Park and Parkwall Federation Progression in Science

EYFS	Materials & Properties	Living Things
	Teaching texts: Stanley's Stick Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. - Explore and talk about different forces they can feel - Talk about the difference between materials and changes they notice. - Describe what they see, hear and feel whilst outside. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. - Explore and talk about different forces they can feel - Talk about the difference between materials and changes they notice. - Describe what they see, hear and feel whilst outside.	**Teaching text: Yucky worms/Farmer duck/ Were going on a bear hunt** **Nature and animals** ELG: The Natural World Children at the expected level of development will: - Explore the natural world around them, making observations and drawing pictures of animals and plants; - Plant seeds and care for growing plants - Understand 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. Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class; - Explore the natural world around them.
EYFS	Vocabulary – understanding the world. natural, materials, bark, leaves, seeds, rocks, shells, pebbles, flowers, herbs stretch, pull, elastic, magnets, attraction, cooling, heating, sink, float, growth, decay, observe, explore, life-cycle, animals magnifying glass, investigation, see, hear, feel, hear, smell, ingredients, shadow Seasons, Spring, Summer, Winter, Autumn, leaves, conkers, pine cones.	
Y1	**Materials & Properties (Term 2)**	**Living Things (Term 4)**	**Living Things (Term 6)**
	What are things made from?	What is alive?	Do living things change or stay the same?
	EVERYDAY MATERIALS • distinguish between an object and the material from which it is made	**LIVING THINGS & THEIR HABITATS** • explore & compare differences between things that are living, dead, never been alive.	**LIVING THINGS & THEIR HABITATS** • identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds

	• identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • describe the simple physical properties of a variety of everyday materials • compare and group together a variety of everyday materials on the basis of their simple physical properties.	• explore & compare differences between things that are living, dead, never been alive • identify & name a variety of plants & animals in their habitats & micro-habitats **ANIMALS INCLUDING HUMANS** • 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 (fish, amphibians, reptiles, birds and mammals, including pets) • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	of animals and plants & how they depend on each other. • identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants & how they depend on each other • describe how animals obtain their food from plants & other animals, using the idea of a simple food chain, & identify and name different sources of food. **PLANTS** • 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.
	Vocabulary (basic specific sophisticated) wood, plastic, glass, paper, water, metal, rock, hard, soft, bendy, rough, smooth, dull, absorbent, brittle, waterproof Leaf, root, flower, seed, branch, petal, fruit, vegetable, tree, plant, bud, blossom, stem, bulb, trunk, garden plant, wild plant, deciduous, evergreen	Vocabulary (basic specific sophisticated) animals fish birds sort pet desert farm forest reptiles mammals diet carnivores herbivores omnivores classify climate	Vocabulary (basic specific sophisticated) fish, birds, pets, animals, smell, touch, reptiles, mammals, habitat, environment, diet, taste, vision, hearing amphibians, canivores, herbivores, ominvores Leaf, root, flower, seed, branch, petal, fruit, vegetable, tree, plant, bud, blossom, stem, bulb, trunk, garden plant, wild plant, deciduous, evergreen
	<u>Cultural Capital</u> Themed day with family invited in. Science assembly 'Mad Science'	<u>Cultural capital</u> Science workshops; Babcock, Mad Science, We the curious (year group or key stage specific). Grimsbury community farm visit	<u>Cultural Capital</u> Science workshops; Babcock, Mad Science
	SEASONAL CHANGES (All year) 'Out and about' book of poems on seasons (Power of Reading) • observe changes across the four seasons		

	• observe and describe weather associated with the seasons and how day length varies Working scientifically. • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions.

Y2	**Materials & Properties (Term 2)**	**Living Things (Term 4)**	**Living Things (Term 6)**
	How do we choose materials?	What do living things need to survive?	How can living things stay healthy?
	EVERYDAY MATERIALS • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	**LIVING THINGS & THEIR HABITATS** • explore & compare differences between things that are living, dead, never been alive • identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants & how they depend on each other • identify & name a variety of plants & animals in their habitats & micro-habitats • describe how animals obtain their food from plants & other animals, using the idea of a simple food chain, & identify and name different sources of food.	**PLANTS** • observe and describe how seeds and bulbs grow into mature plants • find out & describe how plants need water, light & a suitable temperature to grow & stay healthy. **ANIMALS (INCLUDING HUMANS)** • notice that animals & humans, have offspring which grow into adults • find out about & describe basic needs of animals &humans, for survival (water, food & air) • describe the importance for humans of exercise, eating the right amounts of different types of food & hygiene.
	Vocabulary (basic specific sophisticated) hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy, brick, fabric, elastic, foil, squashing, bending, twisting, stretching waterproof, absorbent, opaque, transparent, translucent, resistant	Vocabulary (basic specific sophisticated) food chain animal plant living alive grow dead damp movement herbivores omnivores classify climate features habitat microhabitat savannah tundra respiration sensitivity growth	Vocabulary (basic specific sophisticated) Leaf, leaves, root, bud, flower, blossom, petal, stem, trunk, branches, fruit vegetables, water, light, bulb, seed, tree, plant, growth, healthy wild plants, garden plants, suitable, temperature, deciduous, evergreen, germination, reproduction

