Burley St. Matthias
C of E Primary School

Science Non-negotiables for each topic Y1-6 (updated December 2023) – **TOPIC ENDPOINTS**

We have identified these non-negotiables for each topic in science – they are the key skills and pieces of knowledge which are required for children to be access and achieve in future topics, and we think of them as the foundations of our science curriculum.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals including humans	*Name and identify animals that are herbivore, carnivore or omnivore. *Name and locate parts of the human body and say what they do. *Name the five senses *Explain how they use each of their senses. ***Links to Sound and Light*** *Name and identify a variety of common animals including fish, amphibians, reptiles, birds and animals. *Describe and compare the structure of a variety of fish, amphibians, reptiles, birds and mammals. Including pets.	*Describe the main stages of at least two different animal life cycles and compare the two (frogs and butterfly), including humans. *Name the three basic needs of all animals to survive (food, water, air). *Describe the effect of exercise. *Name the five food groups (fruit & veg; starchy carbohydrates; non-dairy proteins; dairy; high fat & sugar) and make a balanced diet.	*Name the main parts of the human skeleton (skull, spine, backbone, vertebral column, ribcage, pelvis, clavicle, scapula, humorous, ulna, pelvis, radius, femur, tibia, fibula). *Give a simple explanation of how muscles work. *Discuss why some animals need different diets.	*Identify the parts of the digestive system (large and small intestine, pancreas, stomach, oesophagus, tongue, saliva, teeth). *Match the parts of the digestive system to their functions. *Name the different teeth and what their job is (molar, canine, incisors, pre-molars; milk teeth, adult teeth) . *Know the meaning of a producer, predator and prey.	*Describe the main changes of puberty for boys and girls (voice, body hair, skin, body odour, hormones and emotions, menstruation, wet dreams) ***Links to Living Things and their Habitats*** *Name the stages of human development (foetus, baby, toddler, infant, child, adolescent, adult, elderly) and put them in order.	*Name the three main parts of the circulatory system (heart, lungs, blood vessels). *Describe the job of the heart. *Discuss how heart rate is affected by exercise. *Describe how nutrients and water are transported within animals, including humans.
Plants	*Identify and name roots, stems, leaves, flowers, fruits and seeds. *Classify and sort plants from their observations, grouping them into common wild and garden plants, including deciduous and evergreen trees.	*Observe a seed or a bulb, and know that it will grow into a plant . *Explain that plants need water, light and a suitable temperature to grow and stay healthy.	*Explain the functions of the different parts of plants, including identifying the different parts of a flower. *Know plants need seeds to produce more plants (sexual reproduction). *Explain how water is transported within plants.			
Living things and their habitats		*Say what is different about things that are living, dead or have never been alive. *Draw a simple food chain using arrows for the direction of energy. *Name and describe habitats as the natural home of an animal or plant (woodland, rainforest, sea shore, ocean, urban, local habitat). *Categorise animals and plants by their habitat.		*Sort living things into groups: fish, bird, mammal, amphibian, reptile, vertebrate, invertebrate, etc. *Use a classification key to group, identify and name living things by their characteristics.	*Name and know the function of the reproductive parts of a flowering plant: sepal, filament, anther, stamen, pollen, petal, stigma, style, ovary, carpel, ovule. ***Links to Plants*** *Describe sexual reproduction in mammals: embryo, adolescent, penis, vagina, egg, pregnancy, gestation. ***Links to Animals Including Humans*** *Know that some living things reproduce asexually *Describe and compare the differences in the life cycles of a mammal, an amphibian, an insect and a bird.	*Know that microorganisms exist and can be helpful or harmful, describing them using vocabulary including: bacteria, single-celled, microbes, microscopic, virus, fungi, fungus, mould, antibiotic, yeast, ferment, microscope, decompose. *Be able to categorise living things using the Linnaen System.

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Seasonal changes	*Observe the changes over the 4 seasons: Spring, Summer, Autumn, Winter, including length of day. *Describe the weather during different seasons: sun, rain, snow, sleet, frost, ice, fog, cloud, hot/warm, cold, storm, wind, thunder,					
Evolution and inheritance						*Recognise that living things have changed over time and that fossils provide information about living things that inhibited the Earth millions of years ago. *Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. ***Links to Living Things and Their Habitats***
Materials	*Distinguish between an object and the material it is made from. *Materials can be sorted into different groups according to their observable properties. *Describe and compare the properties of different materials hard, soft, shiny, dull, stretchy, rough, smooth, bendy, not bendy, waterproof, not waterproof, sharp, stiff (those at a higher level should use the vocabulary transparent, opaque, absorbent).	*Demonstrate and explain how shapes of objects made from some materials can be changed by squashing, bending, twisting and stretching. *Understand the different materials are suitable for different uses due to properties including strong, flexible, light, hard-wearing, elastic. *Understand what recycling means and explain the basic process of recycling.	*Name the four different types of matter that soil is composed of (minerals, organic matter, air, water). *Identify rocks as sedimentary, igneous or metamorphic and as permeable, impermeable semi-permeable or durable. *Explain the difference between a bone and a fossil. *Explain, using scientific knowledge how soil is formed from rocks and organic matter.	*Know that materials can be a solid, liquid or gas and know their properties. *Understand that some materials change state when heated or cooled. Know that heating causes melting and evaporation. Know that removing heat causes condensing and solidifying (freezing). *Explain what happens to water at the different stages of the water cycle using the terms: precipitation, evaporation, condensation, water vapour.	*Different properties (including thermal conductor/insulator, magnetism, electrical resistance, transparency) make materials suitable for different uses. *Explain why materials have or have not dissolved in certain conditions. *Select and explain the most suitable processes to separate different mixtures- filtering/ sieving/ evaporating. *Explain an irreversible change (including chemical change and burning) and identify the new materials made in irreversible changes.	
Forces			*Identify the type of force required to carry out an action: push, pull, contact force, non-contact force, friction. *Explain that magnets produce an invisible pulling force. *Identify magnetic types and materials (knowing that not all metals are magnetic), and investigate their strengths. *Identify when magnets will repel or attract based on their poles.		*To understand the force of gravity caused by the Earth's pulls object towards its centre (Newton's role). *To explain how different mechanisms work and design their own mechanism to achieve a given purpose. *To understand some mechanisms allow a smaller force to have a greater effect-water resistance and air resistance.	

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Light			*Know that light comes from a source and that a shadow is formed when the light source is blocked. *Know that we see things because light reflects off them. ***Links to Animals Including Humans Y1***			*Know that light travels in straight lines. *Know that we see things when light (either from or source or reflected off an object) enters our eyes.
Sound				*Know that sounds are made by vibration travelled through a medium to the ear. *Know what pitch and volume are and how they can be altered. ***Links to Animals Including Humans Y1***		
Earth and Space					*Describe the Sun, Earth and Moon as spherical. *Name the planets in the solar system independently. *Explain that day and night is due to rotation of the Earth. *Support the idea that different places on Earth experience night and day at different times with evidence. *Explain how the Moon moves relative to the Earth.	
Electricity				*Construct a simple circuit understanding the elements needed to make it work: cell, component, wire, complete circuit. *Recognise some common conductors and insulators. Use switches in circuits and describe how and why they work.		*Know that when a battery (cell) is connected in a circuit it provides a push (voltage) that causes electrons (current) to flow in a circuit which must be complete. *Know and use the main circuit symbols diagrams (bulb, cell, wire, buzzer, switch, motor, battery). *Know that increase in voltage equals increase in current. *Know that some components can resist current more than others.