**Build a key**





A **key** is a set of questions that can help us to classify an organism into a group.

Some animals can be classified as amphibians, birds, fish, mammals or reptiles.

Your challenge is to make a key that could be used to classify a penguin, a bat, a whale and a turtle.

Make sure your key could be used by somebody else to classify the animals correctly.

**To talk about in your group**

1. Which features help you to tell the animals apart?
2. Which features suggest that an animal should be classified in a particular group?
3. Which questions would help somebody to decide how to classify the animals?
4. How many questions need to be used in your key?

*Biology> Big idea BVE: Variation, adaptation and evolution > Topic BVE2: Classification > Key concept BVE2.1: Identifying and classifying organisms*

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| **Response activity** |
| **Build a key** |

**Overview**

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| Learning focus: | Organisms can be identified and classified into hierarchical groups based on their characteristics at the macroscopic and cellular levels. |
| Observable learning outcome: | Use a key to distinguish between and identify organisms in the lab and in the field. |
| Activity type: | Discussion, classifying/sorting |
| Key words: | classification |

This activity can help develop students’ understanding of the use of keys to identify and classify organisms by challenging them to build their own key that other people could use. This activity can be used in response to the following diagnostic question:

* Diagnostic question: Is it a bird…?

**What does the research say?**

Research suggests that students sometimes rely upon an organism’s habitat to classify it rather than its physical features (Allen, 2014); this can lead to misunderstandings and misclassifications, such as:

* that penguins and turtles are amphibians rather than birds and reptiles, respectively, because they divide their time between land and water;
* that bats are birds because they have wings and can fly through the air;
* that whales are fish because they live in the sea.

Research has also found that many students need extra help to understand and correctly apply less familiar taxonomic terms such as ‘amphibian’ (Schofield et al., 1984; Braund, 1991; Allen and Choudhary, 2012).

**Ways to use this activity**

Students should complete this activity in pairs or small groups. The focus of the activity should be on group discussion to decide how to assemble a key that other people could use to help them classify penguins, bats, whales and turtles – or other organisms of your choice.

The groups could be provided with question cards printed and cut out from the end of this document. Make clear to students that they don’t have to use all of the cards – they should choose only the ones they need to make a usable key. They could also be allowed to add their own questions, or for a more challenging activity they could not be given any question cards and asked to come up with suitable questions themselves.

When the groups have constructed their keys, they could swap them between groups to check whether they can be successfully used to classify the chosen organisms.

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. The quality of the discussions can be improved with a careful selection of pairs; or by allocating specific roles to students in each group.

After their discussions, each group should be prepared to report the key points of their discussion to another group, or to the class.

*Differentiation*

The quality of the group discussions can be improved with a careful selection of groups; or by allocating specific roles to students in each group. For example, you may choose to select a student with strong prior knowledge as a scribe, and forbid them from contributing any of their own answers. They may question the others and only write down what they have been told. This strategy encourages contributions from more members of each group.

**Equipment**

For each pair/group:

* arrow cards, yes/no cards, and classification cards, printed and cut out from the end of this document
* question cards, including blanks upon which students can write their own questions, printed and cut out from the end of this document (optional)

**Expected answers**

The key constructed by each group should be functional – i.e. it must be able to be used to correctly classify the chosen organisms.

**Acknowledgments**

Developed by Alistair Moore (UYSEG), from examples described by Allen (2014).

Images: penguin – pixabay.com/4270613 (3032601); bat – pixabay.com/Sweetaholic (1633706); whale – pixabay.com/skeeze (1945416); turtle – pixabay.com/hhach (3116202)

**References**

Allen, M. (2014). *Misconceptions in Primary Science, 2nd* ednBerkshire, UK: Open University Press.

Allen, M. and Choudhary, A. (2012). Animal classification by early years children. *United Kingdom Science Education Research Conference.* National Science Learning Centre, University of York, UK.

Braund, M. (1991). Children's ideas in classifying animals. *Journal of Biological Education,* 25(2)**,** 103-110.

Schofield, B., et al. (1984). Science in Schools: Age 13: Research Report No. 2. *Assessment of Performance Unit.* Department of Education and Science, HMSO, London, UK.

**Print and cut out cards for card-sort activity**

*Arrow cards*

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*Yes/no cards*

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| Yes | Yes | Yes | Yes | No | No | No | No |
| Yes | Yes | Yes | Yes | No | No | No | No |

*Question cards*

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| --- | --- |
| Does it have wings? | Does it have feathers? |
| Does it have gills? | Does it have scales? |
| Does it have a beak? | Does it have a shell? |
| Is it an animal? | Does it have fins? |
| Can it breathe under water? | Does it have fur? |
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*Classification cards*

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| --- | --- | --- | --- | --- |
| It’s an  **AMPHIBIAN** | It’s an  **AMPHIBIAN** | It’s a  **BIRD** | It’s a  **BIRD** | It’s a  **FISH** |
| It’s a  **FISH** | It’s a  **MAMMAL** | It’s a  **MAMMAL** | It’s a  **REPTILE** | It’s a  **REPTILE** |