

Science in Year 1

In the first years of schooling, much of the science curriculum is based around real-life experiences for children. This includes everyday plants and animals, as well as finding out about different materials and the four seasons. There are likely to be lots of opportunities for exploring scientific ideas both in the classroom and the local surroundings.

Scientific Investigation

Children are encouraged to carry out their own observations and experiments to further their scientific understanding. In Year 1 this may include learning to:

- Ask scientific questions
- Carry out simple tests, and make observations
- Collect information to answer questions
- Group together objects according to their properties or behaviours

Plants and Animals

- Name a selection of common plants, including deciduous and evergreen trees
- Name the main parts of plants and trees, such as roots, stems, trunks and leaves
- Name a variety of common animals, including mammals, fish, birds, reptiles and amphibians
- Name some common animals which are carnivores, herbivores and omnivores
- Name the main parts of the human body, including those related to the five senses

Herbivores: animals which feed only on plants, e.g. rabbits

Carnivores: animals which feed on other animals, e.g. eagles

Omnivores: animals which eat both plants and animals, e.g. humans

Deciduous trees are those which lose their leaves in autumn, whereas evergreen trees – as the name implies – are those which retain their green colour all year round.

Everyday Materials

- Recognise that objects are made of materials
- Name some everyday materials such as wood, metal, glass and plastic
- Describe some of the properties of materials, e.g. that wood is hard
- Group together items based on the materials they're made from, or their properties, for example by grouping heavy objects or shiny objects

Seasonal Change

- Observe changes across the four seasons
- Observe and describe how the day and weather changes with the seasons

Parent Tip

There are always plenty of ways in which families can support children at home with science. There may be a park or gardens near you which you can visit over the year and see how the flora changes with the seasons. You may also be able to visit a farm or nature park which provides plenty of opportunity for discussing the wide variety of the animal kingdom.



Science in Year 2

In the first years of schooling, much of the science curriculum is based around real-life experiences for children. This includes everyday plants and animals, as well as finding out about different materials and the four seasons. There are likely to be lots of opportunities for exploring scientific ideas both in the classroom and the local surroundings.

Scientific Investigation

Children are encouraged to carry out their own observations and experiments to further their scientific understanding. In Year 2 this may include learning to:

- Use scientific apparatus to make observations, such as magnifying glasses
- Collect information about what they have seen
- Make links between observations and their scientific understanding

Living Things and their Habitats

- Compare the difference between things which are alive, which are dead, and which have never been alive
- Understand that different animals are suited to different habitats
- Identify some plants and animals in different habitats
- Describe how animals feed on other plants or animals

Habitats are simply the different types of places living things are found. This can range from the vast, such as oceans and rainforests, through to local features such as rock pools, or to the small, such as under a single log.

Plants

- Describe how seeds or bulbs grow into plants
- Understand that plants need water, light and a suitable temperature to grow

Animals including Humans

- Notice that all animals have offspring which grow into adults, including humans
- Know about the basic survival needs of animals, such as food, water and air
- Describe the importance of exercise, healthy diet and hygiene to humans

Everyday Materials

- Identify and compare the uses of different materials including wood, metal, plastic, glass, brick, rock, paper and cardboard
- Find out how some solid objects can be changed by squashing, bending or stretching

Parent Tip

Growing your own plants or flowers at home can be an exciting – if slow – process for children to take part in. Why not try some quick-growing seeds such as cress or mustard, as well as something more substantial planted in the garden, and watch how the processes of growth are similar for all plants?

At certain times of year you may also be lucky enough to witness some of the growth cycle in animals, such as tadpoles in a pond, or lambing season at the local farm.



Science in Year 3

During Key Stage 2 (Years 3 to 6), the strands of science begin to become more recognisable as biology, chemistry and physics, although they will usually be grouped together in primary school. Children will continue to carry out their own experiments to find out about the world around them, and to test their own hypotheses about how things work.