		reproduction excretion nutrition predator adapted dependence classification	grow, adult, water, food, air, exercise, baby, child hygiene, toddler, teenager, nutrition, reproduce
	<u>Cultural Capital</u> Themed day with family invited in. Science assembly 'Mad Science'	<u>Cultural Capital</u> Science workshops; Babcock, Mad Science, We the curious (year group or key stage specific). UWE/UoB Student/professor seminars Pond dipping with local wildlife group	<u>Cultural Capital</u> Science workshops; Babcock, Mad Science, We the curious (year group or key stage specific). UWE/UoB Student/professor seminars
	SEASONAL CHANGES (All year) 'Tree – seasons coms and seasons go' book on seasons • observe changes across the four seasons • observe and describe weather associated with the seasons and how day length varies Working Scientifically • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions.		

Y3	**Materials & Properties (Term 2)**	**Living Things (Term 4)**	**Physics (Term 6)**
	Are all rocks the same?	Can living things live forever?	What is magnetic force? What is the dark?
	ROCKS AND SOILS • 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	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 • investigate the way in which water is transported within plants	**FORCES & MAGNETS** • 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 & attract some materials & not others

	• recognise that soils are made from rocks and organic matter.	• explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. **ANIMALS (INCLUDING HUMANS)** • 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 other animals have skeletons and muscles for support, protection and movement.	• 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 • predict whether two magnets will attract or repel each other **LIGHT** • recognise that they need light in order to see things & 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 change.
	Vocabulary (basic specific sophisticated) Rock, lava, volcano, soil, crumbly, absorbent, fossils, sandstone, granite, marble, pumice, crystals, igneous, Metamorphic sedimentary, permeable impermeable	Vocabulary (basic specific sophisticated) Roots, stem, trunk, leaves, flowers, air, light, water, soil, seed, grow, life cycle, flowering, nutrition, reproduction, nutrients, structure, fertiliser, pollination, dispersal Water, skeleton, bones, relax, muscles, nutrition, nutrients, carbohydrates, proties, fates, fibre, vitamins, joints, ball joint, sockey joint, hinge joint, gliding joint, endoskeleton, exoskeleton, hydrostatic, vertebrate, invertebrate	Vocabulary (basic specific sophisticated) force push pull north south friction surface magnet magnetic attract repel magnetic poles magnetic field repulsion
	<u>Cultural Capital</u> Research project/ learning opportunity based on the work of **Mary Anning** Science assembly 'Mad Science'	<u>Cultural capital</u> Science workshops; Babcock, Mad Science, We the curious (year group or key stage specific).	<u>Cultural Capital</u> UWE/UoB student workshop Research project: Benjamin Franklin
	Working Scientifically • asking relevant questions and using different types of scientific enquiries to answer them		

	• setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording 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 • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.

Y4	**Materials & Properties (Term 2)**	**Living Things (Term 4)**	**Physics (Term 6)**
	What are states of matter?	Are living things in danger?	How do we hear different sounds? Can we control electricity?
	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.	**LIVING THINGS & THEIR HABITATS** • 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 • recognise that environments can change and that this can sometimes pose dangers to living things. **ANIMALS (INCLUDING HUMANS)** • 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.	**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 pitch of a sound 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 sound source increases **ELECTRCITY** • 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 & closes a circuit, 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.
	Vocabulary (basic specific sophisticated) freezing, heating, melt boil, cool, temperature, degrees, thermometer, solid, liquid, gas, evaporation, condensation, particles, temperature, volume, dissolve, permanent, reversible, irreversible, precipitation, sublimation	Vocabulary (basic specific sophisticated) classification movement respiration sensitivity growth reproduction excretion nutrition criteria producers predators prey classify vertebrates invertebrates extinct endangered Mouth, tongue, water, brush, digestion, saliva, transports, stomach, acid, small intestine, vitamins, large intestine, incisor, canine, molar, floss, producer, prey, predator, herbivore, carnivore, omnivore, oesophagus, enzymes	Vocabulary (basic specific sophisticated) ear vibration sound wave volume eardrum pitch particles distance soundproof absorb vacuum amplitude electricity generate produce conductor insulator power wires sockets current renewable non-renewable appliances battery hydroelectric fossil fuel electrons
	<u>Cultural Capital</u> Research project/ learning opportunity based on the work of **Daniel Fahrenheit**	<u>Cultural Capital</u> Babcock Science workshop Avonmouth windfarm visit/visitor	<u>Cultural Capital</u> Trip to 'We the curious' Orchestra theatre trip
	Working Scientifically • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic & careful observations, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording 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 • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.		

