Science Planning Overview

School Objectives: ● Clear vocabulary taught in each topic and built upon each year ● Opportunities to review and consolidate knowledge across year groups ● Develops learners' cultural capital								
Year A	**EYFS**	**Y1&2 A**	**Y1&2 B**	**Y3&4 A**	**Y3&4 B**	**Y5&6 A**	**Y5&6 B**	
Vocabulary (Generic)	School Objectives: ● Clear vocabulary taught in each topic and built upon each year ● Opportunities to review and consolidate knowledge across year groups ● Develops learners' cultural capital							
Skills Working Scientifically (Ongoing)	**Year A**	**EYFS**	**Y1&2 A**	**Y1&2 B**	**Y3&4 A**	**Y3&4 B**	**Y5&6 A**	**Y5&6 B**
Focus Topic – Aut1	**Vocabulary (Generic)**	observe, explore, predict, investigate, predict, sort, results, record, test -ask simple questions -make predictions -observe and compare, talk about difference and similarities -take measurements eg. use senses and simple	question, answer, predict, test, observe, identify, classify		predict, fair test, identify, classify, compare, describe, measure, data, conclusion		predict, fair test, classify, compare, describe, accurate, compare, conclusion, data, variable	
Topic Specific Vocabulary	**Skills Working Scientifically (Ongoing)**		-Ask simple questions and recognise that they can be answered in different ways. -Perform simple tests. -Observe closely, using simple equipment. -Identify and classify. -Gather and record data to help in answering questions. -Use their observations and ideas to suggest answers to 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 thermometers and data loggers. -Gather, record, classify and present data in a variety of ways to help in answering questions.		-Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. -Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. -Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. -Report and present findings from enquiries, including conclusions, causal relationships and explanations	

		equipment eg. magnifiers - notice and talk about changes- how/why -answer questions with support, explain why some things occur -record ideas/ findings with support in a range of ways- verbal, pictorial, written - draw conclusions with support based on their own experiences			-Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. -Reporting 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.	of and a degree of trust in results, in oral and written forms such as displays and other presentations. -Use test results to make predictions to set up further comparative and fair tests. -Identify scientific evidence that has been used to support or refute ideas or arguments.	
Cornerstones Love to Investigate opportunities	**Focus Topic – Aut1**		Amazing Me- Animals Including Humans	People and their pets- Animals Including Humans	Magnetic fun and games- Forces and Magnets	This Planet Rocks- Rocks	Illustrating Life Cycles- Living Things and Their Habitats	Special Effects Materials- Properties and Changes of Materials
	Topic Specific Vocabulary	Children will explore creatures, people, plants and objects in their natural environment. They will explore, solve, observe, predict, think, make decisions and talk about the world around them using their	body parts (head, eyes, nose, mouth, ears, neck, shoulder, arms, hands, chest, stomach, hips, legs, feet, elbows, wrists, knees, ankles), **senses** (sight, smell, sound, taste, touch), **offspring**, baby, adult, **grow**, **survival**,	**bird, fish, amphibian, reptiles, mammals, invertebrates, habitat, living things**	**force**, push, pull, **friction, gravity, magnetic, non-magnetic, Newton,** repel, attract, pole, effect, **metal,** iron, steel	**rock,** sandstone, limestone, chalk, granite, slate, brick, tile, concrete, marble, igneous, sedimentary, metamorphic, permeable, non-permeable, **acid, erosion, fossil,** ammonite, sediment, minerals, soil, **micro-organisms**	**reproduction, reproduce, offspring, life cycle,** dissect, **habitat, mammal** (foetus, juvenile, adolescent, adult), **amphibian**, **insect** (egg, larva, nymph, pupa), **bird, plant (petal, pollen**, anther, sepal, pistil,	**solid, liquid, gas**, dissolve, **soluble,** solute, insoluble, **solution**, heterogeneous/ homogeneous **mixture,** colloid, **reversible, irreversible**, change of state, **evaporation,** sieving, filtering, reaction, **oxidation**

		senses; make observations and explain why some things occur and talk about changes.	exercise, food, hygiene, balanced **diet**			**,** organic matter, particles	**stamen**, receptacle, **stigma**, filaments, **stem, ovule, ovary**)	
	Cornerstones Love to Investigate opportunities		How do germs spread?	What is camouflage for?	Can you block magnetism?	How do fossils form?	Why do birds lay eggs?	**Do all solids dissolve?**
	Key Knowledge	Themed activities will be linked termly to topics and children's ongoing interests and presented through stories, non-fiction texts and play-based opportunities. Eg. Using the story 'Jasper's Beanstalk' learn about how plants grow and the conditions to grow. Play-based opportunities in the water tray explore floating and sinking.	-Identify, name and label the basic parts of the human body and say which part is associated with which sense. - Know that animals, including humans, have offspring which grow into adults - Explain that animals need food, water and air for survival - Describe the importance for humans to exercise and eat well.	-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.	-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. -Describe magnets as having two poles. -Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet. Identify	-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 in rock. -Recognise that soils are made from rocks and organic matter.	-Describe the differences in life cycles of a mammal, an amphibian, an insect and a bird. -Describe the life processes of reproduction in some plants and animals.	-Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. -Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. -Demonstrate that dissolving, mixing and changes of state are reversible changes.

