

SCIENCE – Connected Curriculum Key Learning – KS1 Overview

From The National Curriculum in England – framework document 2013...

Purpose of study

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and 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, and analyse causes.

Aims

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

- develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics
- develop understanding of the **nature, processes and 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 and implications** of science, today and for the future.

Scientific knowledge and conceptual understanding

The programmes of study describe a sequence of knowledge and 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 and 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 and secondary school), build up serious misconceptions, and/or have significant difficulties in understanding higher-order content.

Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary.

They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. The social and 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 and motivation to study science.

The nature, processes and methods of science

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand. The notes and guidance give examples of how 'working scientifically' might be embedded within the content of biology, chemistry and 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 and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data. 'Working scientifically' will be developed further at key stages 3 and 4, once pupils have built up sufficient understanding of science to engage meaningfully in more sophisticated discussion of experimental design and control.

Spoken language

The national curriculum for science reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely. They must be assisted in making their thinking clear, both to themselves and others, and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

School curriculum

The programmes of study for science are set out year-by-year for key stages 1 and 2. Schools are, however, only required to teach the relevant programme of study by the end of the key stage. Within each key stage, schools therefore have the flexibility to introduce content earlier or later than set out in the programme of study. In addition, schools can introduce key stage content during an earlier key stage if appropriate. All schools are also required to set out their school curriculum for science on a year-by-year basis and make this information available online.

Attainment targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Key stage 1

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and 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 and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and 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 and videos. 'Working scientifically' is described separately in the programme of study, but must **always** be taught through and clearly related to the teaching of substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Working Scientifically

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

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

Areas of Study

Plants

Pupils should be taught to:

- identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
- identify and describe the basic structure of a variety of common flowering plants, including trees.

Animals, including Humans

Pupils should be taught to:

- identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
- identify and name a variety of common animals that are carnivores, herbivores and omnivores
- describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)
- identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.

Everyday materials

Pupils should be taught to:

- distinguish between an object and the material from which it is made
- identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
- describe the simple physical properties of a variety of everyday materials
- compare and group together a variety of everyday materials on the basis of their simple physical properties.

Seasonal Changes

Pupils should be taught to:

- observe changes across the four seasons
- observe and describe weather associated with the seasons and how day length varies.

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Ongoing Learning Unit What's the weather like today? Seasonal Changes					
	Why do we play...? <i>Everday Materials</i> <i>Animals including humans</i> When I was a baby Name body parts and their purpose Investigation – using the senses Comparing similarities and differences Keeping healthy	Hello I'm new here. <i>Plants</i> <i>Animals including humans</i> <i>Seasonal changes</i> Plants near our school	What can learn about our world from stories? <i>Everyday materials</i> <i>Seasonal changes</i> Sorting materials for puppets Sorting materials (floating & sinking) Mixing and changing materials Making shadows	Starry Night <i>Seasonal change</i> Light and light sources Telescopes Shooting stars Star constellations	Why is water so precious? <i>Plants</i> <i>Animals including Humans</i> <i>Seasonal Changes</i> Growing <ul style="list-style-type: none"> • Exploring seeds • Class seed diary • What do plants need to grow? • My results Pond life <ul style="list-style-type: none"> • Visit pond • Frog spawn • Review investigation How the environment affects plants & animals Food that keeps us healthy Open ended questions Review investigation Growing/Pond life <ul style="list-style-type: none"> • Grouping plants • Alive or not? 	Where could we go for a great day out? <i>Animals including humans</i> What kind of animals live in rivers?

					<ul style="list-style-type: none"> • Review of investigation <p>Caring for the environment</p> <ul style="list-style-type: none"> • Walk around school • Research in their gardens • - Review investigation • 	
Year 2	<p>Can Party Food be Healthy?</p> <p><i>Everyday Materials</i></p> <p><i>Animals, including humans</i></p> <p>Healthy Eating</p> <p>Sorting and classifying materials</p> <p>Properties of materials</p> <p>Use of materials on basis of properties</p> <p>Changing the shapes of materials</p> <p>Exercise</p>	<p>Pride in Place</p> <p><i>Plants</i></p> <p><i>Seasonal changes</i></p> <p>Identifying common plants and trees</p> <p>Labelling drawings of plants and trees</p>	<p>What is the best way for Mrs Armitage travel?</p> <p><i>Everyday Materials</i></p> <p><i>Seasonal changes</i></p> <p>Investigating materials</p> <p>Which materials make the best wheels?</p> <p>Which materials are waterproof</p> <p>Test the vehicles</p>	<p>Where do bong trees grow?</p> <p><i>Animals, including humans</i></p> <p>Example using local resources</p> <ul style="list-style-type: none"> o Local bee keeper o Honey tasting o Bee life cycle o Pollination o Make honey biscuits 	<p>What makes us like other animals?</p> <p><i>Animals, including humans</i></p> <p><i>Plants</i></p> <p><i>Living things and their habitats (KS2)</i></p> <p>Is it Living?</p> <p>Nature detective</p> <p>Categorisation</p> <p>Observational drawings</p> <p>Human impact on the environment.</p> <p>Animal and Human Care</p> <p>Egg pet</p> <p>Caring for creatures</p>	<p>How did families have fun in the past?</p> <p><i>Everyday materials</i></p> <p><i>Seasonal changes</i></p> <p><i>Rocks(KS2)</i></p> <p>Classification</p> <p>Sorting natural and manmade materials and objects</p> <p>Fossils</p>

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					Keeping the world healthy Looking after ourselves Life Stories Parent and young Animal and human life stories. Animal Families How are animals the same? Habitats and Humans What is a habitat? Human senses Animal senses What's in our air?	
EYFS-Y 6	The Ancient Greeks – Whole School Learning Unit (suggested use Olympics year i.e. every four years) Further opportunities to explore and provide experiences in this subject area					
	The Global Dimension – Whole School Learning Unit (can be used at your discretion. You may choose to revisit every 3-4 years) This is intended to provide a launch pad for adding a global dimension to your existing curriculum. Further opportunities to explore and provide experiences in this subject area					

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