St Herbert's C of E Primary and Nursery School

Science Progression of Knowledge

Cycle A

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary.	Explore the natural world around them. Understand the effect of changing seasons on the natural world around them.	Explore the natural world around them. Understand the effect of changing seasons on the natural world around them.	Explore the natural world around them. Understand the effect of changing seasons on the natural world around them.Plant seeds and care for growing plants.	Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things.	Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things.
Reception	To recognise the seasonal changes withintheir environment To recognise different weathers. To identify and sort healthy and unhealthy foods. To know the names of common fruit and vegetables. Explore the natural world around them. Understand the effect of changing seasons on the natural world around them.	To be able to differentiate between nocturnal and diurnal animals. To understand that some things change over time Describe what they see, hear and feel whilst outside.	To identify animals and some of their characteristics. To recognise similarities and differences between the natural world around them and contrasting environments. Recognise some environments that are different from the one in which they live.	To explore plants and their life cycle. To identify changes in living things- growth. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things.	To select appropriate materials according to their properties. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice.	To use appropriate materials for different purposes- floating and sinking, metallic and non metallic objects. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice.
Year 1/2	Describe the materials that a range of objects are made from. Describe simple physical properties of a variety of everyday materials. Compare & group a variety of everyday materials using their physical properties. Observe & describe changes across the four seasons.	Can describe the properties of a range of everyday materials. The uses (application) of a variety of everyday materials. There are three states of matter. Know the properties of solids, liquids and gases. The shape of solid objects can be changed by squashing, bending,	Identify, name, describe features of and compare common vertebrates. Identify & name common carnivores, herbivores & omnivores. Identify, name, draw & label basic human body part. Know the five senses and link these to human body parts. Observe & describe	Animals (including humans) have offspring which grow into adults. Compare to other animal life cycles. Animals need water, food and air (oxygen) to survive. It is important to exercise, eat the right amounts of different types of food and to keep ourselves clean (hygiene). Observe &	Identify & describe the basic structure of flowering plants. Identify, name & observe a variety of common plants (garden/wild/veg plants, trees) growing in their habitat. Identify deciduous & evergreen trees. Observe & describe changes across the four seasons.	Know and describe the stages as seeds (& bulbs) grow into mature plants (life cycle of a flowering plant). Know that plants need water, light and a suitable temperature to grow and stay healthy. Observe & describe changes across the four seasons.

