Autumn Block 1

Group and classify living things

White Rose SCIENCE

Small steps

Step 1	Group animals
Step 2	Vertebrates and invertebrates
Step 3	Classification keys (animals)
Step 4	Group plants
Step 5	Classification keys (plants)

Group animals

Notes and guidance

In Year 2, children looked at animals (including humans) to identify their needs for survival, life cycles and offspring. They explored examples of mammals, birds, fish, amphibians and reptiles.

In this step, children identify, sort and group animals into categories based on their features. It is essential that children are confident with the definitions of each animal group as they will use this information to classify animals in later steps.

Highlight to children that all animals in this step have a spine. They should be introduced to the term "vertebrate" to describe an animal with a spine. This is a building block for Step 2 where they will look at invertebrates. Children should be shown examples of animals that are harder to categorise, such as the duck-billed platypus, to challenge thinking and reasoning skills.

Key questions

- Is a _____ a mammal?
  How do you know?
- What features do birds have?
- What features do fish have?
- What features do reptiles have?
- What features do amphibians have?
- Is a whale a fish? Why/why not?
- How are amphibians and reptiles similar?
  How are they different?
- Which animals are harder to categorise?

Things to look out for

- Children may incorrectly classify animals. For example, they may classify a whale as a fish because it lives in water. Discuss examples of animals that are harder to categorise before children carry out grouping and sorting activities.

National curriculum links

- Recognise that living things can be grouped in a variety of ways.
- **Working scientifically** – Talk about criteria for grouping, sorting and classifying (non-statutory).

Group animals

Key vocabulary

- **Vertebrate** – An animal with a spine.
- **Mammal** – An animal with a spine, fur or hair on its body, and feeds its young on milk.

- **Bird** – An animal with a spine, feathers, wings and a beak.

- **Fish** – Animals that live in water and have fins and gills. Most fish have scales.

- **Amphibian** – An animal with a spine that lives on land and in water.

- **Reptile** – An animal with a spine and dry scales on its body.

Practical ideas

Play games with children to help them identify animal characteristics.

- One child thinks of an animal but keeps it secret from others playing.

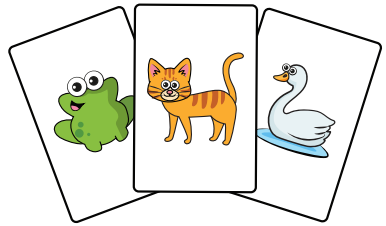
  The other children must guess the animal they are thinking of by asking yes/no questions about the animal's characteristics.

- Children could play the game snap. Each card has a picture of an animal.

  Children turn over a card from the top of their face down pile. If there is a characteristic that is similar about both animals (such as they both have scales) the fastest child to say "Snap!" takes the face up pile and adds them to the bottom of their face down pile.

  If children say "Snap!", but are unable to say what is similar, then their partner takes the face up pile.

  The child that ends up with all the cards is the winner.



Factual knowledge

- Animals with a spine are called vertebrates.
- All mammals, birds, fish, amphibians and reptiles are vertebrates.
- Each animal group has different physical features.

Vertebrates and invertebrates

Notes and guidance

In the previous step, children used the term "vertebrate" to describe animals with a spine. In this step, children are introduced to the term "invertebrate" to describe an animal without a spine.

Children name and identify familiar animals from insect, spider and soft-bodied invertebrate groups. Children group animals based on easily identifiable features.

The enquiry question for this block is introduced in this step. Children are completing an identifying, grouping and classifying enquiry.

Children should use their understanding of vertebrates and invertebrates to begin grouping and classifying animals.

Things to look out for

- Children may incorrectly classify worms and spiders as insects. They are classified in a different category of invertebrate.
- They may think that all invertebrates have an exoskeleton.
- Children may think all invertebrates move in the same way.

Key questions

- What is a vertebrate?
- What is an invertebrate?
- What is an exoskeleton?
- What features do insects have?
- What features do spiders have?
- How can invertebrates be grouped?
- How many ways can you find to group these invertebrates?

Enquiry question

- How can we group and classify living things?

National curriculum links

- Recognise that living things can be grouped in a variety of ways.
- **Working scientifically** – Asking relevant questions and using different types of scientific enquiries to answer them.

Vertebrates and invertebrates

Key vocabulary

- **Vertebrate** – An animal with a spine.

- **Invertebrate** – An animal without a spine.

- **Exoskeleton** – A hard covering on the outside of the body.

- **Insect** – A small invertebrate that has three body sections, six legs and antennae.

- **Spider** – A small invertebrate that has two body sections and eight legs.

- **Soft-bodied invertebrate** – An invertebrate with a soft body such as a slug or a snail.

