**Breakfast food chains**



Think about your breakfast this morning.

**To answer**

1. What did you eat for breakfast? (Cereal, milk, yogurt, fruit, bread, eggs, bacon, sausages… something else)?
2. What are the things you ate made from?
3. Do the things you ate come from plants or animals?
4. If you ate food made from animals, what did those animals eat?

**To do**

1. Write, draw or build models of all the food chains involved in your breakfast.

*Biology> Big idea BOE: Organisms and their environments > Topic BOE1: Interdependence of organisms > Key concept BOE1.1: Food chains and food webs*

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| **Response activity** |
| **Breakfast food chains** |

**Overview**

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| Learning focus: | Feeding relationships within a community of organisms can be modelled using food chain and food web diagrams. |
| Observable learning outcome: | Explain the order of organisms in a given food chain, using ideas about producers, consumers, predators and prey.  Explain that the arrows in a food chain diagram represent transfers of biomass from producer to consumer, or from prey to predator. |
| Activity type: | Independent research project, modelling |
| Key words: | food chain, producer, consumer |

This activity can help to increase engagement and develop students’ understanding of food chains in the context of familiar foods they have eaten. It can be used in response to the following diagnostic questions:

* Diagnostic question: Food chain (1)
* Diagnostic question: Food chain (2)
* Diagnostic question: Bottom of the food chain
* Diagnostic question: Links in the chain
* Diagnostic question: What do the arrows mean?

**What does the research say?**

In a multinational study of students aged 16-18 (Barman, Griffiths and Okebukola, 1995), the majority of students described a food chain as showing ‘what eats what’ (i.e. feeding relationships); however, only approximately 10% of students used the terms ‘producer’ and ‘consumer’ when asked to explain what is shown by a food chain.

Confusion about the direction and meaning of the arrows in a food chain is a commonly reported misunderstanding (Gallegos, Jerezano and Flores, 1994; Gotwals and Songer, 2010), and suggests that students interpret the arrow to mean “eats” (Allen, 2014). Most of the students in the study by Barman et al. (1995) placed the arrows the wrong way around (e.g. from predator to prey) when asked to assemble a food chain using pre-printed cards, yet when presented with a correct depiction of a food web they did not question the direction of the arrows even though in most cases they contradicted the students’ own constructions.

A number of authors have suggested challenging students to construct their own food chains, including for meals they have eaten themselves, to increase engagement and help develop understanding (Barker and Slingsby, 2011; Grumbine, 2012).

**Ways to use this activity**

Students should complete this activity individually, to think about, research and construct food chains involved in their own breakfast. The activity could be set as a homework, and could be followed up with small group discussion of the food chains the students have assembled.

Students could construct their food chains using words, pictures (e.g. drawings or photographs), or modelling materials. They could create posters or models to present to their peers.

*Differentiation*

Some students could be directed to pick a single foodstuff from their breakfast and construct a food chain for that, while other students could be asked to construct food chains for as many of the components of their breakfast as they can.

**Expected answers**

Each of the food chains constructed by students should start with a producer (usually a plant), and should end with themselves as the highest trophic level. Check that the arrows are the correct way around (i.e. from producers to consumers, and from prey to predators).

**Acknowledgments**

Developed by Alistair Moore (UYSEG), from an idea described by Barker and Slingsby (2011).

Images: pixabay.com/contatoartpix (3137152)

**References**

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