Science Knowledge Coverage

	Understanding the world					
YR	• Learn about their senses (Humans-Nursery) • Learn about how to take care of themselves • Describe people who are familiar to them through self-portraits (Humans-Reception) • Eco Week- Oceans: Name and describe animals that live in different habitats. Explore a range of materials, including natural materials (plastics) (Materials-Reception)	• Explore how to change how things work (boat testing- adding blocks to make it sink) (Forces-Reception) • Explore how the wind can move objects (Windmills-Forces-Reception) • Explore how objects move in water through boat making. (Forces-Reception) • Make objects from different materials, including natural materials- making trains junk modelling and bridges (Materials- Reception) • Learn about the Solar System and stars. Learn about space travel (Space-Reception) • Learn about the life cycles of animals, Rosie's walk-hen (Nursery-animals, excluding humans).	• Learn about the Solar System and stars (Reception-Space) How to catch a star by Oliver Jeffers. • Compare adult animals to their babies (Nursery- Animals, excluding humans) Owl babies • Nocturnal animals • Learn about how to take care of themselves (night time routines, brushing teeth etc.) (Reception- Humans • To explore light and dark using torches to make and draw shadows at different angles (Nursery and Reception- light)	• Explore a range of materials, including natural materials (Reception- material) • Make objects from different materials, including natural materials (Reception-material) • Grow plants, jack and the beanstalk (Nursery- plants)- have a variety • UTW - Make Gingerbread men and investigate the effects of different liquids on them. Cook for different amounts of time- what happens? Observe changes. Observe, measure and record how materials change when heated and cooled. (Materials including changing materials-Reception)	• Food groups- looking at fruits and vegetables, using senses (Humans- Nursery) • UW - Life cycle of a caterpillars, plants, chicks. PSED-caring for caterpillars/butterflies. Learn about the life cycles of animals. Compare adult animals to their babies. Observe how baby animals change over time (Animals-Nursery). • Explore the animals in the surrounding natural environment- minibeasts (Animals-reception)-Superworm	• Floating and sinking- Explore how objects move in water (Forces- Reception) • Seasons – Summer Play and explore outside in all seasons and in different weather. Observe living things throughout the year (Reception-seasonal changes) • Taking care of our oceans • Construction with moving parts • The drop goes plop- explore sound (Reception- Listen to sounds outside and identify the source. Make sounds) • Make ice lollies- Compare how materials change over time and in different conditions (Materials including changing materials-Reception) • Rainbow fish, commotion in the ocean. Explore plants and animals in a contrasting natural environment (Reception-living things and their environment)
Y1	**Autumn term**		**Spring term**		**Summer Term**	
	Animals including humans: • Identify and name a variety of common animals that are birds, fish, amphibians, reptiles 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 (birds, fish, amphibians, reptiles and mammals, and including pets). • Identify, name draw and label the basic parts of the human body and say ~~which parts of the body is associated with each sense.~~ ***Key Scientist:*** *Daphne Sheldrik*	**Everyday materials (to be continued in the spring term):** • Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, 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 physical properties. ***Key Scientist:*** *Charles Macintosh*	**Everyday Materials (continued from the autumn term):** • Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, 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 physical properties. ***Focus Scientist:*** *Charles Macintosh*	• Identify, name draw and label the basic parts of the human body and say which parts of the body is associated with each sense. ***Key Scientist:*** *Daphne Sheldrik* • Identify and name a variety of common animals that are carnivores, herbivores and omnivores.	**Plants** • Identify and name a variety of common plants, including garden plants, wild plants and trees, and those classified as deciduous and evergreen • Identify and describe the basic structure of a variety of common plants including roots, stem/trunk, leaves and flowers. ***Key scientist:*** *Beatrix Potter*	**Seasonal Change** • Observe changes across the four seasons • Observe and describe weather associated with the seasons and how day length varies. ***Focus Scientist:*** *weather reporters*
	Ongoing throughout the year: Looking at Living things and their habitats; Animals including humans; Seasonal Change and Plants (once per halt term – outdoor learning – comparison) Looking at and naming plants in St Luke's/ local area; naming vertebrates (squirrels, birds) – not insects and minibeasts! Should be going out once a week Other visits: Holland Park/ Chelsea Physic Garden					

