

Science skills progression

Year	Working Scientifically
EYFS	ELG - The Natural World • Explore the natural world around them, making observations and drawing pictures of animals and plants. Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter Effective practice Help children to notice and discuss patterns around them. Encourage children to raise questions and suggest solutions and answers. Examine change over time.
Y1	• Ask simple questions and recognise that they can be answered in different ways. • Identify and name ... • Gather data to help in answering questions. • Observe closely, using simple equipment and suggest answers to questions. • Perform simple tests.
Y2	• Ask simple questions and recognise that they can be answered in different ways. • Identify and classify • Gather and record data to help in answering questions. • Observe closely, using simple equipment and suggest answers to questions. • Perform simple tests.
Y3 and Y4 Lower KS2	• Ask relevant questions and use different types of scientific enquires to answer them. • Set up simple practical enquiries, comparative and fair tests. • Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment including thermometers and data loggers. • Gather, record, classify and present data in a variety of ways to help in answering questions. • Record findings using simple scientific language and drawings, labelled diagrams, keys, bar charts and tables. • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • Identify differences, similarities or changes related to simple scientific ideas and processes. • Use straightforward scientific evidence to answer questions or support findings.

Y5 and Y6	- Plan different types of scientific enquiries to answer questions, including recognising and controlling variables when necessary. - Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. - Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
Upper KS2	- Use test results to make predictions to set up further comparative and fair tests - Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and the degree of trust in results, in oral and written forms such as displays and other presentations. - Identify scientific evidence that has been used to support or refute ideas or arguments.

Progression in knowledge for each year group in science		
Year 1	Plants	identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
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	Animals, including humans	identify and describe the basic structure of a variety of common flowering plants, including trees
		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	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	observe changes across the four seasons
		observe and describe weather associated with the seasons and how day length varies.
Year 2	Living things and their habitats	explore and compare the differences between things that are living, dead, and things that have never been alive
		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
		identify and name a variety of plants and animals in their habitats, including microhabitats
		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.
	Plants	observe and describe how seeds and bulbs grow into mature plants

		find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
	Animals including humans	notice that animals, including humans, have offspring which grow into adults
		find out about and describe the basic needs of animals, including humans, for survival (water, food and air)
		describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.
	Use of everyday materials	identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
		find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.
Year 3	Plants	identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
		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
		investigate the way in which water is transported within plants
		explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
	Animals including humans	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

		identify that humans and some other animals have skeletons and muscles for support, protection and movement.
	Rocks	compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
		describe in simple terms how fossils are formed when things that have lived are trapped within rock
		recognise that soils are made from rocks and organic matter.
	Light	recognise that they need light in order to see things and that dark is the absence of light
		notice that light is reflected from surfaces
		recognise that light from the sun can be dangerous and that there are ways to protect their eyes
		recognise that shadows are formed when the light from a light source is blocked by an opaque object
		find patterns in the way that the size of shadows change.
	Forces and magnets	compare how things move on different surfaces
		notice that some forces need contact between two objects, but magnetic forces can act at a distance
		observe how magnets attract or repel each other and attract some materials and not others

Year 4		compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
		describe magnets as having two poles
		predict whether two magnets will attract or repel each other, depending on which poles are facing.
	Living things and their habitats	recognise that living things can be grouped in a variety of ways
		explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
		recognise that environments can change and that this can sometimes pose dangers to living things.
	Animals including humans	describe the simple functions of the basic parts of the digestive system in humans
		identify the different types of teeth in humans and their simple functions
		construct and interpret a variety of food chains, identifying producers, predators and prey.
	States of Matter	compare and group materials together, according to whether they are solids, liquids or gases
		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)

Year 5		identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
	Sound	identify how sounds are made, associating some of them with something vibrating
		recognise that vibrations from sounds travel through a medium to the ear
		find patterns between the pitch of a sound and features of the object that produced it
		find patterns between the volume of a sound and the strength of the vibrations that produced it
		recognise that sounds get fainter as the distance from the sound source increases.
	Electricity	identify common appliances that run on electricity
		construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
		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 battery
		recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
		recognise some common conductors and insulators, and associate metals with being good conductors
	Living things and their habitats	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.

	Animals including humans	describe the changes as humans develop to old age.
	Properties and changes of material	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 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
		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.
	Earth and Space	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.

	Forces	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.
Year 6	Living things and their habitats	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.
		Give reasons for classifying plants and animals based on specific characteristics.
	Animals including humans	identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood
		recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
		describe the ways in which nutrients and water are transported within animals, including humans.
	Evolution and inheritance	recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
		recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
		identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

	Light	recognise that light appears to travel in straight lines
		use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye
		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
		use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
	Electricity	associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit
		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
		use recognised symbols when representing a simple circuit in a diagram.