Practical ideas

- Children can explore their local area to identify different invertebrates. In this step, children should simply identify and count the number of species they find, as they will gather and record data using their local area in more detail in the next block.

- Children can group and sort images of invertebrates based on different physical characteristics.

  Children should be encouraged to sort the images in more than one way.

  Ask children to move around the room to see if they can guess the sorting rule for another group.

Factual knowledge

- Animals with a spine are called vertebrates.
- Animals without a spine are called invertebrates.
- Insects have three body sections, six legs and antennae.
- Spiders have two body sections and eight legs.
- Slugs and snails are soft bodied invertebrates.

Classification keys (animals)

Notes and guidance

In this small step, children are introduced to classification keys for the first time. So far, children have sorted vertebrates and invertebrates into groups based on a range of categories. The focus of this step is for children to use simple keys to classify animals correctly. It is important that children have a clear understanding of the physical characteristics of each animal group, as they will use this knowledge to create questions.

Children should create closed questions that can be answered with either "yes" or "no". They may need support with creating these questions. For example, the question "how furry is it?" would not help children to classify, but "does it have fur?" will. If further support is needed, generate a whole-class question bank which they can then use when creating classification keys.

Key questions

- What is a vertebrate?
- What is an invertebrate?
- What features do mammals, birds, fish, amphibians or reptiles have?
- What features do insects, spiders or snails have?
- What is a classification key?
- Why would scientists use a classification key?

Enquiry question

- How can we group and classify living things?

Things to look out for

- Children may use questions that are based on opinion rather than factual knowledge when trying to classify.
- They may create questions that are too broad and therefore do not help to classify. Model writing a broad question and also a specific question. Allow the children to discuss which example is more useful and why.

National curriculum links

- Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.
- **Working scientifically** – Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.

Classification keys (animals)

Key vocabulary

- **Vertebrate** – An animal with a spine.

- **Invertebrate** – An animal without a spine.

- **Insect** – An invertebrate that has three body parts, six legs and antennae.

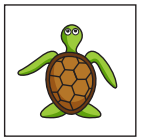
- **Spider** – An invertebrate that has two body sections and eight legs.

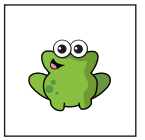
- **Soft-bodied invertebrate** – An invertebrate with a soft body such as a slug or a snail.

Practical ideas

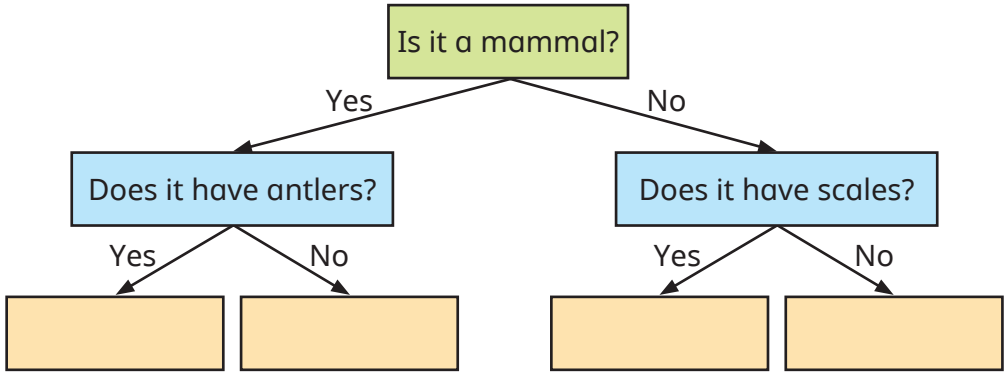
- Create a large-scale classification key in the playground.

  Children can each have a picture of an animal on a sheet of paper.





  Adults can facilitate the questions to allow children to move down the classification key answering "yes" or "no" to the questions.



  This could also be completed using hula hoops and string to represent the classification key.

Factual knowledge

- Classification keys are used to classify animals accurately.
- Closed questions are used in classification keys.

Group plants

Notes and guidance

In KS1, children identified common wildflowers, garden plants, deciduous and evergreen trees. In this step, children build on this knowledge to sort and group plants in different ways.

By the end of this step, children should know that flowering plants produce flowers and fruit and non-flowering plants do not. This step lends itself to practical activities where children can observe plants closely and group them based on different characteristics.

Initially, children may group plants based on categories such as colour or size. To extend learning, they can sort and group plants based on more complex categories such as its leaf structure. Allow children to continue to develop their answers to the enquiry question throughout this step.

Key questions

- What is a flowering/non-flowering plant?
- What is the difference between deciduous and evergreen trees?
- What are the female or male reproductive parts in plants called?
- How can we sort and group these plants?

  How many ways can you find?
- Look at the leaves.

  How are they similar? How are they different?