Y2	Autumn term		Spring term		Summer term	
	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. ***Key Scientist:*** *John Dunlop*	**Living things and their habitats (to be continued in the spring term):** • Explore and compare the differences between things that are living, dead, and things that have 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, and how they depend on each other. • Identify and name a variety of plants and animals in their habitats, including micro-habitats • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. ***Key Scientist:*** *Roger Payne*	**Living things and their habitats (continued from the autumn term):** • Explore and compare the differences between things that are living, dead, and things that have 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, and how they depend on each other. • Identify and name a variety of plants and animals in their habitats, including micro-habitats • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. ***Focus scientist:*** *Isabella Bird*	• **Animals including humans:** • Notice that animals, including humans, have offspring which grow into adults • Describe the basic needs of animals, including humans, for survival (water, food and air) • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. ***Focus Scientist:*** *Roger Payne*	**Plants** • 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 grow and stay healthy. ***Key scientist:*** *Joseph Banks*	
	Ongoing throughout the year: Looking at Living things and their habitats and Plants (once per halt term – outdoor learning – comparison) Looking at and naming plants in St Luke's/ local area; planting things (roof garden?) Living tings – naming invertebrates (minibeasts, insects)					

Y3	Autumn term		Spring term		Summer term	
	Forces and 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 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 • Predict whether two magnets will attract or repel each other, depending on which poles are facing. ***Key Scientist:*** *William Gilbert*	**Light (to be continued in the spring term):** • 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 light is blocked by a solid object • Find patterns in the way that the sizes of shadows change. ***Key Scientist:*** *Euclid, Ibn Sahl, Roger Bacon, Isaac Newton*	**Light (continued from the autumn term):** • 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 light is blocked by an opaque object • Find patterns in the way that the sizes of shadows change ***Key Scientist:*** *Euclid, Ibn Sahl, Roger Bacon, Isaac Newton*	**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. ***Focus Scientist:*** *Henry De La Bethe*	**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 animals have skeletons and muscles for support, protection and movement. ***Focus Scientist:*** *Steve Irwin*	**Plants** • Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal • Identify and describe the functions of different parts of plants; roots, stem, 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 ways in which water is transported within plants. ***Focus Scientist:*** *Jeanne Baret*
	Ongoing throughout the year: Looking at Plants (once per halt term – outdoor learning – comparison) • Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal **(Looking at plants and how they change throughout the year – stages of life cycle)**					

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<tr><th>Y4</th><th colspan="2">Autumn term</th><th colspan="2">Spring term</th><th colspan="2">Summer term</th></tr>
<tr><td></td><td>State 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.
Key Scientists: Daniel Gabriel Fahrenheit and Anders Celsius</td><td>Sound:
Identify how sounds are made, associating some of them with something vibrating
Recognise that vibrations from a sound 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.
Key Scientist: Robert Boyle</td><td>Electricity (continued Summer Term):
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
Key scientist: Benjamin Franklin</td><td>Living things and 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
Key scientist: Jane Goodhall

WEATHER BETTER THIS TIME OF YEAR!</td><td>Electricity (continued from the Spring Term):
• 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
Key scientist: Benjamin Franklin</td><td>Animals including humans
• Describe the simple functions of the basic parts of the digestive system in humans
Key Scientist: Eugenie Clark</td></tr>
<tr><td></td><td colspan="5">Ongoing throughout the year: Looking at habitats (once per halt term – outdoor learning – comparison)
Living things and 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</td></tr>
<tr><th>Y5</th><th colspan="2">Autumn term</th><th colspan="2">Spring term</th><th colspan="2">Summer term</th></tr>
<tr><td></td><td>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.
Key Scientist: David Attenborough</td><td>Properties and 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
Understand 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.
Key Scientist: Ruth Benerito</td><td>Earth and 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
Key scientist: Nicholaus Copernicus</td><td>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.
Key scientist: Ameila Earhart</td><td>Animals including humans:
Describe the changes as humans develop from birth to old age.
Key scientists: paediatricians</td><td></td></tr>
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Y6	Autumn term		Spring term		Summer term	
	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 ***Key Scientist:*** *Michael Faraday*	**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 • Explore the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them ***Key Scientist:*** *Isaac Newton*	**Animals including humans:** • Identify and name the main parts of the human circulatory system, and explain 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. *Key scientist: Dr Taussig*	**Living things and 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 ***Key scientist:*** *Carl Linnaeus*	**Evolution and 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 • identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution ***Key scientist:*** *Charles Darwin*	