



Dovedale Primary School

Long term plan

Science



YR	Autumn	
	Materials	Vocabulary: float, sink, bottom, top, surface, melt, hot, cold, frozen, warm, slippery, change, push, pull, soft, hard, hot, cold
	<u>Required prior knowledge</u> Children should know: • Objects are made from different things • Children will use words such as hard and soft to describe some materials • Objects do different things when placed in water • Some objects are cold and some are hot and things may change	<u>End point</u> • Children should be able to: • Identify and name a range of everyday materials. • Describe materials using simple properties (hard, soft, stretchy, waterproof etc.). • Compare and group materials based on their properties. • Explain why a material is suitable for a particular object.
	Seasons (linked to geography)	Vocabulary: soil, seed, water, leaves, roots, underground, worm, bristles
	<u>Required prior knowledge</u> Children should know: • The weather changes during the year Knowledge of days/weeks/months	<u>End point</u> • Name the four seasons • To play and explore outside in all seasons and in different weather (reflection takes place throughout the year) • To observe living things throughout the year



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Spring	
Space (linked with geography)	Vocabulary: Sun, Moon, Mercury, Venus, Earth, Mars, Jupiter, Uranus, Neptune, Pluto, space, astronaut, rocket, attract, push
<u>Required prior knowledge</u> Children should know: • There is a sun and moon • Objects are made of different materials and they behave differently • Light changes during the day and night and that it goes dark at night	<u>End point</u> • Children are able to name some planets and say where we live • Begin to understand gravity and space travel • Children are able to talk about pushes and pulls • Explore different materials using a magnet and notice which objects/materials they attract • Children are aware that objects can block out light and it creates a shadow
Summer	
Animals including humans	Vocabulary: egg, hatch, grow, chrysalis, change, feathers, beak, tadpole, frogspawn, froglet, lifecycle
<u>Required prior knowledge</u> Children should know: • Things grow and change	<u>End point</u> • Learn about senses (sight and touch) • Learn about sense (hearing and sight) • Explore the senses of smell and touch. • Learn about your sense of taste • Learn about your body parts e.g. My _____ help me to _____ • Discover how our bodies change • Learn the lifecycle of a butterfly and notice the changes • Learn the lifecycle of a tadpole and notice the changes



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		• Learn the lifecycle of a bird and notice the changes • Learn about living and non-living things.
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Y1	Autumn	
	Animals including Humans	Vocab: energy, growth, habitat, fish, amphibian, reptile, bird, mammal, offspring, carnivore, herbivore, omnivore, vertebrate, organ. Sense/senses: sight, hearing, touch, taste, smell Skeleton, head, neck, ear, mouth, shoulder, hand, fingers, leg, foot, thumb, eye, nose, knee, toes, teeth, elbow.
	<u>Required prior knowledge</u> Children should be able to: • Name familiar animals. • Talk about pets and farm animals. • Recognise babies and adults. • Name simple body parts. • Know the five senses through everyday experiences.	<u>End point</u> Children should be able to: • Name the five vertebrate groups. • Identify common animals in each group. • Explain the difference between herbivores, carnivores and omnivores. • Label the main body parts. • Explain which body part is linked to each sense. • Compare animals by observing their features.
	<u>Enquiry type suggestions:</u>	Identifying and Classifying • Sort animals into groups. Pattern Seeking • Look for similarities between mammals. Research • Find information about unusual animals.



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	Seasonal changes	Vocab: Weather: wind/windy, rain/rainy, snow/snowy, sun/sunny, cloud/cloudy, storm/stormy, hurricane, thunder, lightning, gale, hailstone, fog/foggy, ice/icy, frost, clear da, freezing (melting) Seasons: winter, spring, summer, autumn. Daylight, sunlight, sunset, sunrise.
	<u>Required prior knowledge</u> Children should already: • Recognise different types of weather. • Notice changes outside throughout the year. • Talk about appropriate clothing for different weather. • Observe plants and animals during seasonal changes. • Begin to describe seasonal events such as falling leaves or snow.	<u>End point</u> • Name the four seasons in order. • The change in weather causes many other changes. Some examples are: numbers of minibeasts found outside; seed and plant growth; leaves on trees; and type of clothes worn by people. • The earth spins every 24 hours, and this is the length of a day. • In the UK, the day length is longest at mid-summer (about 16 hours) and gets shorter each day until mid-winter (about 8 hours) before getting longer again. • Make simple weather observations over time.
	<u>Enquiry type suggestions:</u>	Observation Over Time • Observe one tree throughout the year. • Record daily weather. • Measure rainfall. • Observe changing daylight. Pattern Seeking • Identify patterns in weather. • Compare temperatures over several weeks.



