Science Year B Learning Overview

EYFS	*We want our children to develop a greater understanding of the world around them*
Nursery	**Key vocabulary:** Change, grow, life cycle, ocean, desert, jungle, camouflage, plant, tree, seed, leaf, stem, roots, petals, seed, spring, summer, autumn, winter, season, weather, frosty, sunny, foggy, stormy, rainy, windy, cloud, ice, snow, sink, float, strong, weak, bendy, hard, soft, material, fabric, plastic, wood, push, pull, slide, magnetic.
	Key learning points: ● Talk about animals and their habitats. ● Talk about how to care for animals. ● Name and talk about the life cycles of some animals. ● Name and talk about the different parts of plants. ● Understand that we grow. ● Plant seeds and care for living plants. ● Explore and talk about different weathers and seasons, ● Explore and create with natural materials. ● Explore different forces including, floating, sinking and magnetic.
Reception	**Key vocabulary:** Change, grow, die, life cycle, nocturnal, hibernate,Environment, habitat, polar regions, ocean, desert, jungle, camouflage,Plant, tree, bush, seed, leaf, stem, roots Spring, summer, autumn, winter, seasons weather, cloud, rainbow, ice, melt, freeze, frost solid, liquid, waterproof, sink, float, strong, weak, bendy, hard, soft, material, fabric, plastic, wood light, dark, shadows, see through, shade,sight, hearing, smell, touch, taste
	Key learning points: ● Talk about and compare animals and their habitats and know how to care for animals ● Understand and talk about the life cycles of some animals ● Name and describe different plants and their features ● Understand that what we grow from seeds is important for us and the world ● Explore and talk about different weathers and seasons ● Explore and create with natural materials

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- Observe and compare how materials change over time
- Understand, explore and create shadows

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<tr><td>KS1</td><td colspan="2"><u>How does the weather change with each season?</u>
Ongoing throughout the year</td></tr>
<tr><td></td><td colspan="2"><u>Prior Vocabulary:</u> Environment, life cycle, habitat, plant, tree, bush, seed, leaf, stem, roots, spring, summer, autumn, winter, seasons, weather, cloud, rainbow, ice, melt, freeze, frost

<u>Key vocabulary:</u> Seasons; spring, summer, autumn, winter Year, months, days Hot, warm, mild, cold Sunny Cloudy Rain, sleet, snow, hail, thunder, lightning, rainbow Wet, damp, dry Windy, breezy, gust Temperature Degrees Celsius Thermometer Weather vane</td></tr>
<tr><td></td><td colspan="2"><u>Enquiry questions (sequenced):</u>

- What is the weather like today? [Observe & Describe]
- How is it different from yesterday/last week/last month? [Compare]
- How much sunshine have we had today? [Observe and Count]
- How is it different from yesterday/last week/last month?? [Compare]

</td></tr>
<tr><td></td><td><u>By the end of this unit, pupils will know (substantive knowledge)</u>
That different weather is associated with different seasons.
That there are changes across the four seasons.
That the day length varies across the four seasons</td><td><u>By the end of this unit, pupils will be able to (procedural and disciplinary knowledge)</u>
Asking simple questions and recognising that they can be answered in different ways
Gathering and recording data to help in answering questions e.g. reading thermometers, keeping a cloud diary
Using their observations and ideas to suggest answers to questions</td></tr>
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<table>
<tr><td>KS1</td><td colspan="2"><u>Why do we need to know about different materials?</u></td></tr>
<tr><td></td><td colspan="2"><u>Prior Vocabulary:</u> solid, liquid, sink, float, strong, weak, bendy, hard, soft, material, fabric, plastic, wood, see through

