Science Skills and Knowledge Progression - Working Scientifically

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Asking Questions	Shows curiosity about the world and asks simple "I wonder…" questions.	Asks simple questions using what, why, how and when.	Asks questions linked to observations and investigations using scientific vocabulary.	Asks scientific enquiry questions with support and identifies simple variables.	Asks scientific questions using sentence stems and builds on previous findings.	Independently asks scientific enquiry questions using scientific vocabulary and variables.	Independently asks deeper scientific questions and identifies appropriate enquiry types.
Plan Enquiry	With support, talks about how to find things out.	Suggests what they need to observe or test.	Chooses simple equipment and talks about what to do.	Identifies the data needed to answer a question and selects suitable equipment.	Identifies how to gather accurate data and suggests enquiry types.	Plans methods to answer scientific questions and chooses appropriate approaches.	Describes and refines methods independently to gather reliable evidence.
Set up Enquiry	Uses simple tools with support and follows instructions.	Uses simple equipment safely with guidance.	Sets up simple comparative tests with support.	Selects and uses equipment appropriately and begins to control variables.	Sets up fair/comparative tests with increasing independence.	Independently selects equipment and controls variables in fair tests.	Sets up complex enquiries independently, controlling variables accurately and safely.
Observe and Measure	Uses senses to explore objects and living things. Makes simple comparisons.	Makes observations using senses and simple equipment. Measures using non-standard units.	Observes closely and measures using simple standard equipment such as rulers and timers.	Makes systematic observations and measures using standard units.	Measures accurately using thermometers, rulers, timers and measuring cylinders.	Takes detailed observations and uses a range of measuring equipment precisely.	Takes repeat readings where appropriate and selects equipment for precision and accuracy.

Record	Records findings through drawings, photographs and simple sorting.	Records observations with pictures, labels and simple tables.	Uses charts, tally charts and simple tables to record findings.	Records findings in tables and labelled diagrams.	Records findings using tables, bar charts and simple graphs.	Records data using scientific diagrams, tables and graphs.	Selects the most appropriate ways to record complex data and observations.
Interpret and Report	Talks about what they noticed and what happened.	Describes what they observed using simple scientific vocabulary.	Uses observations to answer questions and identify patterns.	Draws simple conclusions from results using scientific language.	Uses evidence to explain findings and identify patterns or relationships.	Reports conclusions using evidence and scientific reasoning.	Interprets data critically and reports conclusions using evidence and scientific understanding.
Evaluate	Talks about what worked and what they enjoyed.	Says what was easy or difficult about an activity.	Suggests simple improvements to an investigation.	Identifies what went well and what could be improved.	Recognises when results could be more accurate or reliable.	Evaluates methods and suggests improvements for reliability and fairness.	Critically evaluates enquiries, explaining limitations, reliability and possible improvements.

Science Skills and Knowledge Progression – Knowledge

Topic	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants 	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside.	• 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.	• 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. **Coverage in other units**	• 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	**Coverage in other units**	**Coverage in other units**	**Coverage in other units**

			Living Things and their Habitats • Identify and name a variety of plants and animals in their habitats, including microhabitats.	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.	**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.	**Living Things and their Habitats** • Describe the life process of reproduction in some plants and animals.	**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.
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Living Things and Their Habitats 	• Draw information from a simple map. • Explore the natural world around them. • Describe what they see, hear and feel whilst outside • Recognise some environments that are different to the one in which they live.		• 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 • Identify and name a variety of plants and animals in their habitats, including microhabitats. • Describe how animals obtain their food from plants and		• 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.	• 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.	• 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.

			other animals using a simple food chain.				
		Coverage in other units **Animals Including Humans** • 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. **Seasonal Change** • Observe changes to habitats across the four seasons. **Plants** • Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees in local habitats.	**Coverage in other units** **Animals Including Humans** • Notice that animals, including humans, have offspring which grow into adults	**Coverage in other units** **Plants** • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	**Coverage in other units** **Animals Including Humans** • Construct and interpret a variety of food chains, identifying producers, predators and prey.		**Coverage in other units** **Evolution and Inheritance** • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. (Y6 - Evolution and inheritance) • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. (Y6 - Evolution and inheritance
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
	• Talk about members of their immediate family and community.	• Identify and name a variety of common animals including fish,	• Notice that animals, including humans,	• Identify that animals, including humans, need the right types	• Describe the simple functions of the basic	• Describe the changes as humans develop to old age.	• Identify and name the main parts of the human circulatory