	Observe, describe, measure & record weather across the four seasons. Observe the sun moving across the sky. Describe changes in day-length across the seasons	twisting and stretching. Observe & describe changes across the four seasons. Observe, describe, measure & record weather across the four seasons. Observe the sun moving across the sky. Describe changes in day-length across the seasons	changes across the four seasons. Observe, describe, measure & record weather across the four seasons. Observe the sun moving across the sky. Describe changes in day-length across the seasons	describe changes across the four seasons. Observe, describe, measure & record weather across the four seasons. Observe the sun moving across the sky. Describe changes in day-length across the seasons	Observe, describe, measure & record weather across the four seasons. Observe the sun moving across the sky. Describe changes in day-length across the seasons	Observe, describe, measure & record weather across the four seasons. Observe the sun moving across the sky. Describe changes in day-length across the seasons
Year 3/4	Animals (including humans) need the right types and amounts of food (nutrition). Unlike plants, animals can't make their own food – they need to transfer energy in through food. Humans (and some other animals) have skeletons and muscles for support, protection and movement	Identify & describe different kinds of rocks using appearance and physical properties. Sedimentary rock is laid down in layers in lakes, seas and deserts. Metamorphic rock is formed deep within the earth. Igneous rock is formed when volcanoes erupt. Rocks have lots of uses in our everyday lives. Fossils are formed when things that have lived are trapped within rock over millions of years. Soils are made from rocks and organic matter.	Identify & describe the functions of parts of flowering plants (roots, stem, leaves, etc) and the flower in detail. Plants need air, light, water, nutrients from soil, and room to grow to survive and grow well. Water is moved within plants from the roots to the leaves through tubes called xylem vessels. Flowers support reproduction through pollination, seed formation and seed dispersal (link to the life cycle).		Be able to describe a force using a Force Arrow Model. Some forces need contact (contact forces) between two objects and some forces act at a distance (non-contact forces). Magnets attract or repel each other. Magnets have two poles. Materials can be grouped together based upon whether they are attracted to a magnet (magnetic) or not	We need light to see things. Dark is the absence of light. There are natural and artificial sources of light energy Light from the sun can be dangerous. We protect our eyes Light can be reflected from surfaces (reflected light energy) Shadows are formed when light energy is blocked by an object (shadow = absence of transmitted light energy) Know how to change the size of a shadow.
Year 5/6	Opposing forces can be in balance or unbalanced. Unsupported objects fall towards earth because of gravity force acting between earth and the falling object. Air resistance force (gas) water resistance force (liquid) and friction force (solid) act between moving surfaces. Levers, pulleys and gears allow a smaller force to have a	Light travels in straight lines from a light source (Energy Transfer Model) directly, reflects, goes through a material or is absorbed Light travels in straight lines from a light source directly into the eye (represent this using a light ray diagram) Light travels in straight lines from a light source to an object (reflected) into the eye (represent using a light ray diagram)	Compare and Group materials based on their properties. Give reasons (from evidence) for uses of these materials. A mixture is made up of 2 or more substances (particles mix). A solute (solid) dissolves in a solvent (liquid) to form a solution. A solution and other mixtures can be separated through evaporating, filtering, sieving and chromatography. Dissolving, mixing and changes in state are reversible changes Some changes form new materials (compounds) through chemical reactions. These are irreversible reactions.		Describe similarity/differences in the life cycles of mammals, amphibians, birds and insects. Compare & contrast. Research life cycles of plants, invertebrates & vertebrates within local habitats. Be able identify & describe changes over time. Describe the life process of reproduction in plants & animals. Sexual & asexual.	Order and compare the stages in the human life cycle Understand and describe the changes as humans develop to old age Describe the changes experienced in puberty. Understand why puberty happens. Compare gestation time in animals

	greater effect (force multipliers).	Know the angle of incidence is equal to the angle of reflection Explain the size and shape of a shadow knowing that light travels in straight lines (represent using a light ray diagram)			

Cycle B

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Year 1/2	Describe the materials that a range of objects are made from. Describe simple physical properties of a variety of everyday materials.	Can describe the properties of a range of everyday materials. The uses (application) of a variety of everyday materials.	Identify, name, describe features of and compare common vertebrates. Identify & name common carnivores, herbivores & omnivores.	Animals (including humans) have offspring which grow into adults. Compare to other animal life cycles.	Identify & describe the basic structure of flowering plants. Identify, name & observe a variety of common plants (garden/wild/veg plants,	Know and describe the stages as seeds (& bulbs) grow into mature plants (life cycle of a flowering plant). Know that plants need water, light and a suitable