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Spring	
Everyday Materials	Vocab: Absorption Materials: wood, plastic, glass, metal, water, rock Property (properties): hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy/not bendy, waterproof/not waterproof.
<u>Required prior knowledge</u> Children should already: • Have explored a variety of materials through play. • Use simple words to describe how objects feel (e.g. hard, soft, rough, smooth). • Know that different objects are made from different materials. • Have investigated water, sand, wood and fabric during continuous provision. • Begin to explain why objects are used for particular purposes.	<u>End point</u> By the end of this unit children should be able to: • Explain the difference between an object and the material it is made from. • Name a range of everyday materials. • Describe materials using scientific vocabulary. • Compare materials based on their properties. • Group materials according to their properties. • Explain why a material is suitable for a particular object.
<u>Enquiry Type suggestions:</u>	Comparative Testing • Which material keeps a teddy dry? • Which material is strongest? Identifying and Classifying • Sort objects by the material they are made from. • Group materials according to their properties. Pattern Seeking • Identify patterns between material properties and their uses.



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Summer	
Plants	Vocab: Plant, flower, tree, leaf, stem, trunk, branch, root, petal, wild plant, garden plant, deciduous, evergreen, seed, bulb
<u>Required prior knowledge</u> Children should know: • Pupils name some wild plants such as dandelion, daisy, buttercup, nettles • Pupils can name some plants/flowers we plant such as beans, sunflowers, roses, • Pupils can talk about how the plant changes over time. • Pupils are able to say what a plant needs to grow (water and sunshine).. • Use simple vocabulary such as flower, leaf, tree and grass.	By the end of this unit children should be able to: • Identify a range of common wild plants. • Identify a range of common garden plants. • Identify common deciduous trees. • Identify common evergreen trees. • Name the basic parts of a flowering plant. • Name the basic parts of a tree. • Explain that plants are living things. • Describe simple differences between wild and garden plants. • Describe the difference between deciduous and evergreen trees.
<u>Enquiry type suggestions:</u>	Observation over Time • Observe a bean growing. • Observe trees across the seasons. Identifying and Classifying • Sort plants into groups. • Sort trees into deciduous and evergreen. Pattern Seeking • Notice similarities between flowering plants.



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Y2	Autumn	
	Uses of Everyday Materials	Vocab: Material: brick, paper, cardboard Properties: brittle, rigid, flexible/bendy, absorbent, transparent, hardwearing, reflective, suitable/unsuitable, suitable/unsuitable, waterproof Verbs/movement: twist, stretch, bend, squash, push/pushing, pull/pulling.
	<u>Required prior knowledge</u> Children should already be able to: • Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. • Describe the simple physical properties of materials using vocabulary such as hard, soft, stretchy, stiff, waterproof, absorbent, transparent and opaque. • Compare and group materials based on their properties. • Explain that objects are made from materials chosen for a purpose.	<u>End point</u> By the end of this unit, children should be able to: • Compare the suitability of different materials for particular purposes. • Explain why one material is more suitable than another for a given object. • Describe how materials can be changed by squashing, bending, twisting and stretching. • Compare materials that are flexible with those that are rigid. • Predict how a material might behave when a force is applied. • Use scientific vocabulary to explain the properties and uses of materials. • Justify the choice of a material using evidence from observations and simple tests.



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Enquiry type suggestions:

Comparative Testing

Children should:

- Compare the properties of different materials fairly.
- Test which materials are most suitable for different purposes.
- Observe how materials respond when forces are applied.

Identifying and Classifying

Children should:

- Group materials according to their properties.
- Sort materials into flexible and rigid.
- Classify materials as waterproof or absorbent.

Pattern Seeking

Children should:

- Look for patterns between a material's properties and its uses.

Observation Over Time

Children should:

- Observe whether some materials change over time when exposed to water or weather.
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Spring

Animals Including Humans

Vocab:

Offspring, reproduction, growth, baby, toddler, child, teenager, adult, survival, growth, metamorphosis, basic needs.

Exercise, heartbeat, breathing, hygiene, germs, disease, virus,

Food types: fibre, carbohydrates, protein, oils and spreads, dairy. Met, fish, grains, high-sugar.