<u>Key vocabulary:</u> Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through, twist/twisting, squash/squashing, bend/bending, stretch/stretching</td></tr>
<tr><td></td><td colspan="2"><u>Enquiry questions (sequenced):</u>
● What is the difference between an object and its material? [Research & report]
● What are materials used for and why? [Research & report]
● What are the properties of plastic, metal, glass and wood [Simple test]
● What is the best material for a drink pouch and why? [Investigate & report]
● Which materials can I easily change their shape? [Simple test]
● What materials could I use to make a hat? [Investigate & report]
● What materials could I use to make a pencil? [Investigate & report]</td></tr>
<tr><td></td><td><u>By the end of this unit, pupils will know (substantive knowledge)</u>
All objects are made of one or more materials that are chosen specifically because they have suitable properties for the task. For example, a water bottle is made of plastic because it is transparent allowing you to see the drink inside and waterproof so that it holds the water.
A material can be suitable for different purposes and an object can be made of different materials.
When choosing what to make an object from, the properties needed are compared with the properties of the possible materials, identified through simple tests and classifying activities.
Objects made of some materials can be changed in shape by bending, stretching, squashing and twisting. For example, clay can be shaped by squashing, stretching, rolling, pressing etc. This can be</td><td><u>By the end of this unit, pupils will be able to (procedural and disciplinary knowledge)</u>
Asking simple questions and recognising that they can be answered in different ways
Observing closely, using simple equipment
Performing simple tests
Identifying and classifying
Gathering and recording data to help in answering questions
Using their observations and ideas to suggest answers to questions</td></tr>
</table>

	a property of the material or depend on how the material has been processed e.g. thickness.	
KS1	**How do animals adapt to where they live?**	
	Prior Vocabulary: Environment, life cycle, habitat, polar regions, ocean, desert, jungle, plant, fabric, plastic, wood light, dark, shadows, see through, shade, sight, hearing, smell, touch, taste **Key vocabulary:** Living, dead, never been alive, suited, suitable, basic needs, shelter, food, water, move, feed	
	Enquiry questions (sequenced): ● Is everything alive? **[Investigate]** ● Why do frogs live near a pond? **[Investigate]** ● What micro-habitats can we see in the school playground? **[Observe & report]** ● Why do polar bears live in the Arctic? **[Research & report]** ● Why do meerkats live in the desert? **[Research & report]** ● What is a food chain? **[Present]**	
	By the end of this unit, pupils will know (substantive knowledge) All objects are either living, dead or have never been alive. Living things are plants and animals. Dead things include dead animals and plants and parts of plants and animals that are no longer attached e.g. leaves and twigs, shells, fur, hair and feathers. An object made of wood is classed as dead. Objects made of rock, metal and plastic have never been alive. Animals and plants live in a habitat to which they are suited, which means that animals have suitable features that help them move and find food and plants have suitable features that help them to grow well. The habitat provides the basic needs of the animals and plants – shelter, food and water. Within a habitat there are different micro-habitats e.g. in a woodland – in the leaf litter, on the bark of trees, on the leaves. These micro-habitats have different conditions e.g. light or dark, damp or dry.	**By the end of this unit, pupils will be able to (procedural and disciplinary knowledge)** Asking simple questions and recognising that they can be answered in different ways Identifying and classifying Using their observations and ideas to suggest answers to questions

	These conditions affect which plants and animals live there. The plants and animals in a habitat depend on each other for food and shelter etc.	
KS1	**<u>Why do plants produce seeds?</u>**	
	<u>Prior Vocabulary:</u> plant, tree, bush, seed, leaf, stem, roots, spring, summer, autumn, winter, seasons **<u>Key vocabulary:</u>** Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bulb, light, shade, sun, warm, cool, water, grow, healthy	
	<u>Enquiry questions (sequenced):</u> ● Do all plants have seeds? **[Investigate]** ● Do all flowering plants grow fruit? **[Compare & contrast]** ● What do all plants need to grow? **[Report]** ● When should I plant beans? Why? **[Investigate & explain]**	
	<u>By the end of this unit, pupils will know (substantive knowledge)</u> Plants may grow from either seeds or bulbs. These then germinate and grow into seedlings which then continue to grow into mature plants. These mature plants may have flowers which then develop into seeds, berries, fruits etc. Seeds and bulbs need to be planted outside at particular times of year and they will germinate and grow at different rates. Some plants are better suited to growing in full sun and some grow better in partial or full shade. Plants also need different amounts of water and space to grow well and stay healthy.	**<u>By the end of this unit, pupils will be able to (procedural and disciplinary knowledge)</u>** Gathering and recording data to help in answering questions Using their observations and ideas to suggest answers to questions