		Termly over the year children will look at the seasons, weather and the changing environment over the year.			some magnetic materials. -Predict whether two magnets will attract or repel each other, depending on which poles are facing.			
Cornerstones Love to Investigate opportunities	**Focus Topic – Aut2**		Wild Weather- Seasonal Changes	Weather Art- Seasonal Changes	Fit for Success- Animals Including Humans	Shining the Light- Light	Materials Consultants- Properties and Changes of Materials	Space! Earth and Space
	Topic Specific Vocabulary		**Weather types (rain, storm, snow, thunder, lightning, cloudy, warm, cold) forecast, summer, autumn, winter, spring, seasons, shadow, light,** dark, rainfall, wind direction, temperature	**Weather types (rain, storm, snow, thunder, lightning, cloudy, warm, cold) forecast, summer, autumn, winter, spring, seasons**, wind strength, direction, **sun, light source**	**Herbivore, carnivore, omnivore, nutrition, diet, food chain,** carbohydrates, proteins, fats, dairy, vitamins, minerals, sugar, fibre, **growth,** repair, health, **energy, vertebrate, invertebrate**, bone, skeleton, skull, ribcage, femur, pelvis, muscles, joints, tendons, contract, relax, biceps, triceps, lungs, diaphragm,	**Light source, beam,** darkness, illuminate, **reflect, reflection, concave, convex,** symmetrical, **transparent, translucent, opaque, shadow, block, refraction,** dispersion	**Names of materials** and key properties to describe, **insulator, conductor,** thermal, **transparent, opaque, absorption,** porous/non-porous, hardness, **soluble, magnetic, non-magnetic**	heliocentric, geocentric, spherical, solar system, astrology, star, moon, planet, planet names, **sun**, **Earth,** orbit, **shadow,** axis, day, night, time-zone, eclipse, **light, reflection**, lunar, mass, **gravity,** equinox, solstice, **season,** hemisphere, longitude, latitude

					heart, breathing rate			
Focus Topic – Spr1	**Cornerstones Love to Investigate opportunities**		How big is a raindrop?	How wild is the wind?	What are our joints for?	Why do cat's eyes glow at night?	How do rockets lift off?	How does the Moon move?
	Key Knowledge		-Observe changes across the four seasons. -Observe and describe weather associated with the seasons and how day length varies.	-Observe changes across the four seasons. -Observe and describe weather associated with the seasons and how day length varies.	-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 animals have skeletons and muscles for support, protection and movement.	-Recognise that they need light in order to see things and that dark is in the absence of light. -Notice that light is reflected from surfaces. -Recognise that light from the sun can be dangerous and how to protect 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.	-Compare and group together everyday materials on the basis of their properties including solubility, hardness, conductivity and response to magnets. -Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. -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	-Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. -Describe the movement of the Moon relative to the Earth. -Describe the Sun, Earth and Moon as approximately spherical bodies. -Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.

							burning and the action of acid on bicarbonate of soda).	
Cornerstones Love to Investigate opportunities	**Focus Topic – Spr1**		Brilliant Builders- Uses of everyday materials	Brilliant Builders- Uses of everyday materials	A World of Living Things- Living Things and their Habitats	Habitat Helpers- Living Things and their Habitats	The Human Species- Animals Including Humans	Welcome to Force-Land-Forces
	Topic Specific Vocabulary		**Material, properties,** Properties of materials (rough, smooth, bumpy, flat, sharp, blunt) wood, metal, plastic, glass, **rock, metal, magnetic, non-magnetic, natural, manmade**	**Material, properties, waterproof, absorbent, strong,** weak,	Life processes, movement, **reproduction,** sensitivity, **nutrition,** excretion, respiration, **growth**, **living things, oxygen, energy,** waste products, **senses, environment,** flowering plants, trees, moss, ferns, **vertebrates, invertebrates** (slugs, snails, worms, spiders and **insects) fish, amphibians, birds, mammals, reptiles,** cold/warm blooded	**Environment, habitat,** ecosystem, pollution, climate **change, adaptation,** depend, **survival, natural, manmade, carbon dioxide,** waste, landfill, reuse, recycle, reduce, deforestation, sustainable, endangered, **erosion**	Gestation, **life cycle,** sperm, egg, foetus, development, child, adolescence, adolescent, puberty, teenager, key body parts related to puberty (see vocab list lesson 2) **reproduction,** elderly, **growth, change,** death, blood, blood vessels, arteries, veins, capillaries, heart, pump, **oxygen, carbon dioxide,** circulation, circulatory system	Support, fall, **Earth, gravity**, balancing force, resistance force, weight, **Newtons**, elasticity, **friction**, air resistance,water resistance, upthrust,lever, pulley, **force,** mechanism, gears

