

Curriculum Map - Science



EYFS

Statutory requirements Understanding the World

Children at the expected level of development will:

Know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.

Statutory Educational Programme: Which EYFS strand?

Science at Foundation Stage is covered in the 'Understanding the World' area of the EYFS Curriculum. It is introduced indirectly through activities that encourage every child to explore, problem solve, observe, predict, think, make decisions and talk about the world around them.

Non-statutory guidance: Development Matters 2021 and Birth to Five Matters 2021 offer guidance regarding learning pathways in the curriculum we offer through the EYFS.

At WHPS to link with KS1:

- Explore and talk about different forces they can feel.
- Talk about the differences between materials and changes they notice.
- Describe what they see, hear and feel whilst outside.
- Recognise some environments that are different from the one in which they live.
- Understand the effect of changing seasons on the natural world around them.

Key Stage 1

Working scientifically - Years 1 and 2

These skills should be taught throughout the units

Asking questions. Children should ask simple questions and recognise that they can be answered in different ways.

Scientific enquiries. They should be able to do the following types of enquiry:

- Observations. They should observe closely, using simple equipment.
- Simple tests
- Identifying and classifying
- Secondary sources. They should use simple secondary sources to find answers.

Recording. They should gather and record data to suggest answers to their questions. With help, they should record in a range of ways and begin to use simple scientific language.

Analysing observations. They should use their observations and ideas to suggest answers to questions. They should notice patterns and relationships in their observations. They should talk about what they have found out and how they found out.

Year 1 Units of work	Animals including humans	Seasonal Change	Materials	Plants
Disciplinary knowledge.	<p>Pupils should be taught to</p> <p>Identify and name a variety of common animals that are birds, fish, amphibians, reptiles and mammals</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p> <p>Describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles and mammals, and including pets).</p> <p>Identify, name draw and label the basic parts of the human body and say which parts of the body is associated with each sense.</p>	<p>Pupils should be taught to</p> <p>be able to observe and describe weather associated with the seasons.</p> <p>Observe and describe weather associated with the seasons and how day length varies</p>	<p>Pupils should be taught to</p> <p>Distinguish between an object and the material from which it is made</p> <p>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</p> <p>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</p>	<p>Pupils should be taught to</p> <p>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</p> <p>Identify and describe the basic structure of a variety of common flowering plants, including trees</p>

Year 2 Units of work	Animals including Humans	Materials	Plants	Living Things and their Habitats
	<p>Pupils should be taught to:</p> <p>explore and compare the differences between things that are living, dead, and things that have never been</p>	<p>Pupils should be taught to:</p> <p>identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass,</p>	<p>Pupils should be taught to</p> <p>observe and describe how seeds and bulbs grow into mature plants</p>	<p>Pupils should be taught to:</p> <p>notice that animals, including humans, have offspring which grow into</p>

	<p>alive</p> <p>identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p> <p>identify and name a variety of plants and animals in their habitats, including microhabitats</p> <p>describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food</p>	<p>brick, rock, paper and cardboard for particular uses</p> <p>find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</p>	<p>find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</p>	<p>adults</p> <p>find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p>
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Key Stage 2

Working scientifically - Year 3 and 4

These skills should be taught throughout the units

‘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.

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. 'Working scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to 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 correctly and with confidence, using their growing word reading and spelling knowledge.

Year 3 Units of work	Animals Including Humans	Forces and Magnets	Plants	Rocks	Light
	<p>Pupils should be taught to:</p> <p>identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat</p> <p>identify that humans and some other animals have skeletons and muscles for support, protection and movement</p>	<p>Pupils should be taught to:</p> <p>compare how things move on different surfaces</p> <p>notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</p> <p>observe how magnets attract or repel each other and attract some materials and not others</p> <p>compare and group together a variety of everyday materials on the basis of whether</p>	<p>Pupils should be taught to:</p> <p>identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <p>explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant</p> <p>investigate the way in which water is</p>	<p>Pupils should be taught to:</p> <p>compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>describe in simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>recognise that soils are made from rocks and</p>	<p>Pupils should be taught to:</p> <p>recognise that they need light in order to see things and that dark is the absence of light</p> <p>notice that light is reflected from surfaces</p> <p>recognise that light from the sun can be dangerous and that there are ways to protect their eyes</p> <p>recognise that shadows are formed when the light from a light source</p>

