PROGRESSION IN SCIENCE

Horsted School

Progression of **Working Scientifically Skill** through Horsted School

SCIENCE		EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
QUESTION		Ask simple questions about immediate environment.	I can **ask simple questions** and recognise that they can be answered in different ways, using scientific enquiry.		I can ask relevant questions and use different types of **scientific enquires** to answer them.		**Raise scientific questions** and **hypothesise** I can plan different types of **scientific enquiries** to answer questions, including recognising and controlling variables where necessary.	
	OBSERVE	**Qualitative** e.g. talk about similarities and differences.	**Qualitative and Simple Quantitative** I can use simple equipment to observe closely, including changes over time.		**Qualitative and Quantitative** I can make systematic and careful observations, take accurate measurements and use a range of equipment.		**Qualitative and Quantitative** I can take accurate measurements, using a range of scientific equipment taking repeat readings when appropriate. I can record complex data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	
			e.g. to observe seasonal changes including weather, light and nature. By using our senses/ equipment.	e.g. to measure changes in plant growth over time including selecting equipment.	Systematic/ careful observations. Use bar charts, pictograms, tables. e.g. identifying how does the distance from the light source change the size of the shadow?	Accurate measurements. Use time graphs and other graphs. e.g. investigating how can we alter the loudness of a sound?	Take repeat readings when appropriate. Scatter graphs. e.g. Identifying the temperature at which sugar dissolves. Is there a correlation between gestational length and the mass (kg) of an animal?	Accurate/ precise measurements, Diagrams, tables, bar and line graphs. e.g. what happens to the rate at which our hearts beat when we perform different exercises?
	CLASSIFY and FIND PATTERNS	**Talk and Sort**	**Identify and Classify** I can identify, group and classify.		**Classify and Find Patterns** I can gather, record, classify and present data in a variety of ways to help when answering questions.		**Classify and Find Patterns** I can gather, record, classify and present data in a variety of ways to help when answering questions.	
		Use simple scientific criteria. e.g. I can sort animals into different groups.	e.g. to compare and contrast familiar plants, animals and materials.	e.g. to compare differences including living/ dead/ never alive and different types of materials.	Classify animals/ materials. Link two variables e.g. investigating how the closer the magnet the bigger the force.	Use simple classification keys. Link two variables e.g. demonstrating how the more cells in a circuit, the brighter the bulb.	Identify causal relationships. Present data e.g. How does the length of a baby change over time?	Develop classification keys. Identify evidence that supports/ refutes causal relationship. e.g. to identify animals based on their classification. (Kingdom, Phylum, Class, Order, Family, Genus, Species)
	CONTROL INVESTIGATIONS: comparative and fair testing	**Explore** objects/ materials/ living things/ resources designed to model scientific processes.	**Simple comparative tests** I can perform simple comparative tests.		**Comparative and fair tests** I can set up simple practical enquiries, comparative and fair tests. I can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.		**Design own comparative and fair tests** I can use test results to make predictions to set up further comparative and fair tests.	
			e.g. to investigate what is the best material for a jacket to wear outside.	e.g. to investigate what happens if plants do not get light and water	**Predict.** Fair tests e.g. investigating how does distance affect magnet strength?	**Predict.** Language of independent and control variable. e.g. to compare the sound of a drum when we get further away from it.	Identify when and how to make a test fair. Make predictions based on previous test results. e.g. make predictions on how different objects might fall.	Recognise and control variables. Make predictions based on previous test results. e.g. what affects the brightness of a bulb in a circuit?