KS1	**<u>What do different animals have in common?</u>**	
	<u>Prior Vocabulary:</u> Environment, life cycle, habitat **<u>Key vocabulary:</u>** Offspring, growth, child, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), exercise, breathing, hygiene, germs, disease, food types (examples – meat, fish, vegetables, bread, rice, pasta)	
	<u>Enquiry questions (sequenced):</u> ● Do all animals have offspring? **[Investigate]** ● Do all offspring look like their parents? **[Compare & contrast]** ● What do all animals need to live? **[Identify]** ● How can all animals stay healthy? **[Report]**	
	<u>By the end of this unit, pupils will know (substantive knowledge)</u> Animals, including humans, have offspring which grow into adults. In humans and some animals, these offspring will be young, such as babies or kittens, that grow into adults. In other animals, such as chickens or insects, there may be eggs laid that hatch to young or other stages which then grow to adults. The young of some animals do not look like their parents e.g. tadpoles. All animals, including humans, have the basic needs of feeding, drinking and breathing that must be satisfied in order to survive. To grow into healthy adults, they also need the right amounts and types of food and exercise. Good hygiene is also important in preventing infections and illnesses.	**<u>By the end of this unit, pupils will be able to (procedural and disciplinary knowledge)</u>** Asking simple questions and recognising that they can be answered in different ways Identifying and classifying Using their observations and ideas to suggest answers to questions

LKS2	**<u>How do circuits work?</u>**	
	<u>Prior Vocabulary:</u> Object, material, wood, plastic, glass, metal, foil, rubber **<u>Key vocabulary:</u>** Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal	
	<u>Enquiry questions (sequenced):</u> ● What would life be like without electricity? **[Predict]** ● What is a circuit? **[Label & explain]** ● What can stop a circuit from working? **[Investigate]** ● All metals conduct electricity. True or false? **[Investigate & explain]**	
	<u>By the end of this unit, pupils will know (substantive knowledge)</u> Many household devices and appliances run on electricity. Some plug in to the mains and others run on batteries. An electrical circuit consists of a cell or battery connected to a component using wires. If there is a break in the circuit, a loose connection or a short circuit, the component will not work. A switch can be added to the circuit to turn the component on and off. Metals are good conductors so they can be used as wires in a circuit. Non-metallic solids are insulators except for graphite (pencil lead). Water, if not completely pure, also conducts electricity.	**<u>By the end of this unit, pupils will be able to (procedural and disciplinary knowledge)</u>** Setting up simple practical enquiries, comparative and fair tests Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Using straightforward scientific evidence to answer questions or to support their findings Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

<table>
<tr><td>LKS2</td><td colspan="2"><u>How does sound travel?</u></td></tr>
<tr><td></td><td colspan="2"><u>Prior Vocabulary:</u> Senses, hearing, bend/bending, stretch/stretching

<u>Key vocabulary:</u> Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation</td></tr>
<tr><td></td><td colspan="2"><u>Enquiry questions (sequenced):</u>
● What happens when sound reaches our ears? [Label & explain]
● Does sound travel through solid, liquids and gases equally? [Compare & contrast]
● How can you insulate against sound? [Investigate & explain]
● How can I change the pitch of a sound? [Investigate & explain]</td></tr>
<tr><td></td><td><u>By the end of this unit, pupils will know (substantive knowledge)</u>
A sound produces vibrations which travel through a medium from the source to our ears. The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound.
Different mediums such as solids, liquids and gases can carry sound, but sound cannot travel through a vacuum (an area empty of matter).
The loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium. Therefore, sounds decrease in volume as you move away from the source.
A sound insulator is a material which blocks sound effectively.
Pitch is the highness or lowness of a sound and is affected by features of objects producing the sounds. For example, smaller objects usually produce higher pitched sounds.</td><td><u>By the end of this unit, pupils will be able to (procedural and disciplinary knowledge)</u>
Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment
Setting up simple practical enquiries, comparative and fair tests
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</td></tr>
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<table>
<tr><td>LKS2</td><td colspan="2"><u>How can we group animals?</u></td></tr>
<tr><td></td><td colspan="2"><u>Prior Vocabulary:</u> Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves and names of animals experienced first-hand from each vertebrate group

