Scientific Enquiry-The skills every pupil needs to ensure they can be a Scientist Being a Scientist-Exemplifying Scientific behaviours which ensure pupils know more and remember more			
EYFS	Year 1/2	Year 3/4	Year 5/6
Reception Making observations and drawing pictures Children know about similarities and differences in relation to places, objects, materials and living things Children talk about the features of their own immediate environment and how environments might vary from one another Children describe shapes, spaces, and measures	E1: ask simple questions and recognise that they can be answered in different ways E2: observe closely, using simple equipment E3: perform simple tests E4: identify and classify E5: use their observations and ideas to suggest answers to questions E6: gather and record data to help in answering questions	E1: ask relevant questions and use different types of scientific enquiries to answer them E2: set up simple practical enquiries, comparative and fair tests E3: make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers E4: gather, record, classify and present data in a variety of ways to help in answering questions E5: record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables E6: report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions **E7:** use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions **E8:** identify differences, similarities or changes related to simple scientific ideas and processes **E9:** use straightforward scientific evidence to answer questions or to support their findings.	E1: plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary E2: take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate E3: record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs E4: using test results to make predictions to set up further comparative and fair tests E5: 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 E6: identify scientific evidence that has been used to support or refute ideas or arguments

Children make observations of animals and plants and explain why some things occur, and talk about changes Children use what they have learnt about media and materials in original ways, thinking about uses and purposes	B1: Enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. B2: They should be encouraged to be curious and ask questions about what they notice. B3: They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. **B4:** They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways.	B1: Pupils in years 3 and 4 should be given a range of scientific experiences to enable them to raise their own questions about the world around them. B2: They should start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; recognise when a simple fair test is necessary and help to decide how to set it up; talk about criteria for grouping, sorting and classifying; and use simple keys. B3: They should begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them **B4:** They should help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used. B5: They should learn how to use new equipment, such as data loggers, appropriately. B6: They should collect data from their own observations and measurements, using notes, simple tables and standard units, and help to make decisions about how to record and analyse this data. B7: With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions. **B8:** With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done. **B9:** They should also recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations. **B10:** Pupils should use relevant scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences.	B1: Pupils in years 5 and 6 should use their science experiences to: explore ideas and raise different kinds of questions; select and plan the most appropriate type of scientific enquiry to use to answer scientific questions; recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why. B2: They should use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment. **B3:** They should make their own decisions about what observations to make, what measurements to use and how long to make them for, and whether to repeat them; choose the most appropriate equipment to make measurements and explain how to use it accurately. B4: They should decide how to record data from a choice of familiar approaches; look for different causal relationships in their data and identify evidence that refutes or supports their ideas. B5: They should use their results to identify when further tests and observations might be needed; recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact. B6: They should use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas and should talk about how scientific ideas have developed over time.

<table>
<tr><th colspan="7">Knowledge - Animals including Humans</th></tr>
<tr><th>EYFS</th><th colspan="2">Year 1/2</th><th colspan="2">Year 3/4</th><th colspan="2">Year 5/6</th></tr>
<tr>
<td>Making observations and drawing pictures of animals

Know and talk about the different factors that support their overall health and wellbeing e.g.
Physical Activity
Healthy eating
Teeth
Begin to understand the need to respect and care for the natural environment and all living things</td>
<td>Identify animals as carnivores, herbivores and omnivores.
How humans stay healthy- diet, hygiene. Body parts, senses
● identify and name a variety of common animals including, fish, amphibians, reptiles, birds and mammals
● identify and name a variety of common animals that are carnivores, herbivores and omnivores
● describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)
● identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</td>
<td>Basic needs of animals including humans and how humans stay healthy through exercise, diet and hygiene.
● 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.</td>
<td>Digestion and the digestive system
● describe the simple functions of the basic parts of the digestive system in human
● identify the different types of teeth in humans and their simple function
● construct and interpret a variety of food chains, identifying producers, predators and prey.</td>
<td>Nutrition for animal health and humans, food groups.
Role of skeleton and muscles.
Teeth
● identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat
● identify that humans and some other animals have skeletons and muscles for support, protection and movement.</td>
<td>Changes from birth to death in humans (incl changes experienced in puberty)</td>
<td>The circulatory system. Impact of diet, exercise, life-style and drugs.
Transportation of nutrients and water in animals including humans