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	RESEARCH	**Listen and respond to stories** about scientific processes/ events/ objects. e.g. I can use different vocabulary in different contexts.	**Find information** I can gather and record data to help answer questions.	**Select information** I can select information from a range of sources, including secondary sources of information.	**Explore information** I can use scientific evidence to answer questions and to support my findings.	**Explore relevant information by using a wide range of secondary sources.** I can find things out using a wide range of secondary sources of information.
			e.g. what do animals, including humans, need to survive?	e.g. to research how plants use leaves to make food.	**Research** using given sources. e.g. research different food groups and how they keep us healthy	**Select information** to support findings. e.g. to research an animal's weight, appearance and diet.	Explore how scientific ideas have developed over time. e.g. use secondary sources to research how different mammals develop as they get older.	Identify evidence that has been used to support or refute ideas. e.g. Darwin's theory of evolution.
	MODEL	**Concrete** context. e.g. create drawings and models of their environment	**Concrete** I can draw diagrams.	**Explore** and **create** I can create drawings and physical models of my findings.	**Findings** I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.	**Findings** I can use scientific language and ideas to explain, evaluate and communicate my methods and findings.
			e.g. parts of plants/ the body.	e.g. designing their own habitats.	**Abstract** contexts e.g. processes and phenomena such as forces/ light. **Use** labelled diagrams and drawings and physical models.	**Abstract** contexts e.g. processes and phenomena such as sound/ electricity. **Create** labelled diagrams and drawings and physical models.	**Abstract** contexts. **Evaluate** diagrams/ models e.g. states of matter; solar system.	**Abstract** contexts. **Create** own versions of models. e.g. circulatory system; light.
CONCLUDE		**Explain** simple phenomena: How? Why? e.g. I can make comments about what I have heard and ask questions to clarify my understanding.	**Summarise** I can use my observations and ideas to suggest answers to questions and notice similarities, differences and patterns.		**Summarise** I can report findings from enquiries, including spoken and written explanations, displays or presentations of results and conclusions. I can identify differences, similarities or changes related to simple scientific ideas and processes.	**Summarise** I can 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. I can identify scientific evidence that has been used to support or refute ideas or arguments. I can describe and evaluate my own and other people's scientific ideas using evidence from a range of sources.
			Describe what has happened or been observed. e.g. to observe and describe what objects are made from.	**Explain** why a simple observation occurred. **Evaluate** the effectiveness of observations. e.g. to describe how seeds and bulbs turn into plants and how habitats change throughout the year.	**Explain an observation or an event in scientific terms.** Distinguish between what has been observed and why it happened. Begin to link evidence from secondary sources as well as primary. Suggest improvements.	**Evaluate original hypothesis against observed evidence and reach appropriate conclusions.** Identify causal relationships. Begin to identify how reliable the data is.

Progression of **Biological Knowledge** through Horsted School

EYFS	
Understanding the World (Forest School)	- I can explore the natural world around me. - I can describe what I see, hear and feel when I am outside. - I can make observations of animals and plants. - I can identify mini-beasts and classify them into groups. - I can recognise the differences between the Artic, the Jungle and the environment that I live in.
Animals including humans	- I can make healthy food choices. - I know how to keep my body healthy (cleaning my teeth, drinking lots of water and washing my hands.) - I know that regular movement can keep my healthy. - I know what can make my heart beat faster. - I know the life cycle of a butterfly
Plants	- I can plant seeds and care for growing plants. - I can use my senses to explore natural materials (sunflowers, soil, planting potatoes)

KS1	Year 1	Year 2
Plants	- I can identify and name a variety of common plants, including garden and wild plants (for example daisies, dandelions, daffodils, tulips). - I can identify and compare deciduous and evergreen trees. - I can name and describe the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves, flowers (blossom), branches and fruit.	- I can observe and describe how seeds and bulbs grow into mature plants, including the process of germination and the life cycle of a plant. - I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
Animals including humans	- I know how to identify differences between a variety of common animals that are birds, fish, amphibians, reptiles and mammals. - I can identify and name a variety of common animals that are carnivores, herbivores and omnivores, including birds, fish, amphibians, reptiles and mammals. - I can describe and compare the structure of a variety of common animals based on their teeth, claws, shell, eyes, tail, legs, beak, wings and fur. - I can name, draw and label the basic parts of the human body and say which part of the body is to do with each sense (leg, arm, neck, head, shoulder, elbow, hand, finger, stomach, hip, knee, feet, toe, eyes, ears, nose, mouth, skin, hair, tongue, ankle).	- I know that animals, including humans, have offspring that grow into adults. - I can compare and order different stages of an animal's development. (Life Cycles - chicken, frog, newt, dragonfly, butterfly). - I know the basic needs of animals, including humans, for survival (water, food and air). - I can describe the importance for humans to exercise, eat the right amounts of different types of food, and maintain their hygiene.

All living things		- I can explain that living organisms move, respire, grow, reproduce, excrete, can detect changes and take in nutrients when they are alive and stop when they die.
		- I know that an organism that was never alive doesn't move, respire, grow, reproduce, excrete, can detect changes and take in nutrients and never has.
		- I know that living things live in habitats to which they are suited.
		- I can describe how different habitats provide the basic needs of different kinds of animals and plants, and how they depend on each other.
		- I can identify and name a variety of plants and animals in their habitats, including micro-habitats.
		   • Minibeasts: caterpillars, ants, worms, spiders and ladybirds
		   • Ocean: seaweed, algae, flowers, fish, mammals, lobsters, crabs, prawns, starfish.
		   • Arctic: polar bears, arctic foxes, seals, walruses, whales, fish, grass and moss.
		   • Rainforests: gigantic trees, tree lizards, frogs, chameleons, jaguars, leopards.
		   • Desert: kangaroos, lizards, snakes, cactus.
		- I can describe how herbivores, carnivores and omnivores obtain their food from plants and other animals.
		- I can identify different animal's sources of food by identifying them as prey, predators and producers.