	Compare & group a variety of everyday materials using their physical properties. Observe & describe changes across the four seasons. Observe, describe, measure & record weather across the four seasons. Observe the sun moving across the sky. Describe changes in day-length across the seasons	There are three states of matter. Know the properties of solids, liquids and gases. The shape of solid objects can be changed by squashing, bending, twisting and stretching. Observe & describe changes across the four seasons. Observe, describe, measure & record weather across the four seasons. Observe the sun moving across the sky. Describe changes in day-length across the seasons	Identify, name, draw & label basic human body part. Know the five senses and link these to human body parts. Observe & describe changes across the four seasons. Observe, describe, measure & record weather across the four seasons. Observe the sun moving across the sky. Describe changes in day-length across the seasons	Animals need water, food and air (oxygen) to survive. It is important to exercise, eat the right amounts of different types of food and to keep ourselves clean (hygiene). Observe & describe changes across the four seasons. Observe, describe, measure & record weather across the four seasons. Observe the sun moving across the sky. Describe changes in day-length across the seasons	trees) growing in their habitat. Identify deciduous & evergreen trees. Observe & describe changes across the four seasons. Observe, describe, measure & record weather across the four seasons. Observe the sun moving across the sky. Describe changes in day-length across the seasons	temperature to grow and stay healthy. Observe & describe changes across the four seasons. Observe, describe, measure & record weather across the four seasons. Observe the sun moving across the sky. Describe changes in day-length across the seasons
Year 3/4	Identify how sounds are made (sound energy, vibrations) Sound energy/vibrations travel from a source, through a medium (solid, liquid or gas), to your ear. The volume of a sound is linked to the strength of vibrations (sound energy) that produces it. The distance away from the source affects the volume of sound. The pitch of a sound is linked to the frequency of vibrations (sound energy) that produces it.	Recognise common appliances that run on electricity. Construct a range of simple closed series circuits. Draw these circuits with correct component symbols (named). Recognise and solve 'errors' in circuits to make them work. A switch opens and closes a circuit. Conductors allow electrical (energy) to pass through them. Insulators do not allow electrical (energy) to pass through.	Know the basic functions of parts of the digestive system in humans. Identify different types of teeth and describe their functions. Construct and interpret food chains. Identify producers (of energy), consumers (of energy), predators & prey.		Groups materials as solids, liquids or gases. Know the features (criteria) that make them different. Can describe, using the particle model, how substances change from a gas, into a liquid, then into a solid (and back again) as they are heated or cooled. Temperature (°C) affects the speed (rate) of evaporation. Describe the water cycle (evaporation and condensation).	Living things can be grouped in a variety of ways. Use classification keys to group, identify and name living things in local habitats. Know how to randomly sample a habitat for species diversity (biodiversity). Measure species richness & abundance. Environments can change and this can pose dangers to living things. Conservation acts to save species and restore habitats. Learn how to change a habitat to encourage biodiversity.
Year 5/6	Confidently draw a range of series circuits using symbols. Link the brightness of a bulb / volume of a buzzer to the number & Voltage	Living things can produce identical offspring (asexual) but sexual reproduction results in offspring that, although share inherited features, may vary (not identical)	Name the main parts of the human circulatory system. Describe the functions of the heart (structure), blood vessels (artery, vein & capillaries) & blood (components) Understand & describe the double circulatory system of humans to describe the way water, nutrients & oxygen are transported in animals.		Living things are classified into broad groups according to observable features (binomial naming system). Reasons for classifying.	The sun, planets and moon(s) are spherical bodies. Can describe the development of a heliocentric model of the solar system.

	of cells used in the battery. Measure Voltage. Explain changes in brightness / volume using the Energy Transfer Model (link to Voltage). Explain the action of a switch. Begin to explain component 'failure' by resistance to electrical flow (energy transfer out of the circuit as heat energy). Begin to describe electrical flow as Current.	from their parents. Know some inherited features. This variation means that some individuals will have features better suited to a changing environment. These better features will be selected for by nature, and so, individuals that have them are more likely to survive. Natural selection is the process where species adapt to their environment. It is the engine that drives evolution. Know how some species are adapted. Fossil evidence shows how living things have changed over time.	Know the impact of diet, exercise, drugs & lifestyle on the way our bodies function.	There are five Kingdoms of living things. Know the binomial naming System. Can use & construct classification Keys. Know how to sample a habitat for species diversity (biodiversity). Measure species richness, abundance & evenness. Measure abiotic factors over time. Manage/plan change to encourage biodiversity. Micro-organisms include bacteria and fungi.	Know the order of planets in our solar system. Can describe how planets rotate and orbit the sun. The Earth and other planets orbit the sun in the Solar System. Day and night are caused by the Earth's rotation (sun appears to move across the sky). The moon orbits the Earth. Know the phases of the moon.