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<u>Required prior knowledge</u> Children should already be able to: • Identify and name the five vertebrate groups: mammals, birds, fish, amphibians and reptiles. • Identify and name common animals within each vertebrate group. • Describe whether animals are carnivores, herbivores or omnivores. • Identify, name and label the main parts of the human body. • Name the five senses and identify the body part associated with each sense. • Recognise that humans are animals and belong to the mammal group.	<u>End point</u> By the end of this unit, children should be able to: • Explain that animals, including humans, have offspring which grow into adults. • Describe the basic stages in the life cycle of a human and other animals. • Explain the basic needs of animals for survival. • Describe why humans need food, water and air. • Explain why exercise is important for keeping healthy. • Explain why eating a balanced diet is important. • Describe ways to maintain good hygiene. • Compare the life cycles of different animals using scientific vocabulary. E.g. Explain metamorphosis is a process some animals go through to become adults. Most amphibians go through this, including frogs, and many insects such as beetles, flies and wasps do too.
<u>Enquiry types suggestions:</u>	Research Using Secondary Sources • Research the life cycles of different animals using books, videos and reliable online resources. • Compare how different animals grow and change. • Find out how healthy lifestyles help humans to survive and develop. Pattern Seeking • Identify patterns in animal growth and development. • Compare similarities and differences between animal life cycles. • Look for patterns in healthy and unhealthy lifestyles. Observation Over Time • Observe changes as living things grow. • Observe how exercise affects the body (for example, heart rate or breathing before and after activity).



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		• Observe hygiene routines over time. Identifying and Classifying • Sort foods into healthy food groups. • Classify foods that should be eaten more or less often. • Group animals according to how they reproduce or care for their young.
	Living things and their Habitats	Vocab: Prior: deciduous, evergreen, flower, plant, tree, structure, roots, stem, leaf, trunk, flower, herbivore, carnivore, omnivore. Life cycle: birth, living, dead. Reproduction, suited, suitable, basic needs, food chain, producer, consumer, shelter, feed, habitat, microhabitat, source, nutrients, decay Environment: seashore, woodland, ocean, rainforest, desert, Polar regions, wetlands, grasslands, mountains, marine.
	<u>Required prior knowledge</u> <u>Children should already be able to:</u> • Identify a variety of common wild and garden plants. • Identify common animals, including mammals, birds, fish, amphibians and reptiles. • Recognise that plants and animals are living things. • Understand that plants need water and light to grow. • Know that animals are herbivores, carnivores or omnivores.	<u>End point</u> By the end of this unit, children should be able to: • Explain the difference between something that is living, dead and never alive. • Identify and describe a range of local habitats and microhabitats. • Explain how habitats provide for the basic needs of plants and animals. • Identify common plants and animals found in different habitats.



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	• Observe how plants and animals change throughout the seasons. • Use simple scientific vocabulary to describe living things.	• Describe how living things depend on one another within a habitat. • Construct and interpret simple food chains using arrows correctly. • Identify producers, consumers, predators and prey in simple food chains. • Use scientific vocabulary accurately when describing habitats.
	<u>Enquiry type suggestions:</u>	Identifying and Classifying • Sort objects into living, dead and never alive. • Group animals according to their habitats. • Classify plants found in different environments. • Identify organisms found within a microhabitat. Observation Over Time • Observe changes in a local habitat across several weeks. • Observe how a microhabitat changes following different weather conditions. • Observe seasonal changes affecting plants and animals. Pattern Seeking • Identify patterns between habitats and the living things found there. • Compare the number of organisms found in different microhabitats. Research Using Secondary Sources • Find information about habitats that cannot easily be visited. • Compare habitats from around the world. • Research unusual animals and where they live.



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Summer		
	Plants	Vocab: Prior: leaf/leaves, flower, blossom, bulb, petal, fruit, berry, root, seed, seedling, trunk, branch, stem, bark, stalk, bud, wild, garden, deciduous, evergreen, light, shade, sun, warm, cool, water, grow, suited, conditions. Germinate, germination, healthy/healthily.
	<u>Required prior knowledge</u> Children should already: • Identify common wild and garden plants. • Recognise deciduous and evergreen trees. • Name the roots, stem, trunk, leaves and flowers of a plant. • Know that plants are living things that need water and light. • Observe seasonal changes in plants.	<u>End point</u> • Plants may grow from either seeds or bulbs. These then germinate and grow into seedlings which then continue to grow into mature plants. • Seeds need water, light and a suitable temperature to germinate but most do not need light to germinate: seeds have a store of food inside them. • These mature plants may have flowers which then develop into seeds, berries, fruits etc. • Plants need light, water and a suitable temperature to grow and stay healthy. • 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>Enquiry type suggestions:</u>	Observation Over Time • Observe the germination of seeds over several weeks. • Observe bulbs growing into flowering plants. • Measure and record plant growth over time.



