Hilton Lane Primary School
Science Overview

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
National Curriculum Working Scientifically		*-Ask simple questions and recognise that they can be answered in different ways.* *-Observe closely, using simple equipment* *-Perform simple tests* *-Identify and classify* *-Use observations and ideas to suggest answers to questions* *-Gather and record data to help answer questions.*		*-Ask relevant questions and use different types of scientific enquiries 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 thermometer 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, 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 to support their findings.*		*-Plan different types of scientific enquiries to answer questions , including recognising and controlling variables were necessary* *-Taking measurements, using a range of scientific equipment with increasing accuracy and precision, taking repeat readings when appropriate* *-Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs* *-Using test results to make predictions to set up further comparative and fair test* *-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* *-Identify scientific evidence that has been used to support or refute ideas or arguments.*	
Hilton Lane Specific Working Scientifically *Scientific Enquiry*	*Collecting, analysing and presenting data*	*-Explore and answer questions over the year about the changes of plants in their local environment.* *-Perform simple tests to explore questions e.g. What is the best material for an umbrella? ...for lining a dog basket? ...for curtains? ...for a bookshelf?* *-Make charts and tables about the weather.* *Make displays of what happens in the world around them, including day length, as seasons change*	*-Observe how living things depend on each other e.g. plants serving as a source of food or shelter* *-Describe how they decided where to place things, exploring questions such as, Is a flame alive? Is a deciduous tree dead in winter? And talk about ways of answering their questions* *-Describe the conditions in different habitats and micro-habitats and find out how the conditions affect the number and type(s) of plants and animals that live there*	*-Observe how water is transported in plants by putting put, white carnations into coloured water and observing how water travels up the stem to the flowers* *-Compare the effect of different factors on plant growth (amount of light, amount of fertiliser)* *-Raise and answer questions about the way soils are formed* *-Raise questions and carrying out tests to find out how things move and grouping them.*	*-Use and make simple guides or keys to explore and identify local plants and animals* *-Make a guide to local living things* *-Research the temperature at which materials change state* *-Make earmuffs from a variety of different materials to investigate which provides the best insulation against sound / make and play their own instruments by using what they have found out about pitch and volume*	*-Ask pertinent questions and suggest reasons for similarities and differences* *-Grow new plants from different parts of the parent plant e.g. seeds, stem and root cuttings, tubers, bulbs* *-Create simple models of the solar system* *-Construct simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day* *-Explore falling paper cones or cup-cake cases*	*-Analyse the advantages and disadvantages of specific adaptations, such as being on 2 feet rather than 4, having gills or lungs* *-Decide where to place rear-view mirrors on cars* *-Design and make a periscope and use the idea that light travels in straight lines to explain how it works* *-Investigate the relationship between light sources, objects and shadows by using shadow puppets* *-Design and make a set of traffic lights, a burglar alarm or some other useful circuit*

			-Ask questions about what things animals need for survival and what humans need to stay healthy -Comapre the uses of everyday materials in and around the school with materials found in other places				
	Observation over time	-observe and record how plants have changed over time (leaves falling off trees, buds opening)	-observe and record the growth of a variety of plants as they change over time from a seed or bulb -observe similar plants at different stages of growth -observe how different animals, including humans, grow	-discover how seeds are formed by observing different stages of plant life cycles over a period of time -observe rocks, including those used in buildings and gravestones, exploring how and why they might have changed over time	-observe and record evaporation over a period of time (puddle in the playground or washing on the line)	-observe changes in an animal over a period of time -find out and record the length and mass of a baby as it grows -observe and compare the changes that take place when burning different materials or baking bread or cakes	-observe and raise questions about local animals and how they are adapted to their environment
	Pattern seeking	-observe closely and compare and contrast familiar plants		-look for patterns in the structure of fruits that relate to how seeds are dispersed -look for patterns in what happens to shadows when the light source moves or the distance between the light source moves or the distance between the light source and the object changes -explore the strengths of different magnets and find a way to compare them; sorting materials into those that are	-find patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses -observe patterns e.g. that bulbs get brighter if more cells are added; that metals tend to be conductors of electricity and that some materials can and some cannot be used to connect across a gap in a circuit		

