



National Curriculum 2014: Science Year 1 & Year 2 coverage

Science

Purpose of study

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry & physics. Science has changed our lives & is vital to the world's future prosperity, & all pupils should be taught essential aspects of the knowledge, methods, processes & uses of science. Through building up a body of key foundational knowledge & concepts, pupils should be encouraged to recognise the power of rational explanation & develop a sense of excitement & curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, & analyse causes.

Aims

The national curriculum for science aims to ensure that all pupils:

- develop **scientific knowledge & conceptual understanding** through the specific disciplines of biology, chemistry & physics
- develop understanding of the **nature, processes & methods of science** through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the **uses & implications** of science, today & for the future.

Scientific knowledge & conceptual understanding

The programmes of study describe a sequence of knowledge & concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge & concepts in order to progress to the next stage. Insecure, superficial understanding will not allow genuine progression: pupils may struggle at key points of transition (such as between primary & secondary school), build up serious misconceptions, and/or have significant difficulties in understanding higher-order content.

Pupils should be able to describe associated processes & key characteristics in common language, but they should also be familiar with, & use, technical terminology accurately & precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting & analysing data. The social & economic implications of science are

important but, generally, they are taught most appropriately within the wider school curriculum: teachers will wish to use different contexts to maximise their pupils' engagement with & motivation to study science.

The nature, processes & methods of science

'Working scientifically' specifies the understanding of the nature, processes & methods of science for each year group. It should not be taught as a separate strand. The notes & guidance give examples of how 'working scientifically' might be embedded within the content of biology, chemistry & physics, focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying & grouping; comparative & fair testing (controlled investigations); & researching using secondary sources. Pupils should seek answers to questions through collecting, analysing & presenting data. 'Working scientifically' will be developed further at key stages 3 & 4, once pupils have built up sufficient understanding of science to engage meaningfully in more sophisticated discussion of experimental design & control.

Key Stage 1

The principal focus of science teaching in key stage 1 is to enable pupils to experience & observe phenomena, looking more closely at the natural & humanly-constructed world around them. They should be encouraged to be curious & ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping & classifying things, carrying out simple comparative tests, & finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out & communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs & videos.

'Working scientifically' is described separately in the programme of study, but must **always** be taught through & clearly related to the teaching of substantive science content in the programme of study. Throughout the notes & guidance, examples show how scientific methods & skills might be linked to specific elements of the content.

Pupils should read & spell scientific vocabulary at a level consistent with their increasing word reading & spelling knowledge at key stage 1.

Working Scientifically (not taught as a separate strand but embedded within the rest of the Science Curriculum)

During years 1 & 2, pupils should be taught to use the following practical scientific methods, processes & skills through the teaching of the programme of study content:

- asking simple questions & recognising that they can be answered in different ways
 - observing closely, using simple equipment
 - performing simple tests
 - identifying & classifying
 - using their observations & ideas to suggest answers to questions
- gathering & recording data to help in answering questions.

Year by Year Science Curriculum:

	Autumn	Spring	Summer
Year 1	<p style="text-align: center;">Animals including humans</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ▪ identify & name a variety of common animals including fish, amphibians, reptiles, birds & mammals ▪ identify & name a variety of common animals that are carnivores, herbivores & omnivores ▪ describe & compare the structure of a variety of common animals (fish, amphibians, reptiles, birds & mammals, including pets) ▪ identify, name, draw & label the basic parts of the human body & say which part of the body is associated with each sense. ▪ notice that animals, including humans, have offspring which grow into adults ▪ find out about & describe the basic needs of animals, including humans, for survival (water, food & air) 	<p style="text-align: center;">Everyday materials</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ▪ distinguish between an object & the material from which it is made ▪ identify & name a variety of everyday materials, including wood, plastic, glass, metal, water, & rock ▪ describe the simple physical properties of a variety of everyday materials ▪ compare & group together a variety of everyday materials on the basis of their simple physical properties. <p style="text-align: center;">Seasonal Changes (addressed through Geography)</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ▪ observe changes across the four seasons ▪ observe & describe weather associated with the seasons & how day length varies. 	<p style="text-align: center;">Plants</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ▪ identify & name a variety of common wild & garden plants, including deciduous & evergreen trees ▪ identify & describe the basic structure of a variety of common flowering plants, including trees. ▪ observe & describe how seeds & bulbs grow into mature plants ▪ find out & describe how plants need water, light & a suitable temperature to grow & stay healthy.

Year 2

Animals including humans

Pupils should be taught to:

- describe the importance for humans of exercise, eating the right amounts of different types of food, & hygiene.

Living things & their habitats

Pupils should be taught to:

- explore & compare the differences between things that are living, dead, & things that have never been alive
- identify that most living things live in habitats to which they are suited & describe how different habitats provide for the basic needs of different kinds of animals & plants, & how they depend on each other
- identify & name a variety of plants & animals in their habitats, including micro-habitats
- describe how animals obtain their food from plants & other animals, using the idea of a simple food chain, & identify & name different sources of food.

Use of everyday materials

Pupils should be taught to:

- identify & compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper & cardboard for particular uses
- find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting & stretching.

Forces & Motion

Pupils should be taught:

- to find out about, & describe the movement of, familiar things [for example, cars going faster, slowing down, changing direction]
- that both pushes & pulls are examples of forces
- to recognise that when things speed up, slow down or change direction there is a cause [for example, a push or a pull].