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		- Record changes using labelled drawings, photographs and simple tables. Comparative Test - Compare how plants grow when one condition is changed. Pattern Seeking - Look for patterns in plant growth. Research Using Secondary Sources - Find out about unusual plants from around the world. - Compare how different seeds are dispersed (teacher-led).
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Y3	Autumn	
	Rocks & Fossils	Vocab: igneous, sedimentary, metamorphic, properties, permeable, absorbent, erosion, fossils, organic matter.
	Children should already be able to: Year 1 – Everyday Materials - Identify and name everyday materials including rock. - Describe simple properties of materials (hard, soft, rough, smooth, waterproof, absorbent). - Compare materials according to their properties. - Explain that objects are made from different materials. Year 2 – Uses of Everyday Materials - Compare the suitability of different materials for particular purposes. - Explain why different materials are chosen for different uses. - Carry out simple comparative tests. - Use scientific vocabulary such as <i>property</i>, <i>rigid</i>, <i>flexible</i> and <i>waterproof</i>.	By the end of this unit, children should be able to: - Compare and group rocks according to their appearance and physical properties. - Explain that rocks are naturally occurring materials. - Describe the simple characteristics of igneous, sedimentary and metamorphic rocks. - Explain how fossils are formed in simple terms. - Describe how soils are formed. - Compare different types of soil. - Explain why certain rocks are used for particular jobs. - Use scientific vocabulary accurately when describing rocks and fossils.
	<u>Enquiry type suggestions:</u>	Comparative Testing - Children should compare rocks to determine how their properties make them suitable for different purposes. Identifying and Classifying - Sort rocks according to observable properties. - Group rocks using their own criteria before introducing scientific rock groups. - Classify soils by texture and appearance. Observation Over Time - Observe the effects of weathering on different rocks.



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		• Observe soil settling in water. • Observe fossil replicas closely using magnifiers. Research Using Secondary Sources • Research how fossils provide evidence about the past. • Investigate famous fossil discoveries. • Find out how different rocks are used in everyday life.
	Forces	Vocab: surface, friction, magnetic forces, attract, repel, magnetic, push, pull.
	<u>Children should already be able to:</u> Year 1 – Everyday Materials • Identify and name everyday materials. • Describe simple physical properties of materials. • Compare materials according to their properties. Year 2 – Uses of Everyday Materials • Compare the suitability of materials for different purposes. • Carry out simple comparative tests. • Explain that materials can change shape when forces are applied. • Use vocabulary such as <i>flexible</i>, <i>rigid</i> and <i>property</i>.	<u>End point</u> By the end of this unit, children should be able to: • Explain that a force is a push or a pull. • Compare how objects move on different surfaces. • Explain that friction affects movement. • Explain the difference between contact and non-contact forces. • Describe magnetic forces as acting at a distance. • Identify materials that are magnetic and non-magnetic. • Explain that magnets have north and south poles. • Predict whether magnets will attract or repel one another. • Use scientific vocabulary accurately when explaining forces and magnets.
	<u>Enquiry type suggestions</u>	Comparative Testing • Children should compare how forces affect movement and investigate the properties of magnets. Identifying and Classifying Children should: • Group materials into magnetic and non-magnetic. • Sort objects according to observable properties.



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		- Classify forces as contact or non-contact. Pattern Seeking Children should: - Identify patterns in how magnets behave. - Observe relationships between surfaces and movement. Observation Over Time Children should: - Observe magnets attracting and repelling over repeated investigations. - Observe how friction gradually slows moving objects.
	Spring	
	Plants	Vocab: roots, stem, leaves, pollination, germination, seed dispersal, fertilisation, photosynthesis, stamen, stigma.
	Children should already be able to: Year 1 - Identify common wild and garden plants. - Identify deciduous and evergreen trees. - Label the roots, stem, leaves and flowers of a plant. - Explain that plants are living things. - Know that plants need water and light to survive. Year 2 - Describe how seeds and bulbs grow into mature plants. - Explain that plants need water, light and a suitable temperature to grow healthily. - Observe and compare plant growth over time. - Use vocabulary such as <i>germination</i>, <i>seedling</i> and <i>mature plant</i>.	<u>End point</u> By the end of this unit, children should be able to: - Identify and explain the function of each part of a flowering plant. - Explain how roots help plants survive. - Explain how stems transport water around the plant. - Describe the role of leaves in helping plants grow. - Explain why flowers are important for reproduction. - Describe the stages of a flowering plant's life cycle. - Explain how pollination leads to seed formation. - Describe different methods of seed dispersal. - Explain that different plants have different requirements for healthy growth. - Use scientific vocabulary accurately when explaining plant processes.
	<u>Enquiry type suggestions:</u>	Comparative Testing Children should compare how changing one condition affects plant growth.