				magnetic and those that are not *-look for patterns in the way magnets behave in relation to each other*			
	Identifying, classifying and grouping	*-describe how they could identify and group familiar plants* *-draw diagrams showing the parts of different plants inclusing trees* *-compare and contrast what they have found out about different plants* *-describe how to identify and group different animals* *-group animals according to what they eat*	*-sort and classify things according to whether they are living, dead or were never alive and record their findings using charts* *-observe, identify and classify the uses of different materials, and record their observations*	*-identify and group animals with and without skeletons and observe and compare their movement* *-compare and contrast the diets of different animals* *-group animals based on what they eat* *-use a hand lens or microscope to help identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them* *-identify similarities and differences between soils and investigate what happens when rocks are rubbed together or what changes occur when they are in water* *-compare how different things move and group them* -	*-compare the teeth of carnivores and herbivores and suggest reasons for differences* *-draw and discuss their ideas about the digestive system and compare them with models or images* *-group and classify a variety of different materials*	*-compare how different animals reproduce and grow*	*-use classification systems ad keys to identify some animals and plants in the immediate environment* *-identify the effect of changing one component at a time in a circuit*

	Comparative and fair testing	*-use senses to compare different textures, sounds and smells* *-identify the best material for a dog bed*		*-carry out tests to find out how far things move on different surfaces and gather and record data to find answers to questions*	*-explore the effect of temperature on substances such as chocolate, butter, cream-* *investigate the effect of temperature on washing drying on a line or a snowman melting*	*-observe and compare the life cycles of plants and animals in their local environment with other plants and animals around the world* *-carry out tests to answer questions e.g. what materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?* *-design and make a variety of parachutes and carry out fair tests to determine which designs are the most effective* *-explore resistance in water by making and testing boats of different shapes*	*-compare how some living things are adapted to survive in extreme conditions*
	Research using secordary sources	*-use pictures and videos to compare and contrast animals*		*-research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed*	*-raise and answer questions based on their observations of animals and what they have found out about other animals that they have researched* *-find out what damages teeth and how to look after them*	*-research the gestation periods of other animals and compare them with humans* *-research and discuss how chemical changes have an impact on our lives e.g. cooking, and discuss the creative use of new polymers, super-sticky and super-thin materials* *-compare the time of day at different places on the Earth*	*-research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system* *-explore the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health*

						through internet links and direct communication -find out why some people think that structures such as Stonehenge might have been used as astronomical clocks	
National Curriculum	Plants	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. Sticky vocabulary Deciduous, evergreen, roots, trunk, stem	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 Sticky vocabulary, Temperature, seed, bulb, light	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 the soils, 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. Sticky vocabulary Photosynthesis, pollination, dispersal			
	Animals Including Humans	Identify and name a variety of common animals including fish, amphibian, reptiles, birds and mammals Identify and name a variety of common animals that are	Notice that animals, including humans, have offspring which grow into adults. Find out and describe the basic needs of animals, including humans for survival (water, food and air)	Identify that animals, including humans, need the right type and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat	Describe the simple function of the basic parts of the digestive system in humans Identify the different types of teeth in humans and their simple functions	Describe the changes as humans develop to old age Sticky vocabulary Gestation, reproduce, adolescence.	Identify and name the main parts of the human circulatory system and describe the function of the heart, blood vessels and blood Recognise the impact of diet, exercise, drugs and lifestyle