KS2	Year 3	Year 4	Year 5	Year 6
Plants	- I know the functions of different parts of plants and can describe what they do, including roots, stems, leaves and flowers. - I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. - I can explore the requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow). - I can compare different plants to determine that their needs vary from plant to plant (e.g. Cress can grow without soil/sunflowers growing towards the sun/cacti require less water). - I know that water is transported within plants via transpiration.			
Animals including humans	- I know that animals, including humans cannot make their own food; they get nutrition from what they eat. - I know that animals, including humans, need food to help them grow, be healthy and provide energy to move. - I can identify that animals, including humans, need the right type and amount of vitamins, proteins, fats, sugars, carbohydrates and water. - I know the function of the muscles and can identify why humans and some other animals have skeletons and muscles for support, protection and movement.	- I can explain that the mouth, tongue, teeth, oesophagus, stomach, small intestine and large intestine are parts of the digestive system in humans. - I can name the canines, incisors and molars in a set of teeth and explain what they do. - I can describe and explain a variety of food chains, naming producers, predators and prey, including herbivores and carnivores.	- I know how a human develops from birth to old age. - I can explain what gestation is and how a foetus develops from fertilisation to birth. - I know that puberty is the release of hormones and how it can cause our bodies to change. - I can explain how your skin becomes thinner, your muscles, memory and immune system weaken as you grow older.	- I know that arteries, veins, blood and the heart make up the human circulatory system, and can describe their functions - I can explain how diet, exercise, drugs, and lifestyle can have positive and negative effects on the way the body functions. - I know that water is part of the body's transportation system. - I can explain how glucose, water, vitamins, minerals and medications are transported throughout the body by blood. - I know how drugs and alcohol can affect the human body.
All Living things		- I can show that living things can be grouped together by their appearance, characteristics, similarities and differences. - I know to use classification keys to help group, identify and name both plants and animals. - I know that environments can change due to natural (earthquakes, storms, floods, hurricanes and wildfires) and human impacts (littering, deforestation, pollution and urbanisation) and that can mean living things are put in danger.	- I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. - I can describe the life process of reproduction in flowers and animals (hedgehogs, frogs and dragonflies).	- I can explain how to classify plants (algae, mosses, ferns, lichens, seed-bearing plants) and animals (insects, mammals, birds, amphibians) based on specific characteristics. - I can describe how plants, animals and microorganisms are classified into broad groups (kingdom phylum, class, order, family, genus and species) according to common observable characteristics and based on similarities and differences.
Evolution and Inheritance				- I can explain that the kinds of living things that live on the Earth now are different from those that inhabited the Earth millions of years ago and that fossils provide this information. - I know that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. - I know that animals and plants are adapted to suit their environment and can explain that adaptation may lead to evolution

Key vocabulary for the Biological units

	EYFS	Year 1	Year 2
Plants	Tree, Trunk, Branch, Leaves, Flowers, Petals, Fruit, Roots, Bulb, Seed, Stem	Deciduous, Evergreen trees, Leaves, Flowers (blossom), petals, Fruit, Roots, Bulbs, Seed, Trunk, Branches, Stem	Seeds, Bulbs, Water, Light, Temperature, Growth
Animals including humans	Herbivore, Carnivore, Human, Animal, Fish, Birds, Ear, Eye, Mouth, Nose, Face, Hair, Leg, Knee, Arm, Elbow, Back, Toes, Hands, Fingers	Fish, Reptiles, Mammals, Birds, Amphibians, Herbivore, Omnivore, Carnivore, Leg, Arm, Elbow, Head, Ear, Nose, Back, Wings, Beak	Survival, Water, Air, Food, Adult, Baby, Offspring, Kitten, Calf, Puppy, Chick, Exercise, Hygiene
Living things and their habitats (Year 2)			Living, Dead, Habitat, Energy, Food chain, Predator, Prey, Woodland, Pond, Desert

	Year 3	Year 4	Year 5	Year 6
Plants (Year 3)	Air, Light, Water, Nutrients, Soil, Reproduction, Transportation, Dispersal, Pollination, Flower			
Animals including humans	Movement, Muscles, Bones, Skull, Nutrition, Skeleton,	Mouth, Tongue, Teeth, Oesophagus, Stomach, Small intestine, Large intestine, Herbivore, Carnivore, Canine, Incisor, Molar	Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty	Circulatory, Heart, Blood, Vessels, Veins, Arteries, Oxygenated, Deoxygenated, Valve, Exercise, Respiration
Living things and their habitats (Year 4, 5, 6)		Vertebrates, Fish, Amphibians, Reptiles, Birds, Mammals, Invertebrates, Snails, Slugs, Worms, Spiders, Insects, Environment, Habitats	Mammal, Reproduction, Insect, Amphibian, Bird, Offspring	Classification, Vertebrates, Invertebrates, Micro-organisms, Amphibians, Reptiles, Mammals, Insects, kingdom, phylum, class, order, family, genus and species
Evolution and Inheritance (Year 6)				Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics

Progression of **Chemistry knowledge** through Horsted School

EYFS	
Everyday Materials	- I can identify changes in states of matter (making bread, soup and jelly.) - I can describe how an object floats and sinks. - I can describe different textures of materials.

