.
- *Enrichment (Think) (p.30)*

21st Century Skills: *critical thinking, communication*

AO1: *Knowledge with understanding*

Ask: *Can a person survive without a stomach?*

Discuss briefly. Get students to explain their answer.

Answer: Yes, a person can survive without a stomach by attaching the small intestine directly to the gut. However, such a person needs to eat mostly bland food and in extreme moderation.

### Wrap-Up

- Summarise the main learning points of the lesson. Write on the board using a concept map or graphic organiser. You may want to use the relevant part of *Let's Map It on* p. 33.

## LESSON 4

### Warm-Up

- Quiz the student.

Ask: *When you pass wind / pass out gas, where does the gas come from? What causes the pungent smell of this gas? What kind of food should you avoid to reduce the pungent smell of the gas?*

Answer: The gas largely comes from the fermentation of undigested food by bacteria in the large intestine. Hydrogen sulfide, which makes up only 1 % of this gas, is the chief cause of the pungent smell. To reduce the pungent smell, we should avoid eating too much food which is rich in sulfur such as cheese, beans, cabbage and eggs.

### What are the different parts of the digestive system? (pp.27 - 32) Continuation ...

- Teach students about the small intestine and briefly discuss its role in digestion (p.30).
  - **Support** visual learners by showing how long 6 m is using a rolling measuring tape.
  - *Enrichment (Think) (p.30)*

21st Century Skills: *critical thinking, communication*  
AO1: *Knowledge with understanding*  
Ask: *Why is the small intestine very long?*  
Discuss briefly with students.

Answer: This is to allow for the food to be completely digested, as it is the last stage where solid food is digested.

- *Enrichment (Info) (p.31)*

21st Century Skills: *information literacy*

Mention briefly about diarrhoea and its cause, i.e. by cholera bacteria. Have students read the short write-up.

**Challenge** the more able students to find out more about the cholera bacteria and how we can avoid getting infected.

- Teach students about the large intestine and briefly discuss its role in digestion (p.31).
  - **Support** visual learners by showing how long 1.5 m is using a rolling measuring tape.
- Teach students about the organs associated with the gut [liver, gall bladder and pancreas] and briefly discuss their roles in digestion (p.32).
  - **Support** the lower English-language-proficiency students using *Word Alert* (p.32) to highlight the term *accessory*.