**Ecosystem words**



Draw straight lines to join each **scientific word** to the correct **example from the picture**.

|  |  |  |
| --- | --- | --- |
| **Scientific word** |  | **Example from the picture** |
|  |  | the ground and the air |
|  |  |  |
| community |  | all of the living organisms and their surroundings |
|  |  |  |
| ecosystem |  | all of the living organisms |
|  |  |  |
| individual organism |  | all of the geese |
|  |  |  |
| population |  | a deer |
|  |  |  |
|  |  | all of the animals |

*Biology> Big idea BOE: Organisms and their environments > Topic BOE1: Interdependence of organisms > Key concept BOE1.2: Interdependence within ecosystems*

|  |
| --- |
| **Diagnostic question** |
| **Ecosystem words** |

**Overview**

|  |  |
| --- | --- |
| Learning focus: | An ecosystem is made up of interdependent populations of organisms interacting with each other and the environment in which they live. |
| Observable learning outcome: | Recall that an ecosystem is made up of a community of organisms interacting with the environment in which they live. |
| Question type: | Linking ideas |
| Key words: | population, community, ecosystem |

**What does the research say?**

Many researchers have recognised the difficulties that school children have in reaching this kind of understanding, which seems to be due to misunderstandings of key ideas including how the biotic and abiotic components of ecosystems are organised, that they interact, that they are interdependent/connected, that ecosystems exist in a state of balance, and that this balance can be perturbed by changes over time (e.g. Grotzer and Bell Basca, 2003; Sander, Jelemenska and Kattmann, 2006).

Research into how children’s thinking about the relationships between themselves, other organisms and ecosystems develops from age 5 to age 16 found that up to age 11 children are more likely to think about individual organisms than populations (Leach et al., 1992). Students at age 11 are likely to be more familiar with the everyday, rather than the ecological, use of terms such as ‘population’, ‘community’ and ‘environment’ (Driver et al., 1994). In one study, a quarter of children in a sample of secondary school students thought that a ‘community’ could only be formed by people living together, and another quarter could not distinguish between ‘population’ and ‘community’ (Adeniyi, 1985).

Researchers have used ‘word association tests’ to probe students’ understanding of ecological concepts, in which students must associate short definitions with key words (Yücel and Özkan, 2015).

**Ways to use this question**

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

Note: in the Word and PowerPoint versions of this activity, all of the animals in the picture can be selected separately from the landscape background; this means that they can be moved, deleted or replaced as desired.

*Differentiation*

You may choose to read the instructions and 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**

|  |  |  |
| --- | --- | --- |
| **scientific word** |  | **example from the picture** |
|  |  | the ground and the air |
|  |  |  |
| community |  | all of the living organisms and their surroundings |
|  |  |  |
| ecosystem |  | all of the living organisms |
|  |  |  |
| individual organism |  | all of the geese |
|  |  |  |
| population |  | a deer |
|  |  |  |
|  |  | all of the animals |

**How to respond - what next?**

Students who have joined the words to their correct definitions could be challenged to suggest further examples (from the picture or elsewhere) for the words. This will indicate whether they understand the meanings of the words well enough to apply them consistently, and will help to rule out the possibility that they picked the correct examples from the list by chance.

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 (meaning making) through dialogue.

The following BEST ‘response activity’ described a small group discussion task that could be used in follow-up to this diagnostic question:

* Response activity: What makes up an ecosystem?

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