Changes from birth to death in humans (incl changes experienced in puberty)</td>
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<tr>
<td>Making observations and drawing pictures</td>
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Vocabulary			
EYFS	Year 1/2	Year 3/4	Year 5/6
	Foetus Embryo Womb Gestation Development Puberty Life Cycle Fertilisation Reproduce Life Expectancy skeletal muscle digest circulatory system blood vessels lifestyle nutrients substances	Muscles, Contract, Relax, Joints, Nutrition, Nutrients, Carbohydrates, Protein, Fats, Fibre, Vitamins, Minerals, invertebrates, vertebrates, Digestive system, Small Intestine, large Intestine, Colon, Saliva, Canine, Incisor, Molar Producers,	Foetus Embryo Womb Gestation Development Puberty Life Cycle Fertilisation Reproduce Life Expectancy skeletal muscle digest circulatory system blood vessels lifestyle nutrients substances

Living things and their Habitats Knowledge						
EYFS	Year 1/2		Year 3/4		Year 5/6	
Understand the key features of the life cycle of a plant and an animal		Difference between alive, dead, never lived Animals and plants in local environment ● explore and compare the differences between things that are living, dead, and things that have never been alive ● identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other ● identify and name a variety of plants and	Vertebrates and invertebrates- classification keys. plant and animal habitats Food Chains ● 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.		Micro-organisms, subdivision and classification of plants and animals. Significance of Carl Linnaeus and similar scientists, classification system and keys. Life processes in some plants and animals.)	Life cycles on birth, growth, development, reproduction. Find out about the work of naturalists and animal behaviourists.

		• 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.				

Vocabulary						
EYFS	Year 1/2		Year 3/4		Year 5/6	
		Living habitat Energy Food chain Predator Prey woodland desert Source Adapt	Vertebrates, Invertebrates, Environment, Human impact		Life Cycle, Mammal, Reproduction, Amphibian, Offspring classify classification domain kingdom phylum, class family genus species characteristics micro-organisms organism flowering non-flowering	

Properties of Materials and states of Matter - Knowledge						
EYFS	Year 1/2		Year 3/4		Year 5/6	
Pre school Explore materials with different properties Explore natural materials indoors and outside Use all their senses in hands-on exploration of natural materials	**Properties of everyday materials** including water and how it changes. **Everyday materials** (metal, wood, plastic, glass) and how to test different properties.	**Uses of Everyday materials** - properties and experimenting with materials find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and		**States of matter**- solids, liquids and gases compare and group materials together, according to whether they	**Properties and changes of Materials** including solubility, Reversible changes- melting, dissolving, evaporation. Separating mixtures.Effect of burning.	

Explore collections of materials with similar and/or different properties Talk about the differences between materials and changes they notice.	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	stretching. ● identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for different uses ● compare how things move on different surfaces. ● find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching		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.		

Vocabulary						
EYFS	Year 1/2		Year 3/4		Year 5/6	
	Rough, Smooth,Stretchy, Stiff, Bending, Twisting, Stretching, , Foil Dull,	Waterproof, Absorbent, Fabrics, elastic		Solid, Liquid, Gas, Evaporation, Condensation, Particles,	properties solubility transparency electrical conductor thermal conductor magnets, dissolve solution, separate separating reversible changes dissolving evaporation filtering, sieving melting irreversible new material quantitative measurements conductivity insulation chemical	