Enquiry question

- How can we group and classify living things?

Things to look out for

- In Year 3, children used the term “stamen” to describe the male reproductive parts in plants, and “carpel” to describe the female. They do not need to use the terms “anther”, “filament”, “ovule”, “ovary”, “stigma” and “style” until Year 5.

National curriculum links

- Recognise that living things can be grouped in a variety of ways.
- **Working scientifically** – Talk about criteria for grouping, sorting and classifying (non-statutory).

Group plants

Key vocabulary

- **Flowering plant** – A plant that can produce flowers and fruit.


- **Non-flowering plant** – A plant that does not produce flowers and fruit.


- **Stamen** – The male parts in flowering plants.

- **Carpel** – The female parts in flowering plants.

Practical ideas

- Children should look at physical examples of plants to allow them to observe closely and talk about criteria for grouping, sorting and classifying.

  Large hoops can be used to sort and group these plants in different ways. Hand lenses would help children to make more accurate observations.


- Children can collect leaves from deciduous and evergreen trees to sort and classify them based on their leaf structure.

Factual knowledge

- Non-flowering plants include mosses and ferns.
- Flowering plants can produce flowers and fruit.
- Deciduous trees lose their leaves annually.
- Evergreen trees keep their leaves all year round.

Classification keys (plants)

Notes and guidance

In this small step, children use classification keys to classify plants based on simple physical characteristics. This step allows children to revisit the skills learnt in Step 3

Children should now be more confident when using classification keys, but may still need support with generating succinct, closed questions. Model examples of open and closed questions so children can select the most appropriate questions for their classification key.

In this step, children should provide an answer to the enquiry question. They may choose to show their findings by creating classification keys, presentations, or in written and verbal responses.

Things to look out for

- Children may think that plants are not living things.
- They may create classification questions that are based on opinion rather than factual knowledge.
- Children may create questions that are too broad and therefore do not help to classify. Model writing a broad question and also a specific question. Allow the children to discuss which example is more useful and why.

Key questions

- What is a flowering plant?
- What is a non-flowering plant?
- What characteristics do ferns and mosses have?
- What characteristics do flowering plants have?
- Do all plants have petals? Explain your thinking.
- Do all plants have roots? Explain your thinking.
- How can these plants be classified?

Enquiry question

- How can we group and classify living things?

National curriculum links

- Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.
- **Working scientifically** – Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

Classification keys (plants)

Key vocabulary

- **Flowering plant** – A plant that can produce flowers and fruit.

- **Pollination** – The process of transferring pollen from the male to the female parts of the plant to reproduce.

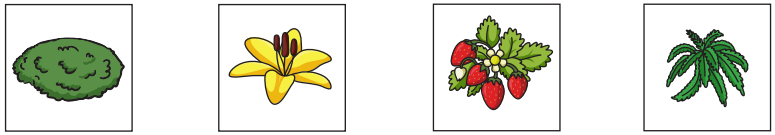
- **Non-flowering plant** – A plant that does not produce flowers or fruit.

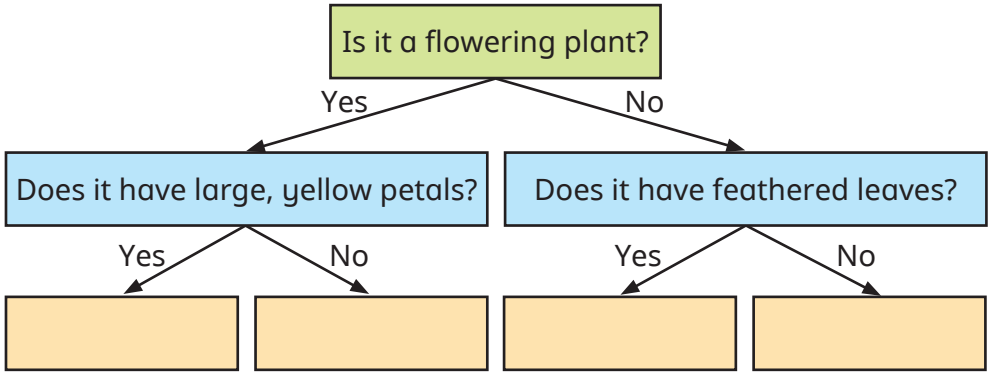
- **Fern** – A non-flowering plant with long stems and feather-like leaves.

- **Moss** – A non-flowering plant that grows in damp, moist conditions.

Practical ideas

- Create open and closed question cards which children can sort correctly to help them understand the difference between question types.
- Children can use physical plant examples from the previous step to classify on a larger scale.





Large hoops and string can be used to create pathways through the classification key.

Factual knowledge

- Classification keys are used to classify plants accurately.
- Closed questions are used in classification keys.