<u>Key vocabulary:</u> Vertebrates, Invertebrates, Fish, Amphibians, Reptiles, Bird, Mammals, Snails, Slugs, Worms, Spiders, Insects, Environment, Habitats</td></tr>
<tr><td></td><td colspan="2"><u>Enquiry questions (sequenced):</u>
● What are the different ways I can group animals? [Grouping]
● How do scientists group animals? [Classifying]
● How can habitats change? [Observation]
● What different animals visit Norfolk over a year? [Report]</td></tr>
<tr><td></td><td><u>By the end of this unit, pupils will know (substantive knowledge)</u>
Living things can be grouped (classified) in different ways according to their features.
Classification keys can be used to identify and name living things.
Living things live in a habitat which provides an environment to which they are suited. These environments may change naturally e.g. through flooding, fire, earthquakes etc.
Humans also cause the environment to change. This can be in a good way (i.e. positive human impact, such as setting up nature reserves) or in a bad way (i.e. negative human impact, such as littering).
These environments also change with the seasons; different living things can be found in a habitat at different times of the year.</td><td><u>By the end of this unit, pupils will be able to (procedural and disciplinary knowledge)</u>
Asking relevant questions and using different types of scientific enquiries to answer them
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</td></tr>
<tr><td>LKS2</td><td colspan="2"><u>How do we get our nutrients?</u></td></tr>
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<table>
<tr><td></td><td colspan="2"><u>Prior Vocabulary:</u> smell, taste, tongue, food types (examples – meat, fish, vegetables, bread, rice, pasta)

<u>Key vocabulary:</u> Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain</td></tr>
<tr><td></td><td colspan="2"><u>Enquiry questions (sequenced):</u>
● What happens after we swallow our food? [Identify & explain]
● What are the main features of the digestive system? [Identify & label]
● Why do we have different types of teeth? [Identify & explain]
● Can an animal be both predator and prey? [Pattern spotting]</td></tr>
<tr><td></td><td><u>By the end of this unit, pupils will know (substantive knowledge)</u>
Food enters the body through the mouth.
Digestion starts when the teeth start to break the food down.
Saliva is added and the tongue rolls the food into a ball.
The food is swallowed and passes down the oesophagus to the stomach. Here the food is broken down further by being churned around and other chemicals are added.
The food passes into the small intestine. Here nutrients are removed from the food and leave the digestive system to be used elsewhere in the body.
The rest of the food then passes into the large intestine. Here the water is removed for use elsewhere in the body.
What is left is then stored in the rectum until it leaves the body through the anus when you go to the toilet.
Humans have four types of teeth: incisors for cutting; canines for tearing; and molars and premolars for grinding (chewing).
Living things can be classified as producers, predators and prey according to their place in the food chain.</td><td><u>By the end of this unit, pupils will be able to (procedural and disciplinary knowledge)</u>
Asking relevant questions and using different types of scientific enquiries to answer them
Setting up simple practical enquiries
Identifying differences, similarities or changes related to simple scientific ideas and processes
Using results to draw simple conclusions</td></tr>
<tr><td>LKS2</td><td colspan="2"><u>How can the same material be different?</u></td></tr>
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	Prior Vocabulary: Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through, twist/twisting, squash/squashing, bend/bending, stretch/stretching **Key vocabulary:** Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle	
	Enquiry questions (sequenced): ● Can a material be a solid, liquid and a gas? **[Investigate & explain]** ● Does all chocolate melt at the same temperature? **[Observe & explain]** ● What is the difference between boiling and evaporation? **[Compare & contrast]** ● What is the water cycle? **[Label & explain]**	
	By the end of this unit, pupils will know (substantive knowledge) A solid keeps its shape and has a fixed volume. A liquid has a fixed volume but changes in shape to fit the container. A gas fills all available space; it has no fixed shape or volume. Freezing is a state change from liquid to solid. Melting is a state change from solid to liquid. Boiling is a change of state from liquid to gas that happens when a liquid is heated to a specific temperature and bubbles of the gas can be seen in the liquid. The freezing point of water is 0^{o}C. and the boiling point of water is 100^{o}C. Evaporation is the same state change as boiling (liquid to gas), but it happens slowly at lower temperatures and only at the surface of the liquid. Evaporation happens more quickly if the temperature is higher, the liquid is spread out or it is windy. Condensation is the change back from a gas to a liquid caused by cooling. Water at the surface of seas, rivers etc. evaporates into water vapour (a gas). This rises, cools and condenses back into a liquid forming clouds. When the cloud get too heavy it falls back down as rain, snow etc. and drain This is known as precipitation. This is the water cycle.	**By the end of this unit, pupils will be able to (procedural and disciplinary knowledge)** Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment. Setting up simple practical enquiries, comparative and fair tests 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 Using straightforward scientific evidence to answer questions or to support their findings