Focus Topic – Spr2	**Cornerstones Love to Investigate opportunities**		Can you be a superhero?	Can you make a paper bridge?	N/A- Chdn make a book in this unit	Why does it flood?	How does blood flow?	Why are zip-wires so fast?
	Key Knowledge		-Distinguish between an object and the material from which it is made. -Identify and name a variety of everyday materials including wood, metal, plastic, glass and rock. -Describe the simple properties of a variety of everyday materials. -Identify and compare the suitability of a variety of everyday materials including wood, metal, plastic, glass, rock, brick, paper and cardboard for particular uses.	-Distinguish between an object and the material from which it is made. -Identify and compare the suitability of a variety of everyday materials including wood, metal, plastic, glass, rock, brick, paper and cardboard for particular uses. -Compare and group together a variety of everyday materials on the basis of their simple physical properties.	-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 the local and wider environment.	-Recognise that environments can change and that this can sometimes pose dangers to living things.	-Describe the changes as humans develop to old age. -Identify and name the main parts the main parts of the human circulatory system. -Describe the functions of the heart, blood vessels and blood.	-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.
Cornerstones Love to Investigate opportunities	**Focus Topic – Spr2**		Growing Things- Plants	Art and Nature- Plants	What's the Matter?- States of Matter	Greatly Green Growers- Plants	Theatre Lighting Technicians- Light	The Classification Code- Living Things and Their Habitats
	Topic Specific Vocabulary		**Growth, plant, leaf, weed,**	**Growth, plant, leaf, weed,**	State of matter, **solid, liquid,**	**Growth, light,** air, warmth,	**Light,** source, **shadow, block,**	**classification,** kingdom, class,

			stem, roots, seed, bean, living, germination, dry, wet, moist, **nutrients**	**healthy, living, seed, bean, nutrients,** deciduous, evergreen, **stem,** trunk, bark, **flower,** blossom	**gas,** particles, **natural, manmade, oxygen,** freeze, melt, solidify, vapour, **evaporation,** condensation, water vapour, precipitation, water cycle	seedlings, **roots, stem, leaves, flower, petal,** buds, fruit, **seed,** wilting,	**absorb,** direct/direction, **transparent, opaque, translucent, reflect,** cone, eye, straight, colour, spectrum, rainbow, **reflection,** angle of reflection, **beam,** scatter, distort, **convex, concave, refraction,** focal point	family, **characteristics,** Linnaeus, classification key, organism, **micro-organism**
Focus Topic – Spr2	**Cornerstones Love to Investigate opportunities**		Can seeds grow anywhere?	What's in a bud?	Are all liquids runny? Is custard a liquid?	Why are trees tall?	How does light travel?	How many worms are underground?
	Key Knowledge		-Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. -Observe and describe how seeds and bulbs grow into mature plants. -Find out and describe how plants need water, light and a suitable temperature to	-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.	-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 the temperature in which this happens in degrees Celsius. -Identify the part played by	-Explore the requirements of plants for life and growth and how they vary from plant to plant. -Investigate the way in which water is transported within plants. -Identify and describe the functions of different parts of flowering plants.	-Recognise that light appears to travel in straight lines. -Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. -Explain that we see things because light travels from light sources to our eyes or from light sources to	-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. -Give reasons for classifying plants and animals

			grow and stay healthy.		evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.		objects and then 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.	based on specific characteristics.
Cornerstones Love to Investigate opportunities	**Focus Topic – Sum1**		Wild and Wonderful Creatures- Animals Including Humans	Exploring Changes- Uses of everyday materials	A feast of Flowers, Fruits and Seeds- Plants	The Circle of Life- Animals Including Humans	Electric Art- Electricity	Survival of the Fittest- Evolution and Inheritance
	Topic Specific Vocabulary		**Bird, fish, reptile, amphibian, mammal, invertebrate, carnivore, herbivore, omnivore, survival,** breathing, **habitat**	Water, ice, **melt,** frozen, **materials, properties, absorbency, waterproof, strong,** resist	**Petals, reproduction,** male, female, **stigma,** style, **stamens, seed,** nectar, pollination, fertilisation, **pollen,** attract, transfer, **ovary, ovules, fruit,** pod, **seeds,** dispersal, **germination**	Digestion, digestive system, organ, saliva, oesophagus, stomach, acid, intestines, enzymes, incisors, molars, premolars, canine, enamel, acid, bacteria, tooth decay, **herbivore, carnivore, omnivore, survival, predator,** prey, **food chain,** food web, producer, consumer, **energy**	**Electricity,** electrical circuit, **circuit** symbol, components, **cell, battery,** positive, negative, **connection,** short circuit, **wire, crocodile clip, bulb, switch, buzzer, motor,** voltage, **current, conductor, insulator,** terminal	**offspring, characteristics,** variation, inherit/inheritance, adaptation, evolution, **fossils**
Focus Topic – Sum2	**Cornerstones Love to Investigate opportunities**		Whose poo?	Can you find the treasure?	What are flowers for?	Can worms sense danger?	Can fruit light a bulb?	How do animals stay warm?

