

# **THE DIGESTIVE SYSTEM**



## THE DIGESTIVE SYSTEM - TEACHER NOTES

---

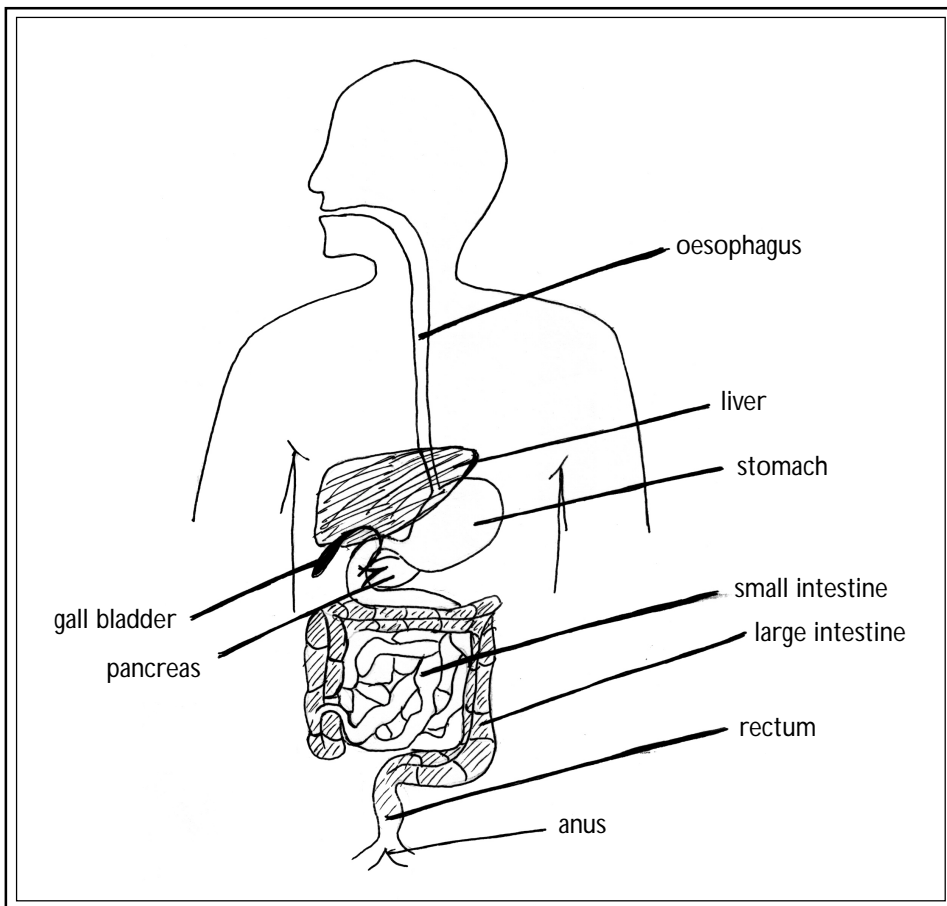
### What it does:

- Breaks down food that we eat into the smallest parts and makes the nutrients available to the rest of the body

### What body parts are involved:

- mouth
- teeth
- tongue
- oesophagus
- stomach
- liver
- gall bladder
- pancreas
- large intestine
- small intestine

### What it looks like:



## How it works:

- The body needs fuel in the form of small, simple molecules. The digestive system is essentially a long tube through which the food passes and is gradually broken down into small molecules and absorbed into the bloodstream. The breaking down is done mechanically (eg using teeth), and chemically (by enzymes). Once this happens, the nutrients from the digested food can pass into the body.
- The main part of the digestive system is the alimentary canal that starts at the mouth and ends at the anus. It is a long tube running through the body. The structure of the tube changes to suit different purposes. The digestive system also consists of the organs that assist with the break down of food (the tongue, teeth, liver, bile duct, pancreas).
- Food enters the body through the mouth and is broken down by the teeth and the enzymes in saliva. The food is then swallowed and passes through the oesophagus.
- The oesophagus has muscular walls that contract in waves to move the food through to the stomach and saliva helps to lubricate it on the way to the stomach.
- The stomach stores food and produces a powerful digestive juice that breaks down proteins. Its inner walls are deeply folded. These stretch when the stomach fills with food. The walls of the stomach are very muscular and these churn the food to help break it into smaller pieces. These pieces then move through to the intestines.
- The small intestine completes the process of digestion, and allows nutrients and water to be absorbed into the bloodstream. The nutrients are absorbed through the wall of the small intestine. The remaining food then passes to the large intestine.
- The large intestine absorbs water and concentrates waste. The remaining waste is passed through the large intestine and out the anus.
- As the food moves through the digestive system, blood vessels at the surface of the alimentary canal absorb nutrients into the blood so that they can be passed to the rest of the body.

## Other facts to know:

- The liver and pancreas are both involved in digestion. Their role is to adjust the chemical composition of the blood before it flows to the rest of the body.
- The liver produces bile. Bile helps to emulsify fats (turns them into small droplets that are easier to digest).
- The gall bladder collects bile from the liver and concentrates it by removing most of the water. The muscular walls of the gall bladder pump bile into the small intestine.
- The pancreas is an organ that produces digestive fluids and regulates blood sugar levels.
- When we are sick, our diaphragms and the muscles of the abdomen contract to squeeze partly digested food from your stomach out of the mouth. Vomit tastes bitter because of the acidic stomach juices it contains.