UKS2	**How and why do I need to look after my heart?** This content is also included in PSHE (TenTen)	
	Prior Vocabulary: Digestive system, small intestine, nutrients, large intestine, nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water **Key vocabulary:** Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle	
	Enquiry questions (sequenced): ● What are the main parts of the circulatory system? **[Label & explain]** ● What are the functions of each part of the circulatory system? **[Research & describe]** ● How are nutrients and water transported in animals (inc humans)? **[Label & explain]** ● How do diet and exercise affect how my body functions? **[Research & present]** ● How do drugs and lifestyle choices affect how my body functions? **[Research & present]**	
	By the end of this unit, pupils will know (substantive knowledge) The heart pumps blood in the blood vessels around to the lungs. Oxygen goes into the blood and carbon dioxide is removed. The blood goes back to the heart and is then pumped around the body. Nutrients, water and oxygen are transported in the blood to the muscles and other parts of the body.. As they are used, they produce carbon dioxide and other waste products. Carbon dioxide is carried by the blood back to the heart and then the cycle starts again as it is transported back to the lungs to be removed from the body. This is the human circulatory system. Diet, exercise, drugs and lifestyle have an impact on the way our bodies function. They can affect how well our heart and lungs work, how likely we are to suffer from conditions such as diabetes, how clearly we think, and generally how fit and well we feel. Some conditions are caused by deficiencies in our diet e.g. lack of vitamins.	**By the end of this unit, pupils will be able to (procedural and disciplinary knowledge)** Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

<table>
<tr><td>UKS2</td><td colspan="2"><u>How does classification work?</u></td></tr>
<tr><td></td><td colspan="2"><u>Prior Vocabulary:</u> Vertebrates, Invertebrates, Fish, Amphibians, Reptiles, Bird, Mammals, Snails, Slugs, Worms, Spiders, Insects, Environment, Habitats

<u>Key vocabulary:</u> Classification, classification keys, vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, arachnids, molluscs, worms, flowering, non-flowering, flora, fauna, kingdom, genus, species, family</td></tr>
<tr><td></td><td colspan="2"><u>Enquiry questions (sequenced):</u>
● How can I classify liquorice allsorts ? [Grouping & ordering]
● Who was Carl Linnaeus and what was his big idea? [Research & present]
● How would I classify a range of invertebrates? [Grouping & ordering]
● How would I classify a range of leaves? [Grouping & ordering]
● How would I use Linnaeus’ taxonomy to name my imaginary creature? [skill]</td></tr>
<tr><td></td><td><u>By the end of this unit, pupils will know (substantive knowledge)</u>
Carl Linnaeus devised the modern system for classification. It simplified the process and changed science.
Living things can be formally grouped according to characteristics. Plants and animals are two main groups but there are other living things that do not fit into these groups e.g. micro-organisms such as bacteria and yeast, and toadstools and mushrooms. Plants can make their own food whereas animals cannot.
Animals can be divided into two main groups: those that have backbones (vertebrates); and those that do not (invertebrates).
Vertebrates can be divided into five small groups: fish; amphibians; reptiles; birds; and mammals.
Each group has common characteristics. Invertebrates can be divided into a number of groups, including insects, spiders, snails and worms.
Plants can be divided broadly into two main groups: flowering plants; and non-flowering plants</td><td><u>By the end of this unit, pupils will be able to (procedural and disciplinary knowledge)</u>
Identifying scientific evidence that has been used to support or refute ideas or arguments
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</td></tr>
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<tr><td>UKS2</td><td colspan="2"><u>How does light travel?</u></td></tr>
<tr><td></td><td colspan="2"><u>Prior Vocabulary:</u> Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous

