	Ottershaw C of E Infant and Junior School									
	Science Knowledge, Skills and Vocabulary Progression Working Scientifically									
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6					
<ul> <li>Ask simple questions and recognise that they can be answered in different ways</li> <li>Use simple equipment to observe closely</li> <li>Perform simple tests</li> <li>Identify and classify</li> <li>Use his/her observations and ideas to suggest answers to questions</li> <li>Gather and record data to help in answering questions</li> </ul>	<ul> <li>Ask simple questions and recognise that they can be answered in different ways including use of scientific language from the national curriculum</li> <li>Use simple equipment to observe closely including changes over time</li> <li>Perform simple</li> </ul>	<ul> <li>Ask relevant questions and use different types of scientific enquiries to answer them</li> <li>Set up simple practical enquiries, comparative and fair tests</li> <li>Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>Gather, record, classify and present data in a variety of ways to help in answering questions</li> <li>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>Report on findings from</li> </ul>	<ul> <li>Ask relevant questions and use different types of scientific enquiries to answer them</li> <li>Set up simple practical enquiries, comparative and fair tests</li> <li>Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>Gather, record, classify and present data in a variety of ways to help in answering questions</li> <li>Record findings using simple scientific language, drawings, labelled diagrams, keys,</li> </ul>	<ul> <li>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>Use test results to make predictions to set up further comparative and fair tests</li> </ul>	<ul> <li>Plan different types of scientific enquiries to answer their own or others' questions, including recognising and controlling variables where necessary</li> <li>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>Use test results to make predictions to set up further comparative and fair tests</li> <li>Report and present</li> </ul>					

	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 his/her findings	<ul> <li>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>Identify differences, similarities or changes related to simple scientific ideas and processes</li> <li>Use straightforward scientific evidence to answer questions or to support his/her findings</li> </ul>	<ul> <li>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</li> <li>Identify scientific evidence that has been used to support or refute ideas or arguments</li> </ul>	<ul> <li>including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</li> <li>Describe and evaluate their own and other people's scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources</li> <li>Group and classify things and recognise patterns</li> </ul>
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Working Scientifically Vocabulary									
question, observe, test, notice, group, answer, record	question, observe, test, notice, group, answer, record	question, enquiry, compare, fair test, observe, record, classify, present data, report, conclusion, predict, improve, similarities, differences, evidence, <u>Non-chronological report</u> - question, equipment, safety, results	question, enquiry, compare, fair test, observe, record, classify, present data, report, conclusion, predict, improve, similarities, differences, evidence, <u>Non-chronological report</u> - aim, equipment, safety, method, diagram, results	plan, answer questions, measure, retest, record, classify, predict, compare, fair test, present data, conclusion, identify, argue <u>Non-chronological report</u> - aim, hypothesis, constant, variable, equipment, safety, method, results	plan, answer questions, measure, retest, record, classify, predict, compare, fair test, present data, conclusion, identify, argue <u>Non-chronological report</u> - aim, hypothesis, constant, variable, equipment, safety, method, results, conclusion				

	Animals including Humans							
У	ear 1	Year 2	Year 3	Year 4	Year 5	Year 6		
•	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	<ul> <li>Understand that animals, including humans, have offspring which grow into adults</li> <li>Describe the basic needs of animals, including humans, for survival (water, food and air)</li> <li>Describe the importance for</li> </ul>	<ul> <li>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</li> <li>Identify that humans and some other animals have</li> </ul>	<ul> <li>Describe the simple functions of the basic parts of the digestive system in humans</li> <li>Identify the different types of teeth in humans and their simple functions</li> <li>Construct and interpret a variety of</li> </ul>	• Describe the changes as humans develop to old age	<ul> <li>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</li> <li>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> </ul>		
•	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	humans of exercise, eating the right amounts of different types of food, and hygiene	skeletons and muscles for support, protection and movement	food chains, identifying producers, predators and prey		<ul> <li>Describe the ways in which nutrients and water are transported within animals, including humans</li> </ul>		