## DIGESTION ACTIVITIES

---

**Activity Title:** Compare the nutrition content of common foods

**Level:** Y4-Y6

**Resources/Apparatus Required:** Food cartons and packaging (eg milk cartons, biscuit packets, chip packets, bread bags, etc)

**Specific learning outcome:** Students will compare the nutritional content of different types of food

**Curriculum links:** **Health and Physical Education**  
Personal health and physical development

**Science**  
Living world

**Mathematics**  
Numeracy

**Essential Skills**  
Communication, numeracy, information, work and study

### Directions:

---

- 1 Ask the students if they have noticed the nutritional information on the side of a packet of food before. Explain what a few of these key groups are and what they do for our bodies (eg Vitamin C, Calcium, Fat). (See Appendix for details).
- 2 Hand out 3 different types of food packets to the students (either in groups, or individually), and ask them to write down the amount of each category (eg Vitamin C, Calcium, Fat), each of these foods contain.
- 3 Graph and discuss the results. Which food do they think is better for them?



**Activity Title:** How our intestines work

**Level:** All

**Resources/Apparatus Required:** Lengths of rubber tubing  
Marbles

**Specific learning outcome:** Students will understand that muscles help to move our food through the digestive system

**Curriculum links:** **Health and Physical Education**  
Personal health and physical development

**Science**  
Living world

**Essential Skills**  
Communication, information, physical skills, work and study

**Directions:**

---

- 1 Explain to the students that muscles are used to move out food through our digestive systems.
- 2 Explain to the students that in this case, the marbles represent our food, and the rubber tubing represents our intestines.
- 3 Get the students to push the marbles from one end of the rubber tube to the other.
- 4 Draw a cross section of the intestine on the whiteboard, showing the layer of muscle.



**Activity Title:** Surface area

**Level:** All

**Resources/Apparatus Required:** piece of paper

**Specific learning outcome:** Students will understand how the intestines have a large surface area yet take up a relatively small amount of space

**Curriculum links:** **Health and Physical Education**  
Personal health and physical development

**Science**  
Living world

**Essential Skills**  
Communication, information

**Directions:**

---

- 1** Explain to the students that the lining of the intestine has a huge area (as much as 9 square metres. If possible, go outside and show the children how big this is so that they get a visual understanding.), and that this is possible because the lining has so many folds.
- 2** Get students to measure the surface area of an A4 piece of paper.
- 3** Then get the students to fold the piece of paper into accordion pleats.
- 4** Discuss how the surface area has remained the same, but the amount of space the paper takes up is now much smaller.



**ActivityTitle:** **The story of food**  
Revision activity

**Level:** Y3-Y6

**Resources/Apparatus Required:** -

**Specific learning outcome:** Students will be able to describe the passage of food through the body

**Curriculum links:** **Health and Physical Education**  
Personal health and physical development

**Science**  
Living world

**English**  
Written language

**Mathematics**  
Numeracy

**Essential Skills**  
Communication, information, work and study

**Directions:**

---

- I Get the student to write a story about what happens to a piece of food (eg a sandwich, a piece of pizza, a pie, etc) as it moves through the body and is digested.



**Activity Title:** Cardboard tube stethoscopes  
Starter activity

**Level:** All

**Resources/Apparatus Required:** Cardboard tubes

**Specific learning outcome:** Students will understand that our bodies make noises when food is digested

**Curriculum links:** **Health and Physical Education**  
Personal health and physical development

**Science**  
Living world

**Essential Skills**  
Communication, information, self-management and competitive skills, work and study.

**Directions:**

---

- 1** Give the students a cardboard tube each and explain to them that this is their stethoscope for listening to their stomachs.
- 2** In pairs, get the students to listen to each other's stomachs and discuss what they can hear. Use this as a lead in to a discussion of the digestive system.
- 3** To extend, get the students to listen to each other's stomachs at different times of the day (eg just before and just after eating lunch).

**NB:** The gurgling noises the children will be able to hear are the sounds of their stomach muscles churning to breakdown food.



**Activity Title:** **Test your knowledge**  
Revision activity

**Level:** Y4-Y6

**Resources/Apparatus Required:** Computers with Internet access

**Specific learning outcome:** Students will be able to review and test their knowledge of nutrition and digestion

**Curriculum links:** **Health and Physical Education**  
Personal health and physical development

**Science**  
Living world

**Technology**  
Technological knowledge and understanding

**Essential Skills**  
Communication, numeracy, information, physical skills,  
work and study

**Directions:**

---

- 1** Students need to log on to computers and find the 'Kidfood' site - [www.kidfood.org/](http://www.kidfood.org/)
- 2** Get the students to do the kidfood quiz and record their results.



**Activity Title:** **Building a digestive system**  
Revision activity

**Level:** Y4-Y6

**Resources/Apparatus Required:** A variety of everyday objects eg different shaped boxes, plastic bags, plastic containers, cardboard tubes, empty bottles, cardboard, etc

**Specific learning outcome:** Students will build their own digestive system

**Curriculum links:** **Health and Physical Education**  
Personal health and physical development

**Science**  
Living world

**Essential Skills**  
Communication, information, problem solving,  
self-management and competitive skills, social and co-operative  
skills, work and study

**Directions:**

---

- 1 Organise the class into groups of 3-4 and instruct them that they are going to build their own digestive system using the items that are in front of them.
- 2 Tell them that they will need to work as fast as they can to produce the most detailed and complete digestive system possible. Make sure that the group is able to explain what each part is and what it does.