Scientific Investigation

Investigation work should form part of the broader science curriculum. During Year 3, some of the skills your child might focus on include:

- Set up simple comparative tests, ensuring that they are carried out fairly
- Make systematic observations, using appropriate equipment and standard units
- Gather and record information to help to answer scientific questions
- Use results to draw simple conclusions or to raise further questions
- Use straightforward scientific evidence to answer questions

Plants

- Identify the basic functions of a plant's roots, stem/trunk, leaves and flowers
- Understand that plants need air, light, water, nutrients and room to grow
- Understand the role of flowers in the life cycle, including pollination and seed dispersal

Pollination is the act of reproduction in which pollen is transferred – usually to another plant – to make seeds. Seed dispersal is the distribution of seeds by actions such as sprinkling, through the wind, or by being eaten as part of a fruit.

Animals including Humans

- Know that animals get their nutrition from food, and need the right types and amounts of nutrition
- Identify that humans and some other animals have skeletons and muscles, and know their basic functions

Rocks

- Compare and group different types of rocks based on their appearance and properties
- Describe how fossils are formed
- Recognise that soils are made from rocks and organic material

At this level, rocks are often grouped into one of three categories:

Igneous: rocks formed from magma under the Earth's surface, often after a volcano, or deep underground.

Metamorphic: rocks formed under great heat or pressure under the Earth's surface, such as slate or marble.

Sedimentary: rocks formed where sediment builds up in deposits under lakes or oceans.

Parent Tip

Many families will have a magnet of some form about the house, and this makes a great tool for scientific investigation. A fun experiment is to compare whether household objects are attracted to magnets, such as keys, tins, cans, and even different denominations of coin.



Light

- Recognise that we need light to see things
- Notice that light is reflected from surfaces
- Know how shadows are formed, and identify how the size of a shadow changes

Forces and Magnets

- Notice that some forces need contact to act, but that magnetic forces can act at a distance
- Observe how magnets attract or repel each other, describing magnets as having two poles
- Compare and group objects according to whether or not they are magnetic



Science in Year 4

During Year 4, children begin to use more scientific vocabulary to describe objects and processes, such as describing solids, liquids and gases, or erosion. Vocabulary is a key part of any area of study, and particularly in science. Learning new words – and their spellings – can often be fun when they relate to experiments and science investigations.

Scientific Investigation

Investigation work should form part of the broader science curriculum. During Year 4, some of the skills your child might focus on include:

- Carry out fair tests, using control tests where appropriate
- Take accurate measurements using a range of scientific equipment, including thermometers
- Organise and presenting data to help answer scientific questions
- Record findings using scientific vocabulary, diagrams, charts and tables
- Report on findings using oral and written explanations of results and conclusions

Living Things and their Habitats

- Use classification keys to group, identify and name a variety of living things
- Recognise that environments can change

A common example of classification is the grouping of vertebrates into fish, amphibians, reptiles, mammals and birds.

Animals including Humans

- Describe the basic functions of the parts of the digestive system, such as mouth, oesophagus, stomach and intestines
- Identify the different types of teeth in humans, and their functions
- Construct a variety of food chains to show producers, predators and prey

States of Matter

- Group materials as solids, liquids and gases
- Observe that some materials change state when heated or cooled
- Know the part of evaporation and condensation in the water cycle

The water cycle is the process of water being evaporated from the Earth's surface, and then condensing to form clouds and rain before falling back to Earth.

Sound

- Understand that sounds are caused by vibrations reaching the ear
- Find what affects the pitch and volume of a sound

Parent Tip

Children may make simple musical instruments in school to explore sound. You could also make some at home using elastic bands stretched over an open box, seeds or grains in a sealed box, or even a simple drum from a saucepan!



Electricity

- Construct a simple electrical circuit using cells, wires, bulbs and switches
- Understand that a complete circuit is needed to power a lamp or buzzer
- Recognise some common conductors and insulators

