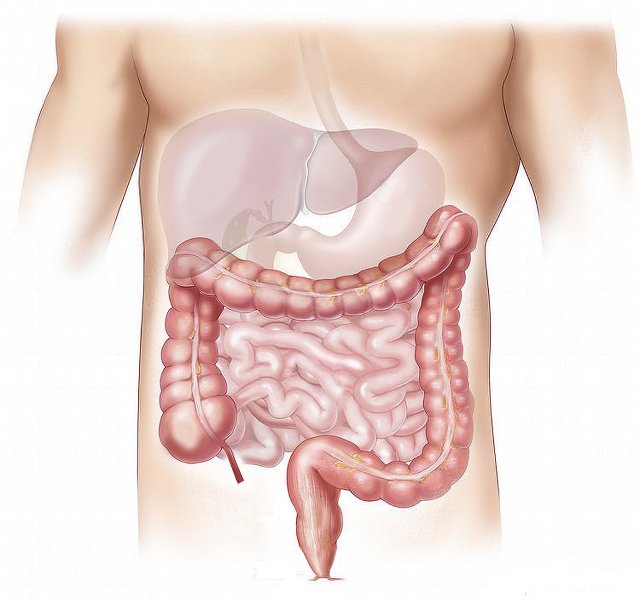
**The human digestive system**



The boxes below contain the names of some human organs.

Put a tick next to each organ that is **part of the human digestive system**.

Then draw straight lines to join each **organ** you have ticked to its main **function**.

|  |  |  |
| --- | --- | --- |
| **Organ** |  | **Function** |
|  |  | To dissolve food and absorb nutrients. |
|  |  |  |
| Stomach |  | To digest food and absorb nutrients. |
|  |  |  |
| Lungs |  | To store and churn food. |
|  |  |  |
| Intestines |  | To transport food from the mouth. |
|  |  |  |
| Oesophagus |  | To release energy from food. |
|  |  |  |
|  |  | To absorb oxygen. |

*Biology> Big idea BCL: The cellular basis of life > Topic BCL2: From cells to organ systems > Key concept BCL2.2: Supplying cells – the human circulatory, digestive and gas exchange systems*

|  |
| --- |
| **Diagnostic question** |
| **The human digestive system** |

**Overview**

|  |  |
| --- | --- |
| Learning focus: | Human life depends upon the tissues and organs of the circulatory, digestive and gas exchange systems working together to support the life processes of the cells from which we are made. |
| Observable learning outcome: | Describe simply the structures and functions of the human digestive system. |
| Question type: | Linking ideas |
| Key words: | digestive system |

|  |  |
| --- | --- |
| **P** | **PRIOR UNDERSTANDING**  This diagnostic question probes understanding of ideas that are usually taught at age 5-11, to aid transition from earlier stages of learning. |

**What does the research say?**

Studies have found that young children commonly recognise the mouth and stomach as part of the digestive system, but not the intestines (García-Barros, Martínez-Losada and Garrido, 2011; AHİ, 2017). The word ‘tummy’ is commonly used by children up to age 10 to refer in a non-organ-specific way to the abdominal area (Teixeira, 2000). The role of the stomach is often misunderstood as the main or only place where digestion occurs (food is mainly stored and churned in the stomach, while most of the digestion and absorption takes place in the intestines) (Millar, 2011).

A common misconception held by school children is that digestion (rather than cellular respiration) is the process that releases useful energy from food, perhaps because students incorrectly link two ideas – i.e. that digestion breaks down food, and that organisms get energy from food (Simpson, 1984). Some children incorrectly describe digestion as ‘melting’ or ‘dissolving’ (Çakici and Yilmaz, 2005).

**Ways to use this question**

Students should complete the question individually. This could be a pencil and paper exercise, or you could use the presentation with an electronic voting system or mini white boards.

*Differentiation*

You may choose to read the boxes to the class, so that everyone can focus on the science. In some situations it may be more appropriate for a teaching assistant to read for one or two students.

**Expected answers**

|  |  |  |
| --- | --- | --- |
| **Organ** |  | **Function** |
|  |  | To dissolve food and absorb nutrients. |
|  |  |  |
| Stomach ✓ |  | To digest food and absorb nutrients. |
|  |  |  |
| Lungs |  | To store and churn food. |
|  |  |  |
| Intestines ✓ |  | To transport food from the mouth. |
|  |  |  |
| Oesophagus ✓ |  | To release energy from food. |
|  |  |  |
|  |  | To absorb oxygen. |

**How to respond - what next?**

If there is a range of answers, you may choose to respond through structured class discussion. Ask one student to explain why they gave the answer they did; ask another student to explain why they agree with them; ask another to explain why they disagree, and so on. This sort of discussion gives students the opportunity to explore their thinking and for you to really understand their learning needs. Responses often work best when the activities involve paired or small group discussions, which encourage social construction of new ideas through dialogue.

If students have misunderstandings about which organs are part of the digestive system, and what their main functions are, it may be helpful to respond with a small group discussion activity in which students have to work together to stick organs onto a poster or a T-shirt and explain their functions (Allen, 2014). The focus of the activity should be on group discussion to reach a consensus on where to place the organs and how to explain their functions. It is through the discussions that students can check their understanding and develop their explanations. Listening in to the conversations of each group will often give you insights into how your students are thinking. After their discussions, each group should be prepared to report the key points of their discussion to another group, or to the class.

**Acknowledgments**

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Images: pixabay.com/Elionas2 (1463369)

**References**

AHİ, B. (2017). Thinking about digestive system in early childhood: a comparative study about biological knowledge. *Cogent Education,* 4(1).

Allen, M. (2014). *Misconceptions in Primary Science, Second* ednBerkshire, UK: Open University Press.

Çakici , Y. and Yilmaz, C. (2005). Exploring Turkish upper primary level pupils' understanding of digestion. *International Journal of Science Education,* 27**,** 79-100.

García-Barros, S., Martínez-Losada, C. and Garrido, M. (2011). What do children aged four to seven know about the digestive system and the respiratory system of the human being and of other animals? *International Journal of Science Education,* 33**,** 2095-2122.

Millar, N. (2011). Nutrition, diet and photosynthesis. In Reiss, M. (ed.) *ASE Science Practice: Teaching Secondary Biology.* 2nd ed. London, UK: Hodder Education.

Simpson, M. (1984). Digestion - the long grind. *Biology Newsletter,* 43**,** 12-16.

Teixeira, F. M. (2000). What happens to the food we eat? Children's conceptions of the structure and function of the digestive system. *International Journal of Science Education,* 22(5)**,** 507-520.