	Year 1	Year 2
Everyday Materials and their uses	- I know the difference between an object and the material from which it is made. - I can name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. - I can describe how materials can be shiny/dull, rough/smooth, bendy, waterproof, absorbent, opaque/transparent and group them.	- I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. - I know that the shape of some solid objects can be changed by squashing, bending, twisting and stretching.

	Year 3	Year 4	Year 5	Year 6
Materials	Rocks - I know how to group rocks based on their appearance and physical properties (hard/soft, permeable/impermeable). - I can describe the differences between igneous (pumice, granite), sedimentary (sandstone, chalk, flint) and metamorphic (slate, marble) rocks and identify how they are formed. - I can describe in simple terms how things that were alive turn into fossils. 1. The animal dies. 2. Soft parts of the animal's body, including skin and muscles, start to rot away. Scavengers may come and eat some of the remains. 3. Before the body disappears completely, it is buried by sediment - usually mud, sand or silt. Often at this point only the bones and teeth remain. 4. Many more layers of sediment build up on top. This puts a lot of weight and pressure onto the layers below, squashing them. Eventually, they turn into sedimentary rock. 5. While this is happening, water seeps into the bones and teeth, turning them to stone as it leaves behind minerals. - I know that soils are made from rocks and organic matter and can identify the different types of soil (loamy, clayey, silty and sandy).	States of Matter - I can group materials together, according to whether they are solids, liquids or gases including tricky ones like gels, foams, mists and pastes. - I can demonstrate and explain 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). - I know what evaporation and condensation is in the water cycle and know that changes in temperature can increase and decrease the rate of evaporation.	Properties and changes of materials - I can compare and group together everyday materials (wood, plastic and metal) based on their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. - I can recognise that some materials (sugar, salt) will dissolve in liquid to form a solution and describe how to recover a substance from a solution. - I can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. - I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, woods and plastic. - I know that dissolving, mixing and changes of state are reversible changes. - I know that changing materials can 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.	

Key vocabulary for the chemistry units

	EYFS	Year 1	Year 2
Everyday Materials and their uses	Material, Wood, Plastic, Glass, Paper, Shiny, Metal, Rock, Hard, Soft, Fabric, Smooth, Rough	Wood, Plastic, Glass, Paper, Water, Metal, Rock, Hard, Soft, Bendy, Rough, Smooth	Hard, Soft, Stretchy, Stiff, Shiny, Dull, Rough, Smooth, Bendy, Waterproof, Absorbent, Opaque, Transparent, Brick, Paper, Fabrics, Squashing, Bending, Twisting, Stretching, Elastic, Foil

	Year 3	Year 4	Year 5	Year 6
Rocks (Year 3)	Fossils, Soils, Sandstone, Chalk, Flint, Granite, Marble, Slate, Pumice, Crystals, Absorbent, Igneous, Metamorphic, Sedimentary			
States of Matter (Year 4)		Solid, Liquid, Gas, Evaporation, Condensation, Particles, Temperature, Freezing, Heating		
Properties and changes of materials (Year 5)			Hardness, Solubility, Transparency, Conductivity, Magnetic, Filter, Evaporation, Dissolving, Mixing, reversible, irreversible	

Progression of **Physics Knowledge** through Horsted School

	EYFS	Year 1	Year 2
Seasonal Change	- I can understand the effect of change in seasons on the natural world around them. - I know the similarities and differences between Autumn, Spring, Summer and Winter. - I can identify what season it is. - I know the changes in trees and plants as the seasons progress.	- I can explain changes in weather, temperature and wildlife through autumn, winter, spring and summer - I can describe the differences in the weather in autumn, winter, spring and summer. - I know that the amount of daylight hours get longer in the summer and shorter in the winter.	