Physics - Knowledge						
EYFS	Year 1/2		Year 3/4		Year 5/6	
Pre school Explore and respond to different natural phenomena in their setting and on trips Reception Explore and talk about different forces they can feel	**Weather** -seasonal changes- changes in weather, lengths of day and seasons ● observe changes across the 4 seasons ● observe and describe weather associated with the seasons and how day length varies.		**Light**. Shadows, how light makes it possible to see things. Sun safety with regards to sight. Reflection of light off surfaces, recognise that they need light in order to see things and that dark is the absence of light ● notice that light is reflected from surface ● 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 a solid object ● find patterns in the way that the size of shadows change. **Forces and magnets**, Friction and movement across various surfaces. magnetic forces, fair test for strength. Attraction and	**Sound**- vibration, how sounds are made, factors affecting pitch and volume. **Electricity** household use of electricity. Simple electrical circuits	**Forces**: effects of gravity and drag forces- friction, air, water resistance Levers, pulleys, springs, gears. Study of Galileo and Isaac Newton **Earth, Space** : movement and description of the Earth, Sun and Moon and planets. The effect of day and night	**Electricity**- Series circuits, voltage effects on the brightness or volume in a circuit. Circuit diagrams **Light**: Light sources, reflection and shadows. Learning that light travels in straight lines,

			repulsion. 2 poles of a magnet ● 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.			
Vocabulary						
EYFS	Year 1/2		Year 3/4		Year 5/6	

	Weather Seasons weather Summer, Spring, Autumn, Winter,	Wood Metal Plastic Glas Brick Rochk, paper, cardboard, opaque, transparent, translucent, reflective, non-reflective, flexible, rigid	**Sound** Vibration, Wave, Pitch, Tone, Percussion, Wood wind, Brass, Insulate	**Forces and Magnets** Magnetic, Force, Attract, repel, Friction, Poles, Magnetic poles, **Light -** Reflective, Reflection natural, Artificial, **Electricity** Cells Switches, Buzzers, Motor, Circuit, Series, Conductors, insulators complete circuit	**Forces** gravity air resistance water resistance friction, surface force, effect accelerate decelerate mechanism pulley gear spring theory of gravitation Galileo Galilei Isaac Newton **Earth and space** Earth, Sun, moon, Orbit, Axis, Rotation, Spherical, Day, Night, Hemisphere, Season, Tilt, Phases of the Moon, star, constellation, Solar system Mercury Venus Mars Jupiter Saturn Uranus Neptune Pluto	**Electricity** Amps, Volts, Voltage, Cell Circuit Diagram, Symbols

Plants - Knowledge

EYFS	Year 1/2		Year 3/4		Year 5/6	
Pre school Plant seeds and care for growing plants	Observe growth, plant structures, compare and contrast 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	Life cycle of a plant and what it needs to grow and be healthy. ● 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.	parts of a plant and functions- Life cycle of flowering plants. Plant needs for healthy growth ● 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.			

Vocabulary						
EYFS	Year 1	Year 2	Year 3/4		Year 5/6	
	Leaf, flower, fruit, berry, seed, trunk, branch, bark, stalk, bud	Deciduous, Evergreen, Blossom, Petals, Roots, Bulb, Stem, Temperature, Growth plus local trees and wild flowers	nutrients, reproduction, transportation dispersal, pollination			

Rock and fossils and evolution - Knowledge

EYFS	Year 1	Year 2	Year 3/4		Year 5/6	
			Rocks - types and formations. Fossils and how they occur. Rocks in the local environment and how they change over time ● 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.			**Evolution and inheritance:** how living things on earth changed over time, genetics and evolution
Vocabulary						
EYFS	Year 1	Year 2	Year 3/4		Year 5/6	
			Fossil, sedimentary, metamorphic, igneous Fossils, Sandstone, Granite, Marble, Rock Pumice,Crystals, Absorbent, Sedimentary, Organic matter, Grains			evolution adaption inherited traits adaptive traits natural selection inheritance Charles Darwin Alfred Wallace DNA variation offspring fossi