Animals including Humans Vocabulary								
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6			
Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves • Names of animals experienced first-hand from each vertebrate group • Parts of the body including those linked to PSHE teaching Senses - touch, see, smell, taste, hear, fingers (skin), eyes, nose, ear and tongue	Offspring, reproduction, growth, child, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples - meat, fish, vegetables, bread, rice, pasta)	Skeleton, bones, muscles, support, protect, move, skull, ribs, spine, muscles, joints Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water,	Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain	Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, Puberty: the vocabulary to describe sexual characteristics	Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs and lifestyle			

		Living things and	d their Habitats		
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<ul> <li>Explore and compare the differences between things that are living, dead, and things that have never been alive</li> <li>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</li> <li>Identify and name a variety of plants and animals in their habitats, including micro-habitats</li> <li>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</li> </ul>		<ul> <li>Recognise that living things can be grouped in a variety of ways</li> <li>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li>Recognise that environments can change and that this can sometimes pose dangers and have an impact on living things</li> </ul>	<ul> <li>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</li> <li>Describe the life process of reproduction in some plants and animals</li> </ul>	<ul> <li>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</li> <li>Give reasons for classifying plants and animals based on specific characteristics</li> </ul>

	Living things and their Habitats Vocabulary									
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6					
	Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed • Names of local habitats e.g. pond, woodland etc. • Names of micro-habitats e.g. under logs, in bushes etc.		Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate	Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings	Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering and non- flowering					

	Plants							
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6			
<ul> <li>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</li> <li>Identify and describe the basic structure of a variety of common flowering plants, including trees</li> </ul>	<ul> <li>Observe and describe how seeds and bulbs grow into mature plants</li> <li>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</li> </ul>	<ul> <li>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</li> <li>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</li> <li>Investigate the way in which water is transported within plants</li> <li>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</li> </ul>			<ul> <li>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</li> </ul>			

	Plants Vocabulary								
Year 1 Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud. Names of trees in the local area	grow, nealtny, Leat, flower, blossom, petal, fruit, berry, root, seed,	Plants V Year 3 Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal - wind dispersal, animal dispersal, water	Vocabulary Year 4	Year 5	Year 6 flowering and non- flowering				
Names of garden and wild flowering plants in the local area	trunk, branch, stem, bark, stalk, bud Names of trees in the local area Names of garden and wild flowering plants in the local area	dispersal							

	Evolution and Inheritance							
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6			
					<ul> <li>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</li> <li>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <li>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</li> </ul>			

	Evolution and Inheritance Vocabulary							
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6			
					Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils			

	Seasonal changes							
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6			
<ul> <li>Observe changes across the four seasons</li> <li>Observe and describe weather associated with the seasons and how day length varies</li> </ul>								
		Seasonal chang	es - Vocabulary					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6			
Weather (sunny, rainy, windy, snowy etc.) • Seasons (winter, summer, spring, autumn) • Sun, sunrise, sunset, day length								

	Materials and States of Matter						
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6		
<ul> <li>Distinguish between an object and the material from which it is made</li> <li>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</li> <li>Describe the simple physical properties of a variety of everyday materials</li> <li>Compare and group together a variety of everyday materials on the basis of their simple physical properties</li> </ul>	<ul> <li>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>Describe how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</li> </ul>		<ul> <li>Compare and group materials together, according to whether they are solids, liquids or gases</li> <li>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)</li> <li>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</li> </ul>	<ul> <li>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</li> <li>Recognise that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li> <li>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li> <li>Give reasons, based on evidence from comparative and fair tests, for the</li> </ul>			