	Year 3	Year 4	Year 5	Year 6
Forces including magnets	– I know that the rougher a surface, the slower an object will move on it and the smoother and object the quicker it will move on it. - I know that magnets have a north pole and a south pole and a magnetic field. - I know that some forces (push and pull) need contact between two objects, but magnetic forces can act at a distance due to the magnetic field. - I can predict whether two magnets will attract or repel each other, depending on which poles are facing. - I can observe how magnets attract or repel each other and attract some materials and not others. - I know how to compare and group materials (coins, iron nails, paper clips, pens, pencils, drink cans, food tines, wooden spoons, plastic tubs) based on whether they are magnetic or non-magnetic.		- I know that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. - I know the effects of air resistance, water resistance and friction between object and moving surfaces results in objects slowing down. - I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	
Sound		- I know that sound is caused because of vibrations. - I know that sound vibrations travel through air to the ear. - I know that quicker vibrations cause higher pitched sounds and that slower vibrations cause lower pitched sounds.		

		- I know that bigger vibrations cause a louder sound and that smaller vibrations cause a quieter sound. - I know that sounds get fainter as the distance from the sound source increases, volume dependent.		
Electricity		- I can identify common appliances (toaster, microwave, cooker, washing machine, television, iron) that run on electricity. - I can construct and make observational drawings with labels of a simple series electrical circuit which includes cells, wires, bulbs, switches and buzzers. - I know that a switch opens and closes a circuit and am able to apply this to a simple series circuit that powers a lamp (open switch - does not light/closed switch - lights). - I know that a battery is made up of more than one cell. - I know that some materials are conductors (copper, graphite, water, gold), and some are insulators (wood, glass, paper, fabric, plastic, rubber) and can explain that metals are good conductors.		- I know that increasing the voltage in a circuit will increase the volume of a buzzer and increase the brightness of a lamp. - I know that decreasing the voltage in a circuit will decrease the volume of a buzzer and lower the brightness of a lamp. - I can compare and give reasons for variations in how components function (amount of voltage/amps), including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. - I know how to draw a diagram using recognised symbols to represent a simple circuit.
Light	- I can recognise that I need light in order to see things and that dark is the absence of light. - I can show that light is reflected from surfaces. - I can show that shadows are formed when the light from a light source is blocked by a solid object. - I know that the further the distance from a light source the bigger the shadow will be and the less dense in colour. - I know that the smaller the angle away from the light source, the longer the shadow will be.		- I know that as the sun gets higher in the sky shadows get shorter and when the sun is lower in the sky, the shadows are longer.	- I know that light appears to travel in straight lines. - I understand that objects are seen because they give out or reflect light into the eye. - I know that light travels in straight lines and can use this to show why shadows have the same shape as the objects that cast them. - I know that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. - I know that light can bend through a prism and that this is called refraction. - I know that white light is made up of 3 primary colours (red, green and blue) and 3 secondary (yellow, magenta and cyan).

				- I know that rainbows are caused by the refraction of light through raindrops.
Earth and Space			- I know that the apparent movement of the sun across the sky and day and night is caused by the Earth's rotation. - I can describe the movement of the Earth, and other planets, relative to the Sun in the solar system. - I can describe the movement of the Moon relative to the Earth. - I can describe the Sun, Earth and Moon as approximately spherical bodies. - I know that as the sun gets higher in the sky shadows get shorter and when the sun is lower in the sky, the shadows are longer.	

Key vocabulary for physics units

	EYFS	Year 1	Year 2
Seasonal Change	Summer, Spring, Autumn, Winter, Season, Sun, Day, Dark, Light, Night, Moon, Star, Earth, Planet, Space, Loud, Quiet, Volume, Sound	Summer, Spring, Autumn, Winter, Sun, Day, Moon, Night, Light, Dark	

	Year 3	Year 4	Year 5	Year 6
Forces (including magnets)	Magnetic, Force, Contact, Attract, Repel, Friction, Piles, Push, Pull		Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys	
Sound		Volume, Vibration, Wave, Pitch, Tone, Speaker		
Electricity		Cell, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators		Cell, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators, Amps, Volts, Cell, Symbols
Light	Light, Shadows, Mirror, Reflective, Dark, Reflection			Refraction, Reflection, Light, Spectrum, Rainbow, Colour, Primary, Secondary,
Earth and Space			Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, Star, Constellation	