Y5	Materials & Properties (Term 2)	Living Things (Term 4)	Physics (Term 6)
	Can we change materials?	Do all lifecycles look the same?	How do things move on Earth, the moon and space?
	PROPERTIES & CHANGES OF MATERIALS • compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets • 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 • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • demonstrate that dissolving, mixing and changes of state are reversible changes • 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.	**LIVING THINGS AND THEIR HABITATS** • describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • describe the life process of reproduction in some plants and animals. **ANIMALS (INCLUDING HUMANS)** • describe the changes as humans develop to old age. • identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • describe the ways in which nutrients and water are transported within animals, including humans.	**EARTH & SPACE** • 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. Living Things & Their Habitats • describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • describe the life process of reproduction in some plants and animals. **FORCES** • 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.
	Vocabulary (basic specific sophisticated) hardness, flexibility, transparency, conductivity, magnetic, evaporation, dissolving, mixing, filtering,	Vocabulary (basic specific sophisticated) mammal, amphibian, insect, bird adulthood, male, female, fertilisation pollinated/pollination reproduction puberty	Vocabulary (basic specific sophisticated) sun moon star planet sphere spherical bodies satellite orbit celestial bodies Earth Mercury Venus Mars Jupiter Saturn Neptune Uranus Pluto dwarf planet axis

	irreversible, permeable, impermeable, porous, malleable, solubility	adolescence cell embryo stamen, filament, anther, carpel, stigma, style, ovary life cycle, growth, baby, toddler, child, teenager, adult, old age, puberty, reproduce, foetus, life expectancy, adolescence, adulthood, early/ middle/ late adulthood, childhood gestation, fertilisation,	rotate geocentric model heliocentric model astronomer magnetic field repulsion gravitational pull weight mass friction air resistance water resistance buoyancy streamlined mechanism
	<u>Cultural Capital</u> Research project/ learning opportunity based on the work of **Sir William Ramsay**	<u>Cultural Capital</u> Babcock/Mad Science	<u>Cultural Capital</u> Workshop in school – space dome Sir Isaac Newton project Clifton observatory visit/visitor
	Working Scientifically • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting 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 • identifying scientific evidence that has been used to support or refute ideas or arguments.		

Y6	**Physics (Term 2)**	**Living Things (Term 4)**	**Revision**
	How do we light up our world?	How do living things change over time and place?	
	LIGHT • 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 objects and then to our eyes	**EVOLUTION & INHERITANCE** • 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	Revision of previous work

	• use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. **ELECTRICITY** • associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the 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	• identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. **LIVING THINGS & THEIR HABITATS** • 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 based on specific characteristics.	
	Vocabulary (basic specific sophisticated) circuit symbol cell battery reflect diagram current amps voltage opaque transparent switch indicator electrons translucent resistance component element	Vocabulary (basic specific sophisticated) offspring habitat environment adaption inheritance variations characteristics evolution natural selection fossil adaptive traits inherited traits genetics Heart, lungs, brain, muscle, blood, diet, exercise, lifestyle, water, damage ecosystem adaption harmful effects classify characteristics species blood vessels, liver, kidney, skeleton, muscular, digest, digestion, digestive, impact, drugs, substances, alcohol, nutrients, amphibians vertebrates invertebrates structure microorganisms arachnids annelids echinoderms Linnaean domain phylum kingdom circulatory system, skeletal	
	<u>Cultural Capital</u> Thomas Edison research project	<u>Cultural Capital</u> Natural History Museum visit Research project into Carl Linnaeus	
	Working Scientifically • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs		

	• using test results to make predictions to set up further comparative and fair tests • reporting and presenting 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 • identifying scientific evidence that has been used to support or refute ideas or arguments.