Animals Including Humans 	• Name and describe people who are familiar to them. • Recognise some environments that are different to the one in which they live.	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. • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	have offspring which grow into adults. • Find out about and describe the basic needs of animals, including humans, for survival. • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	and amount of nutrition. • Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	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.		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.
			Coverage in other units **Living Things and their Habitats** • 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.			**Coverage in other units** **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.	**Coverage in other units** **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.
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

Evolution and Inheritance 	• Recognise some environments that are different to the one in which they live.						• 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.
			Coverage in other units **Living Things and their Habitats** • Identify that most living things live in habitats to which they are suited. **Animals Including Humans** • Notice that animals, including humans, have offspring which grow into adults	**Coverage in other units** **Rocks** • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. **Plants** • Explore the part that flowers play in the life cycle of flowering plants.	**Coverage in other units** **Living Things and their Habitats** • Recognise that environments can change and that this can sometimes pose dangers to living things.	**Coverage in other units** **Living Things and their Habitats** • Describe the life process of reproduction in some plants and animals.	
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Seasonal Change	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Understand the effect of changing seasons on the natural world around them.	• Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.		**Coverage in other units** **Light** • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.		**Coverage in other units** **Earth and Space** • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.	
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

Everyday Materials 	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside.	• 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.	• 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.	**Coverage in other units** **Rocks** • Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. **Forces and Magnets** • 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.	• 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. • Identify the part played by evaporation and condensation in the water cycle.	• Compare and group together everyday materials on the basis of their properties, including hardness, solubility, transparency, conductivity and response to magnets. • Know that some materials will dissolve in liquid to form a solution. • Use knowledge of solids, liquids and gases to decide how mixtures might be separated. • Give reasons for the particular uses of everyday materials. • Demonstrate that dissolving, mixing and changes of state are reversible changes. • Explain that some changes result in the formation of new materials and are not usually reversible.	
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

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.			
	Coverage in other units **Living Things and their Habitats** • Explore the natural world around them. • Describe what they see, hear and feel whilst outside.	**Coverage in other units** **Everyday Materials** • Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including rock. • Describe the simple physical properties of everyday materials.	**Coverage in other units** **Uses of Everyday Materials** • Identify and compare the suitability of rock for particular uses.				**Coverage in other units** **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
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

Light 	• Describe what they see, hear and feel whilst outside.	**Coverage in other units** **Animals Including Humans** • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. **Materials** • Describe the simple physical properties of a variety of everyday materials.		• 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.		**Coverage in other units** **Materials** • Compare and group together everyday materials on the basis of their properties, including transparency.	• 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.
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

Forces 	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside.		**Coverage in other units** **Materials** • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	• 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. • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other.		• 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. • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	
Sound	**EYFS**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
	• Describe what they see, hear and feel whilst outside.				• Identify how sounds are made, associating some of them with something vibrating.		

		Coverage in other units **Animals Including Humans** • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.			• 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.		
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
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		• 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

					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		on/off position of switches. • Use recognised symbols when representing a simple circuit in a diagram
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Earth and Space 	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside	**Coverage in other units** **Seasonal Changs** • Observe changes across the four seasons. • Observe and describe weather associated with				• 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	

		the seasons and how day length varies.					