APPENDICES

Extended Vocabulary

	Year 1	Year 2
Plants	**Trees** - deciduous, evergreen, ash, birch, beech, rowan, common lime, oak, sweet chestnut, horse chestnut, apple, willow, sycamore, fir, pine, holly, etc **Wild flowering plants** - cleavers, coltsfoot, daisy, dandelion, garlic mustard, mallow, mugwort, plantain, red clover, self-heal, shepherd's purse, sorrel, spear thistle, white campion, white deadnettle and yarrow. **Garden plants** – crocus, daffodil, bluebells, etc **Parts of plants** – roots, branch, trunk, stalk, leaf, flower, petal, seeds, bulbs and twigs	**Trees** - deciduous, evergreen, ash, birch, beech, rowan, common lime, oak, sweet chestnut, horse chestnut, apple, willow, sycamore, fir, pine , holly, etc **Wild flowering plants** - cleavers, coltsfoot, daisy, dandelion, garlic mustard, mallow, mugwort, plantain, red clover, self heal, shepherd's purse, sorrel, spear thistle, white campion, white deadnettle and yarrow. **Garden plants** – crocus, daffodil, bluebells, etc **Parts of plants** – roots, branch, trunk, stalk, leaf, flower, petal, seeds, bulbs and twigs **Need of plants** – water, light, heat, temperature
Animals including humans	Birds, fish, amphibians, reptiles, mammals, invertebrates, feathers, scales, gills, fins, hair, land, water, backbone, skeleton, carnivores, herbivores, omnivores, meat, plants	**Classification** - Birds, fish, amphibians, reptiles, mammals and invertebrates, Carnivores, herbivores, omnivores. **Stages of growth of many insects** – egg, larva, pupa, adult **Names of invertebrates** – ladybirds, butterflies, dragonflies, etc **Names of amphibians** – smooth newt, common frog, toad **Stages of life** – baby, toddler, child, teenager, adult **Life processes** – growth, nutrition (feeding), respiration (breathing is part of this) **Hygiene** – clean, wash, germs **Food** – healthy, grow, strong, energy
Living things and their habitats		Habitat, micro habitat Pond, meadow, log pile, woodland, river, lake, beach, cliff **Organism** – plant, animal **Trees** - deciduous, evergreen, ash, birch, beech, rowan, common lime, oak, sweet chestnut, horse chestnut, apple, willow, sycamore, fir, pine , holly, etc **Wild flowering plants** - cleavers, coltsfoot, daisy, dandelion, garlic mustard, mallow, mugwort, plantain, red clover, self heal, shepherd's purse, sorrel, spear thistle, white campion, white deadnettle and yarrow. **Garden plants** – crocus, daffodil, bluebells, etc **Parts of plants** – roots, branch, trunk, stalk, leaf, flower, petal, seeds, bulbs and twigs **Invertebrates** – snail, slug, woodlouse, spider, beetle, fly, etc **Pond animals** – pond skater, water slater, ramshorn snail, pond snail, leech, common frog, smooth newt, etc

	Year 3	Year 4	Year 5	Year 6
Plants	**Trees** - deciduous, evergreen, ash, birch, beech, rowan, common lime, oak, sweet chestnut, horse chestnut, apple, willow, sycamore, fir, pine, holly, etc **Wild flowering plants** - cleavers, coltsfoot, daisy, dandelion, garlic mustard, mallow, mugwort, plantain, red clover, self heal, shepherd's purse, sorrel, spear thistle, white campion, white deadnettle and yarrow. **Garden plants** – crocus, daffodil, bluebells, etc **Parts of plants** – roots, branch, trunk, stalk, leaf, flower, petal, seeds, bulbs and twigs **Parts of a flower** – petal, stamen (anther + filament), carpel (stigma + style + ovary + ovule) **Processes** – pollination, fertilisation, germination			
Animals including humans	Nutrition, Diet, Vitamins, minerals, fats, proteins and carbohydrates **Functions of skeletons** – protect, support and aid movement	**Digestive system** –oesophagus, stomach, acid, small intestine, protein, vitamin, mineral, carbohydrate, fats, energy, growth, repair, saliva **Teeth** – Incisors, canines, premolars, molars, function **Food chain** – producer, consumer, predator, prey	Gestation, Fetus, Fertilisation, Species, Baby, Toddler, Adolescent, Adult, Elderly person, Puberty, Hormones, Pituitary gland, Testosterone, Estrogen	**Circulatory system** – heart, blood, veins, arteries, pulse, clotting **Diet** – balanced, vitamins, minerals, proteins, carbohydrates, sugars, fats **Drugs** – caffeine, nicotine, alcohol, cannabis, cocaine, heroine **Lifestyle** – healthy
Living things and their habitats		**Habitat** - micro habitat, Pond, meadow, log pile, woodland, river, lake, beach, cliff **Organism** – plant, animal **Trees** - deciduous, evergreen, ash, birch, beech, rowan, common lime, oak, sweet chestnut, horse chestnut, apple, willow, sycamore, fir, pine , holly, etc **Wild flowering plants** - cleavers, coltsfoot, daisy, dandelion, garlic mustard, mallow, mugwort, plantain, red clover, self heal, shepherd's purse, sorrel, spear thistle, white campion, white deadnettle and yarrow. **Garden plants** – crocus, daffodil, bluebells, etc **Parts of plants** – roots, branch, trunk, stalk, leaf, flower, petal, seeds, bulbs and twigs **Invertebrates** – snail, slug, woodlouse, spider, beetle, fly, etc **Pond animals** – pond skater, water slater, ramshorn snail, pond snail, leech, common frog, smooth newt, etc	**Animals** – amphibians, reptiles, birds, mammals, insects, fish **Animal development** – egg, larva, pupa, nymph, adult, metamorphosis **Parts of a flower** – petal, stamen (anther + filament), carpel (stigma + style + ovary + ovule) **Processes** – pollination, fertilisation, germination	Classification Vertebrate, invertebrate Kingdoms: animal, plant, 'micro-organism' Classes: amphibian, reptile, bird, mammal, Scales, feathers Flowering plant, non-flowering plant
Evolution and Inheritance	.	.	.	Evolution, evolve, natural selection, survival, reproduction, offspring, parents, siblings, environment, variation, fossils, ammonites, belemnites, micrasters

