Class 2 Year 3-4 two year rolling Science Overview

Science Intent

Science provides the foundation for understanding the world around us. Engaging children's natural curiosity, imagination and excitement; science enables children to explore, learn and make sense of the world they live in. Our creative science curriculum will enable children to gain positive attitudes towards scientific knowledge and investigative processes; to understand both the uses and implications of science today, and in the future.

Age	Year	Autumn	Spring		Summer	
KS2	**A (2021-2022, 2023-2024 etc) Y3/4**	**MATERIAL PROPERTIES & MATERIAL CHANGES** (States of Matter) ▪ compare and group materials together, according to whether they are solids, liquids or gases ▪ observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) ▪ Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature *Properties of solids, liquids, gases, sieving & filtering linked to cleaning dirty water, water & water cycle (evaporation and condensation), investigating evaporation of* ***puddles*** *(wide / air temp).* *Reversible changes from heating and cooling (ice cream, ice, chocolate, butter).* *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).*	**'PLANTS'** (Functions of plant parts and growth) ▪ Identify, locate 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. *Classification, Identification of different plants.* *Functions of different parts – concentrate on root, leaf, stem, petal,* *Relationship between insects and petals with pollination. Link between fruit, seed, seed dispersal and new plant.* *Growing plants and observing throughout the year – factors affecting growth (link with growing areas around school not just in classroom, link with local grower or food supplier.* *Every class does asexual reproduction through growth of own plants.* *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* *Life cycle of a dandelion*	**HEALTH** **'ANIMALS, INCL HUMANS'** (Health & Nutrition) ▪ 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. *Design menus/diets for….* *e.g. LKS2 classes 'Healthy lunch box'* *Eatwell Plate (food groups dairy, starchy foods, meat/fish/beans/eggs, fruits & veg, fatty and sugary foods* *(link with D&T)* *Pupils should continue to learn about the importance of nutrition and should be introduced to the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions.*	**'ANIMALS, INCL HUMANS'** (Skeletons and Movement) ▪ Identify that humans and some other animals have skeletons and muscles for support, protection and movement. *Draw round our bodies – labelling what's going on inside.* *Yr3/4 focus on Skeleton and movement of bodies /what bodies can do link with DIFFERENT TYPES of exercise and how they can exercise different parts/muscles of the body.* *Identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons.*	**LIGHT & ASTRONOMY** **'Y3 LIGHT'** (Shadows and Reflective 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 surfaces. ▪ 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 can change. *Explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them to answer questions about how light behaves. Think about why it is important to protect their eyes from bright lights.* *Look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change.* *Look for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.*

KS2	B (2022-2023, 2024 – 2025 etc) Y3/4	**'ELECTRICITY'** ▪ Identify common appliances that run on electricity. ▪ Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. ▪ Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. ▪ Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp, lights in a simple series circuit. ▪ Recognise some common conductors and insulators, and associate metals with being good conductors. *Construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices. Draw the circuit as a pictorial representation, not necessarily using conventional circuit symbols at this stage;* *Pupils should be taught about precautions for working safely with electricity.* *Observe patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.*	**'FORCES AND MAGNETS'** ▪ Compare how some things move on different surfaces. ▪ Notice that some forces need contact between two objects but magnetic forces can act at a distance. ▪ Observe how magnets attract or repel each other and attract some materials and not others. ▪ Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. ▪ Describe magnets as having two poles *(like and unlike poles).* ▪ Predict whether two magnets will attract or repel each other, depending on which poles are facing. *Observe that magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary (for example, opening a door, pushing a swing). Explore the behaviour and everyday uses of different magnets (for example, bar, ring, button and horseshoe).* *Compare how different things move and group them; raising questions and carrying out tests to find out how far things move on different surfaces and gathering and recording data to find answers their questions; exploring the strengths of different magnets and finding a fair way to compare them; sorting materials into those that are magnetic and those that are not; looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another; identifying how these properties make magnets useful in everyday items and suggesting creative uses for different magnets.*	**ANIMALS, INCL HUMANS'** (Teeth and Digestion) ▪ 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. *Be introduced to the main body parts associated with the digestive system, for example, mouth, tongue, teeth, oesophagus, stomach and small and large intestine and explore questions that help them to understand their special functions.* *Compare the teeth of carnivores and herbivores, and suggest reasons for differences; finding out what damages teeth and how to look after them. Draw and discuss their ideas about the digestive system and compare them with models or images.*	**'ROCKS'** ▪ 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. *Linked with work in geography, pupils should explore different kinds of rocks and soils, including those in the local environment.* *Observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. Research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. Explore different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water. Raise and answer questions about the way soils are formed.*	**'SOUND'** ▪ Identify how sounds are made, associating some of them with something vibrating. ▪ Recognise that vibrations from sounds travel through a medium to the ear. ▪ Find patterns between the volume of a sound and the strength of the vibrations that produced it. ▪ Recognise that sounds get fainter as the distance from the sound source increases. *Make own instruments using the idea that something needs to vibrate to create a sound.* *Explore and identify the way sound is made through vibration in a range of different musical instruments from around the world; and find out how the pitch and volume of sounds can be changed in a variety of ways. Find patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. Make earmuffs from a variety of different materials to investigate which provides the best insulation against sound. Make and play their own instruments by using what they have found out about pitch and volume.*	**'LIVING THINGS & THEIR HABITATS** (biodiversity, classification & care of environments) ▪ 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. ▪ Construct and interpret a variety of food chains, identifying producers, predators and prey. ▪ Recognise that environments can change and that this can sometimes pose dangers to living things. *Use the local environment throughout the year to raise and answer questions that help them to identify and study plants and animals in their habitat. They should identify how the habitat changes throughout the year. Explore possible ways of grouping a wide selection of living things that include animals and flowering plants and non-flowering plants. Begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects.* *Explore examples of human impact on environments.* *Using and making simple guides or keys to explore and identify local plants and animals; making a guide to local living things; raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.*