		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* *<u>Sticky vocabulary</u>* *Carnivores, omnivores, herbivores, mammals, amphibians*	*Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.* *<u>Sticky vocabulary</u>* *Offspring, growth, exercise, heartbeat, hygiene, survival*	*Identify that humans and some other animals have skeletons and muscles for support, protection and movement.* *<u>Sticky vocabulary</u>* *Nutrition, skeletons, bones, muscles*	*Construct and interpret a variety of food chains, identifying produces, predators and prey.* *<u>Sticky vocabulary</u>* *Digestive system, digestion, food chain, teeth (incisor, canine, molar, premolar)*		*on the way their bodies function* *Describe the ways in which nutrients and water are transported within animals including humans.* *<u>Sticky vocabulary</u>* *Blood, blood vessels, lungs, oxygen, carbon dioxide, circulatory system, drugs.*
	<u>Living Things and Their Habitats</u>		*Explore and compare the difference 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 micro habitats* *Describe how animals obtain their food from plants and other animals, using the idea*		*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 lining things in their local and wider environment.* *Recognise that environments can change and that this can sometimes pose dangers to living things.* *<u>Sticky vocabulary</u>* *Classification, environment, impact*	*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* *<u>Sticky vocabulary</u>* *Reproduce, fertilise, Metamorphosis, pollination.*	*Describe how living things are classified into broad groups according to common observable characteristic and based on similarities or differences, including microorganisms, plants and animals* *Give reasons for classifying plants and animals based of scientific characteristics.* *<u>Sticky vocabulary</u>* *Vertebrates, invertebrates, characteristics, microorganisms.* *<u>Evolution and Inheritance</u>*

			of a simple food chain and identify and name different sources of food. *<u>Sticky vocabulary</u>* *Habitat, micro-habitat, living, dead, food chain*				*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 way sand that adaptation may lead to evolution.* *<u>Sticky vocabulary</u>* *Variation, adaption, inherited, species, evolution*
	<u>Materials</u>	*<u>Everyday Materials</u>* *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.*	*<u>Uses of Everyday Materials</u>* *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 shape of solid objects made from some materials can be changed by squashing, bending , twisting and stretching.* *<u>Sticky vocabulary</u>*	*<u>Rocks</u>* *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.* *<u>Sticky vocabulary</u>*	*<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* *Identify the part play by evaporation and condensation in the water cycle and*	*<u>Properties and Changes of Materials</u>* *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*	

		Sticky vocabulary *Material, stiff, dull, rough, smooth, bendy.*	*Opaque, transparent, translucent, reflective, flexible*	*Rock (stone, pebble, boulder), fossil, organic matter.*	*associate the rate of evaporation with temperature.* *Sticky vocabulary* *Solid, liquid, gas, evaporation, temperature, water cycle*	*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 hat this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.* *Sticky vocabulary* *Dissolve, solution, soluble, insoluble, filter, reversible, irreversible*	
		Seasonal Change *Observe changes across the four seasons* *Observe and describe weather associated with the seasons and how day length varies*		*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.*	*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.*	*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*	*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 reflects light into the eye*

		Sticky vocabulary *Spring, summer, autumn, winter, season.*		*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 objects* *Find patterns in the way that the size of shadows change.* *Sticky vocabulary* *Dark, opaque, shiny, shadow, reflect*	*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* *Sticky vocabulary* *Source, vibration, pitch, volume, faint*	*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* *Sticky vocabulary* *Spherical, solar, system, rotates, orbit, planets*	*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* *Sticky vocabulary* *Transparent, translucent, light rays*
				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* *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*	*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 a simple series circuit, based on whether or not the lamp is part of fa 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*	*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.* *Sticky vocabulary* *Gravity, friction, mechanisms, levers, pulleys, gears*	*Electricity* *Associate brightness of a lamp or volume of a buzzer with the number and voltage of cells used in the circuit* *Compare and give reasons for variation in how components functions, 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.* *Sticky vocabulary* *Cell, motor, voltage, component*

				Predict whether two magnets will attract or repel each other depending on which poles are facing. *<u>Sticky vocabulary</u>* *Force, magnetic, attract, poles*	*Recognise some common conductors and insulators and associate metals with being good conductors.* *<u>Sticky vocabulary</u>* *Electricity, electrical circuit, component, conductor, insulator.*		