	Year 1	Year 2
Everyday Materials and their uses	**Types of materials**: wood, plastic, glass, metal, water, rock, brick, fabric, sand, paper, flour, butter, milk, soil **Properties of materials**: hard/soft, stretchy/not stretchy, shiny/dull, rough/smooth, bendy/not bendy, transparent/not transparent, sticky/not sticky **Verbs associated with materials**: crumble, squash, bend, stretch, twist **Senses**: touch, see, hear, smell and taste	**Types of materials**: wood, plastic, glass, metal, water, rock, brick, fabric, sand, paper, flour, butter, milk, soil **Properties of materials**: hard/soft, stretchy/not stretchy, shiny/dull, rough/smooth, bendy/not bendy, transparent/not transparent, sticky/not sticky **Verbs associated with materials**: crumble, squash, bend, stretch, twist **Senses**: touch, see, hear, smell and taste

	Year 3	Year 4	Year 5	Year 6
Rocks	**Names of rocks** – Chalk, limestone, granite, basalt, sandstone, flint, slate, shale, marble **Types of rock –** Sedimentary, metamorphic, igneous **Types of minerals** – Calcite, feldspar, topaz, diamond, talc, corundum **Properties of rocks** – Hard/soft, permeable/impermeable **Processes** – Heat, pressure, erosion, transportation, deposition, melt, solidify **Size of rocks** – Grain, pebbles **Rock describing words** – Crystals, layers **Early areas of land** – Gondwana, Pangea **Land formations** – Plates, volcanoes, mountains, valleys	.	.	.
States of Matter		**States of matter** Solid, liquid and gas **Examples of gases** Oxygen, hydrogen, helium, carbon dioxide, methane **Examples of liquids** Water, milk, juice, petrol, oil **Examples of solids**–Wood, rocks, metal, plastic, glass, wool, leather, etc **Processes –** Melting, condensation, evaporation, solidifying, freezing Water cycle Water vapour Steam Heating Cooling	.	.
Properties and changes of materials			**Thermal conductivity** – thermal conductor, thermal insulator **Electrical conductivity** – electrical conductor, electrical insulator **Dissolving** – Solvent, solution, solute, soluble, insoluble, solid, liquid, particles, suspensions **Separating materials** – Sieve, filter, evaporate, condense	

	Year 1	Year 2
Seasonal Change	**Seasons**: Spring, Summer, Autumn, Winter Year, months, days, hot, warm, mild, cold, sunny, cloudy, rain, sleet, snow, hail, thunder, lightning, rainbow, wet, damp, dry, windy, breezy, gust, temperature, degrees Celsius, thermometer, weather vane, anemometer	

	Year 3	Year 4	Year 5	Year 6
Forces including magnets	**Magnets** – bar and horseshoe Attract, repel North and south poles Magnetic Magnetic field		**Types of forces**: gravity, friction, air resistance, upthrust, weight Measuring forces: Newton meter, Newtons (N) Particles Surface area Push, pull Balance Mass – grams and kilograms Mechanical devices – gears, levers, pulleys, springs	
Sound		**Ways to create sound** – bang, blow, shake, and pluck **Loudness** – quiet, quieter, quietest, loud, louder and loudest **Pitch** - low, lower, lowest, high, higher, and highest **Vibrations** **Source**		
Electricity		**Appliances**: fridge, freezer, TV, computer, iron, kettle, etc Series circuit **Components**: battery, bulb (lamp), bulb (lamp) holder, buzzer, crocodile clip, leads, wires, switch **Describing words**: brighter, duller, slow, fast, quiet, loud Conductor, insulator **Effects of electricity**: Light, sound, movement, heat **Switches** – open, close		Electricity, volts, series circuit, **Components** - battery, bulb, holder, buzzer, crocodile clip, lead, wires, switch Conductor, insulator, resistance Effects of electricity: light, sound, movement, heat
Light	**Simple comparisons**: dark, dull, bright, very bright **Comparative vocabulary**: brighter, duller, and darker **Superlative vocabulary**: brightest, dullest, and darkest Opaque, translucent, transparent **Shadow** – block, absence of light **Reflect** – bounce, mirror, reflection **See** – light source **Sun** – sunset, sunrise, position	.	.	**Simple comparisons**: dark, dull, bright, very bright **Comparative vocabulary**: brighter, duller, and darker **Superlative vocabulary**: brightest, dullest, and darkest Opaque, translucent, transparent **Shadow** – block, absence of light **Reflect** – bounce, mirror, reflection **See** – light source **Sun** – sunset, sunrise, position