	Key Knowledge		-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.	-Find out how the shapes of solid objects can be changed by squashing, bending, twisting and stretching. -Distinguish between an object and the material from which it is made. -Identify and name a variety of everyday materials including wood, metal, plastic, glass and rock. -Describe the simple properties of a variety of everyday materials. -Identify and compare the suitability of a variety of everyday materials including wood, metal, plastic, glass, rock, brick, paper and cardboard for particular uses.	-Identify and describe the functions of different parts of flowering plants. -Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	-Describe the simple functions of the basic parts of the digestive system in humans. -Identify the different types of teeth in humans and their simple functions. -Construct and interpret a variety of food chains, identifying producers, predators and prey.	-Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in a circuit. -Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. -Use recognised symbols when representing a simple circuit in a diagram.	-Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. -Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. -Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

Cornerstones Love to Investigate opportunities	**Focus Topic – Sum2**		Food Chains- Living Things and their Habitats	Habitats and Homes- Living Things and their Habitats	Sounds Spectacular- Sound	Electric Personalities- Electricity	Medical Manoeuvres- Animals Including Humans (Revision topic)	Sensational Science- Properties and Changes of Materials (Revision topic)
	Topic Specific Vocabulary		**Food chain, carnivore, herbivore, omnivore, predator,** dependence, **habitats,** dead, alive, **savannah, rainforest, tundra, ocean,** micro-habitat	Mini-beasts, **habitats,** woodland, seashore, **ocean, rainforest, savannah, tundra, growth, germination**	Music, sounds, noise, vibration, travel, sound waves, sound proof, medium, transmit, detect, decibel, volume, stronger, weaker, pitch, low/high note	**Electricity, cell, battery, circuit, wire, crocodile clip, bulb,** bulb holder, **buzzer, connection,** power, **switch, motor, conductor, insulator, current,** appliance, device	**Diet**, exercise, lifestyle, drugs, addiction, disease, medicine, alcohol, cigarettes, stimulant, depressant, analgesic, hallucinogen	**mixture, solution, reversible, irreversible, acid,** alkaline, **oxidation,** chemical reaction,physical reaction
	Cornerstones Love to Investigate opportunities		Will it degrade?	Where do snails live?	How can we change a sound?	Can you make a circuit from playdough?	What's in blood? What can your heart rate tell you?	Will it erupt?
	Key Knowledge		-Explore and compare the differences between things that are living, dead, and have never been alive. -Describe how animals obtain their food from plants and other animals, using a simple food chain, and identify and	-Identify and name a variety of plants and animals in their habitats, including micro-habitats. -Identify that most living things live in habitats to which they are suited. -Describe how different habitats provide for the basic needs of	-Identify how sounds are made, associating some of them with something vibrating. -Recognise that vibrations from sounds travel through a medium to the ear. -Find patterns between the pitch of a sound	-Identify common appliances that run on electricity. -Construct a simple series electrical circuit, identifying and naming its basic parts. -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	-Recognise the impact of diet, exercise, drugs and lifestyle on the way bodies function. -Describe the ways in which nutrients and water are transported within animals, including humans.	-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.

			name different sources of food. -Identify and name a variety of plants and animals in their habitats, including micro-habitats.	different kinds of animals and plants, and how they depend on each other.	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 source increases.	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. Recognise some common conductors and insulators, and associate metal with being a good conductor.		

Key vocabulary highlighted repeats across units/ year groups to ensure it is being re-visited and consolidated.

Web links/ videos:

- The Hamilton lesson plans include web links to a range of videos.
- Twinkl planning also has lots of video links
- http://www.switchedonkids.org.uk/ Electricity
- https://wowscience.co.uk/teachers/ Suggested web links within each area of Science
- http://www.sciencekids.co.nz/gamesactivities.html A range of games linked to different areas
- https://www.natgeokids.com/uk/ Click on Primary Resources and select Science topic
- https://www.stem.org.uk/
- https://explorify.wellcome.ac.uk/ Short lesson plan ideas
- https://www.whizzpopbang.com/blog/ Suggested experiments here- I have also subscribed to a trial of the magazine. Reading comprehension links too.