		<ul> <li>particular uses of everyday materials, including metals, wood and plastic</li> <li>Demonstrate that dissolving, mixing and changes of state are reversible changes</li> <li>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</li> </ul>
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	Materials and States of Matter - Vocabulary							
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6			
Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through	Names of materials – wood, metal, plastic, glass, brick, rock, paper, cardboard Properties of materials – as for Year 1 plus opaque, transparent and translucent, reflective, nonreflective, flexible, rigid Shape, push/pushing, pull/puling, twist/twisting, squash/squashing, bend/bending, stretch/stretching		Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle	Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve reversible/non- reversible change, burning, rusting, new material				

Electricity							
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6		
Know that electricity is needed to make somethings work.	Know that electricity is needed to make somethings work. Know that some appliances need batteries and some use mains electricity to work.		<ul> <li>Identify common appliances that run on electricity</li> <li>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</li> <li>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li> <li>Recognise some common conductors and insulators, and associate metals with being good conductors</li> </ul>		<ul> <li>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>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</li> <li>Use recognised symbols when representing a simple circuit in a diagram</li> </ul>		

	Electricity - Vocabulary							
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6			
			Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non- metal, symbol N.B. Children in year 4 do not ned to use standard symbols as this is taught in year 6		Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage NB Children do not need to understand what voltage is but will use volts and voltage to describe different batteries. The words cells and batteries are now used interchangeably			

		Earth a	and Space		
Year 1	Year 2         Know that the Sun is a star.         Know that the Moon orbits the Earth.         Name the planets.	Year 3	Year 4	<ul> <li>Year 5</li> <li>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system</li> <li>Describe the movement of the Moon relative to the Earth</li> <li>Describe the Sun, Earth and Moon as approximately spherical bodies</li> <li>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</li> </ul>	Year 6
		Farth and Sp	ace - Vocabulary		
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
				Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune) spherical, solar system, rotates, star, orbit, planets	

	Forces and Magnets							
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6			
Explore floating and sinking, pushes and pulls.	Explore cars moving quicker on different surfaces. Sort objects using a magnet.	<ul> <li>Compare how things move on different surfaces</li> <li>Notice that some forces need contact between two objects, but magnetic forces can act at a distance</li> <li>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</li> <li>Describe magnets as having two poles Predict whether two magnets will attract or repel each other, depending on which poles are facing</li> </ul>		<ul> <li>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect</li> </ul>				

	Forces and Magnets - Vocabulary							
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6			
		Force, push, pull, twist, contact force, non- contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole		Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears				

Light							
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6		
Know that light is needed to see.		<ul> <li>Recognise that he/she needs light in order to see things and that dark is the absence of light</li> <li>Notice that light is reflected from surfaces</li> <li>Recognise that light from the sun can be dangerous and that there are ways to protect eyes</li> <li>Recognise that light from the sun can be dangerous and that there are ways to protect eyes</li> <li>Find patterns in the way that the size of shadows change</li> </ul>			<ul> <li>Recognise that light appears to travel in straight lines</li> <li>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</li> <li>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</li> <li>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</li> </ul>		

	Light - Vocabulary							
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6			
		Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous			Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous, straight lines, light rays.			

	Sound						
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6		
Exploring how to change the volume of a sound during music lessons.	Exploring how to change the volume and pitch of a sound during music lessons.	Exploring how to change the volume and pitch of a sound during music lessons.	<ul> <li>Identify how sounds are made, associating some of them with something vibrating</li> <li>Recognise that vibrations from sounds travel through a medium to the ear</li> <li>Find patterns between the pitch of a sound and features of the object that produced it</li> <li>Find patterns between the volume of a sound and the strength of the vibrations that produced it</li> <li>Recognise that sounds get fainter as the distance from the sound source increases</li> </ul>				
		Sound - V	'ocabulary				
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6		
			Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation				

		Ro	cks		
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		<ul> <li>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li> <li>Describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> <li>Recognise that soils are made from rocks and organic matter</li> </ul>			Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
		Rocks - V	ocabulary		
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil			inherited, species, fossils

The objectives in italics are non-curriculum but used to introduce physics topics in KS1