Science Skills and Knowledge Progression - Scientists

Topic	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants	**Scientist:** David Attenborough **Occupation:** Natural historian and broadcaster **Link:** Encourages children to explore, observe and care for the natural world and living things.	**Scientist:** George Washington Carver **Occupation:** Agricultural scientist and inventor **Link:** Shows how plants are useful and important for farming, food and everyday life.	**Scientist:** Agnes Arber **Occupation:** Botanist **Link:** Helped scientists understand plant structures and how plants grow.	**Scientist:** Jan Ingenhousz **Occupation:** Biologist and chemist **Link:** Discovered that plants need light to make food and grow.			
Living Things and Their Habitats	**Scientist:** David Attenborough **Occupation:** Natural historian and broadcaster **Link:** Inspires children to explore habitats and care for wildlife.		**Scientist:** Sylvia Earle **Occupation:** Marine biologist and oceanographer **Link:** Studies ocean habitats and teaches us how to protect living things and environments.		**Scientist:** Carl Linnaeus **Occupation:** Biologist and physician **Link:** Created a system to classify and group living things.	**Scientist:** Maria Sibylla Merian **Occupation:** Naturalist and scientific illustrator **Link:** Studied insects and their life cycles carefully.	
Animals Including Humans		**Scientist:** Jane Goodall **Occupation:** Primatologist, ethologist and anthropologist **Link:** Observed chimpanzees to help us understand animal behaviour and similarities between humans and animals.	**Scientist:** Louis Pasteur **Occupation:** Microbiologist and chemist **Link:** Discovered germs and showed why hygiene is important for keeping healthy.	**Scientist:** Daniel Hale Williams **Occupation:** Surgeon **Link:** Improved heart surgery and helped scientists understand the human body and healthcare.			**Scientist:** Rosalind Franklin **Occupation:** Chemist and scientist **Link:** Her work helped scientists discover the structure of DNA and inheritance.

Evolution and Inheritance							**Scientist:** Charles Darwin **Occupation:** Naturalist and biologist **Link:** Developed the theory of evolution by natural selection and explained how living things adapt over time.
Seasonal Change		**Scientist:** Luke Howard **Occupation:** Meteorologist **Link:** Named and classified clouds to help scientists understand weather patterns.					
Everyday Materials		**Scientist:** Charles Macintosh **Occupation:** Chemist and inventor **Link:** Developed waterproof materials to solve everyday problems.	**Scientist:** Ruth Benerito **Occupation:** Chemist and inventor **Link:** Developed wrinkle-resistant cotton and improved fabrics used every day.		**Scientist:** Anders Celsius **Occupation:** Astronomer and scientist **Link:** Created the Celsius scale used to measure temperature and changes in materials.	**Scientist:** Stephanie Kwolek	

EYFS



Exploring the natural world

David Attenborough

He shows us how to observe nature closely and care for all living things.

YEAR 1

Animals including humans



Jane Goodall

She observed chimpanzees to understand animal behaviour and how humans are animals too.

Everyday Materials



Charles Macintosh

He created waterproof materials to help people stay dry.

Plants



George Washington Carver

He discovered many uses for plants and helped farmers grow more food.

Seasonal Changes



Luke Howard

He was the first to name clouds and helped us understand the weather.

YEAR 2

Animals including humans



Louis Pasteur

He discovered germs and how to keep people healthy.

Living things & habitats



Sylvia Earle

She explores oceans and works to protect habitats and wildlife.

Plants



Agnes Arber

She studied how plants grow and helped us understand plant structures.

Uses of everyday materials



Ruth Benerito

She developed wrinkle-resistant cotton and improved fabrics we use every day.

YEAR 3

Plants



Jan Ingenhousz

He discovered that plants need light to make their own food.

Animals including humans



Daniel Hale Williams

He performed important heart surgery and improved healthcare.

Rocks



Mary Anning

She found fossils that helped us understand prehistoric life.

Light



Ibn al-Haytham

He investigated light and vision and explained how we see.

YEAR 4

Living things & habitats



Carl Linnaeus

He created a system to name and classify plants and animals.

States of matter



Anders Celsius

He created the Celsius temperature scale to measure heat and cold.

Sound



Evelyn Glennie

She shows how sound vibrations can be felt, even without hearing.

Electricity



Lewis Latimer

He improved the lightbulb and helped make electric light more useful.

YEAR 5

Forces



Isaac Newton

He explained gravity and how forces make things move.

Earth & space



Mae Jemison

She was the first Black woman in space and inspires future explorers.

Properties & changes of materials



Stephanie Kwolek

She invented Kevlar, a super-strong material used in many products.

Living things & life cycles



Maria Sibylla Merian

She carefully studied insects and their life cycles.

YEAR 6

Evolution & inheritance



Charles Darwin

He developed the theory of evolution by natural selection.

Animals including humans



Rosalind Franklin

Her work helped discover the structure of DNA.

Light



Patricia Bath

She invented a device to improve cataract surgery and help people see.

Electricity



Edith Clarke

She advanced the study of electricity and designed systems we still use today.