		they are attracted to a magnet, and identify some magnetic materials describe magnets as having 2 poles predict whether 2 magnets will attract or repel each other, depending on which poles are facing	transported within plants explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	organic matter	is blocked by an opaque object find patterns in the way that the size of shadows change
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Year 4 Units of work	Electricity	Animals Including Humans	States of Matter	Sound	Living Things and their Habitats
	<p>Pupils should be taught to:</p> <p>identify common appliances that run on electricity</p> <p>construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a</p>	<p>Pupils should be taught to:</p> <p>describe the simple functions of the basic parts of the digestive system in humans</p> <p>identify the different types of teeth in humans and their simple functions</p> <p>construct and interpret a variety of food chains, identifying producers, predators and prey</p>	<p>Pupils should be taught to:</p> <p>compare and group materials together, according to whether they are solids, liquids or gases</p> <p>observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)</p> <p>identify the part played by evaporation and</p>	<p>Pupils should be taught to:</p> <p>identify how sounds are made, associating some of them with something vibrating</p> <p>recognise that vibrations from sounds travel through a medium to the ear</p> <p>find patterns between the pitch of a sound and features of the object that produced it</p> <p>find patterns between</p>	<p>Pupils should be taught to:</p> <p>recognise that living things can be grouped in a variety of ways</p> <p>explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>recognise that environments can change and that this can sometimes pose dangers to living things</p>

	<p>battery</p> <p>recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p> <p>recognise some common conductors and insulators, and associate metals with being good conductors</p>		<p>condensation in the water cycle and associate the rate of evaporation with temperature</p>	<p>the volume of a sound and the strength of the vibrations that produced it</p> <p>recognise that sounds get fainter as the distance from the sound source increases</p>	
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Upper Key Stage 2

These skills should be taught throughout the units

‘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.

The principal focus of science teaching in **upper key stage 2** is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

‘Working and thinking scientifically’ must always be taught through and clearly related to 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, spell and pronounce scientific vocabulary correctly

Year 5 Units of Work	Properties and Changes of Materials	Earth and Space	Forces	Animals Including Humans	Living Things and their Habitats
	<p>Pupils should be taught to:</p> <p>compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating give reasons, based</p>	<p>Pupils should be taught to:</p> <p>describe the movement of the Earth and other planets relative to the sun in the solar system describe the movement of the moon relative to the Earth describe the sun, Earth and moon as approximately spherical bodies use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</p>	<p>Pupils should be taught to:</p> <p>explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object identify the effects of air resistance, water resistance and friction, that act between moving surfaces recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p>	<p>Pupils should be taught to:</p> <p>describe the changes as humans develop to old age</p>	<p>Pupils should be taught to:</p> <p>describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird describe the life process of reproduction in some plants and animals</p>

	<p>on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda</p>				
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Year 6 Units of Work	Animals Including Humans	Electricity	Light	Living Things and their Habitats	Evolution and Inheritance
	<p>Pupils should be taught to:</p> <p>identify and name the main parts of the human circulatory system, and describe the functions of the</p>	<p>Pupils should be taught to:</p> <p>associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in</p>	<p>Pupils should be taught to:</p> <p>recognise that light appears to travel in straight lines</p> <p>use the idea that light</p>	<p>Pupils should be taught to:</p> <p>describe how living things are classified into broad groups according to common observable</p>	<p>Pupils should be taught to:</p> <p>recognise that living things have changed over time and that fossils provide information about</p>

	<p>heart, blood vessels and blood</p> <p>recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>describe the ways in which nutrients and water are transported within animals, including humans</p>	<p>the circuit</p> <p>compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches</p> <p>use recognised symbols when representing a simple circuit in a diagram</p>	<p>travels in straight lines to explain that objects are seen because they give out or reflect light into the eye</p> <p>explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes</p> <p>use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</p>	<p>characteristics and based on similarities and differences, including micro-organisms, plants and animals</p> <p>give reasons for classifying plants and animals based on specific characteristics</p>	<p>living things that inhabited the Earth millions of years ago</p> <p>recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</p>
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