<u>Key vocabulary:</u> straight lines, light rays, Refraction, Reflection, Spectrum, Rainbow, Colour, light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous</td></tr>
<tr><td></td><td colspan="2"><u>Enquiry questions (sequenced):</u>
● How do we know that light appears to travel in straight lines? [Label & explain]
● How does the eye see? [Label & explain]
● Why does a shadow have the same shape as the object that casts them? [Research & present]
● Why do shadows change when the light source changes? [Investigate & explain]</td></tr>
<tr><td></td><td><u>By the end of this unit, pupils will know (substantive knowledge)</u>
Light appears to travel in straight lines, and we see objects when light from them goes into our eyes.
The light may come directly from light sources, but for other objects some light must be reflected from the object into our eyes for the object to be seen.
Objects that block light (are not fully transparent) will cause shadows. The shape of the shadow will be the same as the outline shape of the object.</td><td><u>By the end of this unit, pupils will be able to (procedural and disciplinary knowledge)</u>
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
Identifying scientific evidence that has been used to support or refute ideas or arguments</td></tr>
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<tr><td>UKS2</td><td colspan="2"><u>How can circuits be adapted for different purposes?</u></td></tr>
<tr><td></td><td colspan="2"><u>Prior Vocabulary:</u> Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal

<u>Key vocabulary:</u> Circuit, complete circuit, circuit diagram, circuit symbol, cell, component, battery, bulb, buzzer, motor, switch, voltage</td></tr>
<tr><td></td><td colspan="2"><u>Enquiry questions (sequenced):</u>
● What are the symbols used to represent a circuit and its components? [Label & explain]
● How does adding more cells change a circuit? [Investigate & explain]
● How does adding more components change a circuit? [Investigate & explain]
● What is the difference between a parallel and a series circuit? [Research & report]</td></tr>
<tr><td></td><td><u>By the end of this unit, pupils will know (substantive knowledge)</u>
Recognise the circuit symbols used to draw simple circuit diagrams.
Adding more cells to a complete circuit will make a bulb brighter, a motor spin faster or a buzzer make a louder sound. If you use a battery with a higher voltage, the same thing happens.
Adding more bulbs to a circuit will make each bulb less bright. Using more motors or buzzers, each motor will spin more slowly and each buzzer will be quieter.
Turning a switch off (open) breaks a circuit so the circuit is not complete and electricity cannot flow. Any bulbs, motors or buzzers will then turn off as well.</td><td><u>By the end of this unit, pupils will be able to (procedural and disciplinary knowledge)</u>
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
Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
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</td></tr>
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<tr><td>UKS2</td><td colspan="2"><u>What is evolution and how does it help survival?</u></td></tr>
<tr><td></td><td colspan="2"><u>Prior Vocabulary:</u> Living, dead, never been alive, suited, suitable, basic needs, shelter, food, water, move, feed

<u>Key vocabulary:</u> Offspring, sexual reproduction, vary, characteristics, suited, adapted, evolution, environment, inherited, species, fossils</td></tr>
<tr><td></td><td colspan="2"><u>Enquiry questions (sequenced):</u>
● What features have I inherited? [Observation]
● How have different animals adapted to their environments? [Observe & report]
● Who was Charles Darwin and what was his big idea? [Research & present]
● How does the fossil record help us understand evolutionary relationships? [Compare & contrast]
● What is a common ancestor? [Compare & contrast]</td></tr>
<tr><td></td><td><u>By the end of this unit, pupils will know (substantive knowledge)</u>
All living things have offspring of the same kind, as features in the offspring are inherited from the parents.
Due to sexual reproduction, the offspring are not identical to their parents and vary from each other.
Plants and animals have characteristics that make them suited (adapted) to their environment. If the environment changes rapidly, some variations of a species may not suit the new environment and will die. If the environment changes slowly, animals and plants with variations that are best suited survive in greater numbers to reproduce and pass their characteristics on to their young.
Over time inherited characteristics become more dominant within a population. Over a very long period of time, these characteristics may be so different to how they were originally that a new species is created. This is evolution.
Fossils give us evidence of what lived on the Earth millions of years ago and provide evidence to support the theory of evolution.
Scientists such as Darwin and Wallace observed how living things adapt to different environments to become distinct varieties with their own characteristics with a common ancestor.</td><td><u>By the end of this unit, pupils will be able to (procedural and disciplinary knowledge)</u>
Identifying scientific evidence that has been used to support or refute ideas or arguments
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</td></tr>
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