WORKING SCIENTIFICALLY SKILLS PROGRESSION

ASKING ENQUIRY QUESTIONS

EARLY YEARS FS1	EARLY YEARS FS2	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
		Ask simple questions.	Ask simple questions and recognise that they can be answered in different ways.	Ask simple, relevant questions and use scientific enquiries to answer them.	Ask relevant questions and use different types of scientific enquiries to answer them.	Plan scientific enquiries to answer questions.	Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.

SETTING UP TESTS

EARLY YEARS FS1	EARLY YEARS FS2	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
		Perform simple tests, with support.	Perform simple tests.	Set up simple practical enquiries, comparative and fair tests, with support.	Set up simple practical enquiries, comparative and fair tests.		

OBSERVING AND MEASURING

EARLY YEARS FS1	EARLY YEARS FS2	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Explore the natural world around them, making observations and drawings.		Observe using simple equipment.	Observe closely using simple equipment.	Make careful observations and, where	Make systematic and careful observations	Take measurements, using a range of	Take measurements, using a range of

Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences.		Identify and group things they observe, with support. .	Identify and classify things they observe.	appropriate, take measurements using standard units, using a range of equipment. Identify changes that relate to simple scientific ideas, when prompted.	and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Identify differences, similarities or changes related to simple scientific ideas and processes.	scientific equipment, with increasing accuracy and precision.	scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
RECORDING DATA							
EARLY YEARS FS1	**EARLY YEARS FS2**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
		Gather and record simple data.	Gather and record data to help in answering questions.	Gather, record, classify and present data in a variety of ways. Record findings using simple scientific language, drawings, labelled diagrams and tables.	Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language,	Record data and results using scientific diagrams and labels, classification keys, tables, bar and line graphs	Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.

					drawings, labelled diagrams, keys, bar charts, and tables.		
INTERPRETING RESULTS							
EARLY YEARS FS1	**EARLY YEARS FS2**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
Understand some important processes and changes in the natural world around them.		Use their observations and ideas to suggest answers to questions, with support.	Use their observations and ideas to suggest answers to questions.	Use results to draw simple conclusions and raise further questions.	Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	Use test results to make predictions to set up further tests.	Use test results to make predictions to set up further comparative and fair tests.
	COMMUNICATING RESULTS						
EARLY YEARS FS1	**EARLY YEARS FS2**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
				Report on findings from enquiries, including oral and written explanations.	Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	Report and present findings from enquiries, including conclusions, in oral and written forms such as displays and other presentations.	Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.

USING SCIENTIFIC EVIDENCE							
EARLY YEARS FS1	**EARLY YEARS FS2**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
				Use scientific evidence to answer questions.	Use scientific evidence to answer questions or to support their findings	Identify scientific evidence that has been used to support or disprove ideas	Identify scientific evidence that has been used to support or refute ideas or arguments.

BIOLOGY

PLANTS

EARLY YEARS FS1	EARLY YEARS FS2	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Observe plants closely through a variety of means e.g. magnifiers & photographs. Extend vocabulary: leaves, petals, roots, bulb, trunk, branches, stem, garden plants, wild plants, seeds. Use all the senses in hands-on exploration of plants. All plants need water & light to grow & survive Most plants start growing from a seed or bulb	Name & describe some plants. Draw pictures of plants. Describe what they see, hear & feel whilst outside. Extend vocabulary: blossom, buds, bulb, evergreen, deciduous All plants need water, light and warmth to grow and survive. A seed produces roots to allow water to get into the plant and shoots to produce leaves to collects the sunlight	Identify and name a variety of common wild and garden plants, including deciduous and evergreen 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.	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.		Describe the life process of reproduction in some **plants** (and Animals, including humans).	

LIVING THINGS AND THEIR HABITATS

Observe growth & decay over time. Talk about what they see, using a wide vocabulary. Explore different	Examine change over time Describe what they see, hear & feel whilst outside. Discuss how to care for the living things & their habitats.		explore and compare the differences between things that are living, dead, and things that have never been alive		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	describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird describe the life process of	describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences,

habitats outdoors, e.g. Scent, colour & shape of flowers attracting bees. Begin to understand the need to respect & care for the natural environment & all living things. Explore different habitats outdoors, e.g. scent, colour & shape of flowers attracting bees.	Express opinions on natural & built environments & opportunities to hear different points of view on the quality of the environment. Use words such as busy, quiet, pollution. Observational drawings of the natural world.		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		living things in their local and wider environment recognise that environments can change and that this can sometimes pose dangers to living things	reproduction in some plants and animals	including micro-organisms, plants and animals give reasons for classifying plants and animals based on specific characteristics
ANIMALS, INCLUDING HUMANS							
Observe animals closely through a variety of means e.g. Magnifiers & photographs. Name & identify body parts. Look at key stages of development from birth to adult. Understand the key features of the life cycle of a butterfly.	Talk about things they have observed including animals. Observational drawings of animals. Identify different parts of their body & animals. Be able to show care and concern for living things. Have some understanding of	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,	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	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,	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.	Describe the changes as humans develop to old age.	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

Observe & describe in words or actions the effects of physical activity on body.	growth and change. Observe how flora & fauna behave differently as the seasons change. Use correct terms e.g. Chrysalis, pupa when observing life cycle of butterfly & ladybirds. Identify different parts of their body & animals. Describe what they see, hear & feel. Shows some understanding that good practices with regard to exercise, eating, drinking water, sleeping & hygiene can contribute to good health. Know the effects exercise has on their bodies.	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.	amounts of different types of food, and hygiene.	protection and movement.			water are transported within animals, including humans.
EVOLUTION AND INHERITANCE							
				From 'Rocks' Describe in simple terms how **fossils** are formed when things that have lived are trapped within rock.			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.

CHEMISTRY

MATERIALS

EARLY YEARS FS1	EARLY YEARS FS2	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Talk about what they see, using a wide vocabulary Characteristics of liquids & solids e.g. Cooking eggs, melting chocolate. Explore collections of materials with similar and/or different properties. Use all their senses in hands-on exploration of natural materials. Explore & talk about different forces they can feel e.g. Stretch, snap, rigid, magnetic repulsion, water pushing up when pushing a boat under it. Talk about the differences between materials and changes they notice e.g. Cooking, melting, shadows, floating & sinking	Use vocabulary to name specific features of the natural world, both natural & man-made. Observe & interact with natural processes, such as ice melting, a sound causing a vibration, light travelling through transparent material, an object casting a shadow, a magnet attracting an object & a boat floating on water.	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.		**<u>STATES OF MATTER</u>** 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). Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	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.	
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.			

PHYSICS

FORCES AND MAGNETS

EARLY YEARS FS1	EARLY YEARS FS2	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Explore how things work, eg. slides, levers, pulleys.	Explore how things work, eg. slides, levers, pulleys.			compare how things move on different surfaces. notice that some forces need contact between 2 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, 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.		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.	

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.			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.
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.		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.

					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.		
EARTH AND SPACE (including Seasonal Changes)							
Understand the effect of changing seasons on the natural world around them.	Understand the effect of changing seasons on the natural world around them.	Observe changes across the 4 seasons. Observe and describe weather associated with the seasons and how day length varies.				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.	