**What happens to the food we eat?**



1. What happens to the food we eat?

|  |  |
| --- | --- |
| **A** | All of it stays in the body. |
| **B** | Some of it stays in the body and some of it leaves the body. |
| **C** | All of it leaves the body. |

1. How would you explain your answer to question 1?

|  |  |
| --- | --- |
| **A** | Goodness is taken out of the food, then we get rid of the rest. |
| **B** | The food is digested and nutrients are absorbed, then we get rid of the rest. |
| **C** | The food is broken down and turned into poo, which we get rid of. |
| **D** | The food is used to make us grow bigger and taller. |

*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*

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| **Diagnostic question** |
| **What happens to the food we eat?** |

**Overview**

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| --- | --- |
| 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: | Two-tier multiple choice |
| 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?**

From an early age, children understand that ‘goodness’ is taken out of food after it is eaten, though there is little understanding of the chemical process of digestion even in older children (Driver et al., 1994; Millar, 2011; AHİ, 2017). Many students think that while food is broken down, its chemical composition remains unchanged (Teixeira, 2000; García-Barros, Martínez-Losada and Garrido, 2011). Several studies have found that most children up to age 7 believe that all the food we eat stays in the body; by age 10, approximately 50-75% of children think part of the food stays and part of it leaves, with the remaining children’s ideas split between all of the food staying and all of it leaving (Teixeira, 2000; AHİ, 2017).

It has been reported that some children misunderstand how food is used for growth; in one study, primary school children thought food leaves the stomach and moves into the legs and arms, where it accumulates and makes them grow longer (Teixeira, 2000).

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 questions 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 questions 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**

1. B - Some of it stays in the body and some of it leaves the body.
2. B - The food is digested and nutrients are absorbed, then we get rid of the rest.

**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 digestion and why only part of the food we eat is absorbed, the following BEST ‘response activity’ describes a modelling task that could be used in follow-up to this diagnostic question to build understanding:

* Response activity: A model of digestion

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Developed by Alistair Moore (UYSEG).

Images: pixabay.com/PublicDomainPictures (15687)

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