| Earth and Space | | | **Day and night** - Earth, axis, rotate
Solar system – Star = Sun, Planets = Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune (Pluto was classified as Dwarf planet in 2006)
Phases of the Moon - full moon, gibbous moon, half moon, crescent moon, new moon, waxing ,waning
Moon's orbit: 29.5 days, lunar month, Orbit, planets, revolve, sphere | |

Key Scientists

Year 1	Animals including humans: David Attenborough (1926 – present)	Plants: Barbara McClintock (1902 – 1992) Joseph Banks (1743 – 1820) Gregor Mendel (1822 -1884) Carl Linnaeus (1707 – 1778) George Forrest (1873 – 1932)	Materials: John Boyd Dunlop (1840 – 1921) Charles Macintosh (1760 -1843) John McAdam (1756 – 1836)	Seasonal change: John Dalton (1766 – 1844) Gabriel Fahrenheit (1686 – 1736) Inez Fung (1941 – present)
Year 2	Animals including humans: David Attenborough (1926 – present)	Plants: Barbara McClintock (1902 – 1992) Joseph Banks (1743 – 1820) Gregor Mendel (1822 -1884) Carl Linnaeus (1707 – 1778) George Forrest (1873 – 1932)	Materials: Leo Hendrik Baekeland (1863 – 1944) Charles Goodyear (1800 – 1860) Dr Alex King Dr Frances Ross	Living things: Kate Humble (1968 -) Steve Backshall (1973 -) Chris Packham (1961 -)

Year 3	Animals including humans: Diane France (1954 -)	Forces and Magnets: William Gilbert (1522 – 1603) Hans Christian Oersted (1777 – 1851)	Plants: Barbara McClintock (1902 – 1992) Joseph Banks (1743 – 1820) Gregor Mendel (1822 – 1884) Carl Linnaeus (1707 – 1778) George Forrest (1873 – 1932)	Light: James Clerk Maxwell (1831 – 1879) Thomas Young (1773 – 1829)	Rocks: Professor Ian Stewart (contemporary geologist) Adriana Ocampo (1955 -) Space geologist Friedrich Mohs (1773-1839) Inge Lehmann (1888-1993) Alfred Wegener (1880 – 1930) Tuzo Wilson (1908- 1993) Marie Tharp (1920 – 2006) Dorothea Bate (1878 – 1951)
Year 4	Animals including humans: Charles Elton (1900 – 1991)	Living things and their habitats: Carl Linnaeus (1707 – 1778)	Electricity: Benjamin Franklin (1706 – 1790) Charles Augustine Coiloumb (1736 – 1806) Alessandro Volta (1745-1827) Andre-Marie Ampere (1775 – 1836)	Sound: Robert Boyle (1627 – 1691) Ernst Mach (1838 – 1916) Heinrich Hertz (1857 – 1894)	States of Matter: Marie Curie (1867 – 1934)
Year 5	Animals including humans: Robert Winston (1940 -)	Earth and Space: Aristotle Neil Armstrong Buzz Aldrin	Living things and their organisms: Heather M Briggs	Properties and changes of materials: Antoine Lavoisier (1743 - 1794) Dmitri Mendeleyev (1834 - 1907) Sir Humphry Davy (1778 - 1829) John Dalton (1766 - 1844) Marie Curie (1867 – 1934)	Forces: Sir Isaac Newton (1642 – 1727) Christopher Cockerell (1910 – 1999)
Year 6	Animals including humans: William Harvey (1578 – 1657)	Electricity: Thomas Edison (1847 – 1931) Benjamin Franklin (1706-1790)	Living things: Carl Linnaeus (1707-1778) Evelyn Cheesman (1881 – 1969) Sir Hans Sloane (1660 – 1753) Gilbert White (1720 – 1793)	Light: Thomas Young (1773 – 1829) – Sir David Brewster (1781 – 1868) - Jean-Bernard-Leon Foucault (1819-1868)	Evolution and Inheritance: Charles Darwin (1809 – 1882) Alfred Russell Wallace (1823 - 1913) Richard Owen (1804 – 1882)