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		Observation Over Time • Observe the transport of water through celery. • Observe flowering plants throughout their life cycle. • Measure plant growth over several weeks. Pattern Seeking • Look for relationships between environmental conditions and plant growth. Research Using Secondary Sources • Research unusual methods of seed dispersal. • Investigate plants adapted to extreme environments. • Compare pollination in different flowering plants.
	Light	Vocab: reflection, surface, shadow, transparent, translucent, opaque, artificial, energy, light source, refraction, spectrum.
	<u>Children should already be able to:</u> Year 1 – Seasonal Changes • Observe changes in weather and daylight across the seasons. • Notice that daylight hours change throughout the year. • Make observations about the Sun and weather. Year 1 – Everyday Materials • Identify materials that are transparent and opaque. • Describe simple properties of materials. • Compare and group materials according to their properties. Year 2 – Uses of Everyday Materials • Compare materials according to their properties. • Identify materials that are suitable for different purposes. • Explain that some materials are transparent, translucent or opaque.	<u>End point</u> By the end of this unit, children should be able to: • Explain that we need light to see things. • Explain that darkness is the absence of light. • Identify natural and artificial sources of light. • Describe how light is reflected from surfaces. • Explain why it is dangerous to look directly at the Sun. • Describe ways to protect their eyes from the Sun. • Explain how shadows are formed. • Investigate and explain why shadows change size. • Use scientific vocabulary accurately when discussing light and shadows



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	<u>Enquiry type suggestions:</u>	Pattern Seeking • Look for patterns in the way shadows change. • Explore how different surfaces reflect light. • Identify relationships between the position of a light source and shadow size. Comparative Testing • Compare how different materials affect the amount of light passing through. • Compare reflective and non-reflective surfaces. Observation Over Time • Observe shadows at different times of the day. • Observe changes in daylight during different seasons. Research Using Secondary Sources • Research how people protect themselves from the Sun. • Find out how mirrors are used in everyday life. • Investigate how light is used in different occupations.
Summer		
	Animals including humans	Vocab: nutrients, fat, carbohydrate, protein, skeleton, protection, support, muscles, joint, movement.
	<u>Required prior knowledge</u> Year 1 • Identify and name common animals, including mammals, birds, fish, amphibians and reptiles. • Identify carnivores, herbivores and omnivores. • Name and label the main parts of the human body. • Identify the five senses and the body parts associated with them. Year 2 • Explain that animals, including humans, have offspring that grow into adults.	<u>End point</u> By the end of this unit, children should be able to: • Explain that animals cannot make their own food. • Describe the importance of nutrition for growth and survival. • Identify the main nutrients needed for a healthy diet. • Explain why a balanced diet is important. • Identify the main bones in the human skeleton. • Explain the three main functions of the skeleton. • Explain how muscles work with bones to create movement. • Compare the skeletons of different animals.



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	• Describe the basic needs of animals for survival (food, water and air). • Explain why humans need a balanced diet, exercise and good hygiene. • Describe the basic stages of a human life cycle. • Understand that healthy choices help our bodies to grow and develop.	• Recognise that some animals have exoskeletons or hydrostatic skeletons. • Use scientific vocabulary accurately when explaining how the body works.
	<u>Enquiry type suggestions:</u>	Pattern Seeking • Children should look for relationships between nutrition, exercise and body function. Comparative Testing • Compare foods according to nutritional content. • Compare the flexibility of different joints. • Compare how muscles behave during movement. Observation Over Time • Observe changes to pulse rate before and after exercise. • Observe muscle fatigue during repeated activities. Research Using Secondary Sources • Research different animal skeletons. • Compare vertebrates and invertebrates. • Investigate unusual animal adaptations.



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Y4	Autumn	
	Electricity	Vocab: circuit, component, appliance, charge, electron, battery, cell, bulb, buzzer, switch, wire, current electricity, static electricity, negative terminal, positive terminal, voltage, chemical reaction, absorption, conductor, energy, insulator, particle, property, wave.
	Year 1 – Everyday Materials - Identify and name a variety of everyday materials. - Describe simple properties of materials. - Compare and group materials according to their properties. Year 2 – Uses of Everyday Materials - Explain that materials are chosen because of their properties. - Compare materials and justify their suitability for different purposes. Year 3 – Forces and Magnets - Compare and group materials according to their properties. - Understand that some metals are magnetic and others are not. - Carry out comparative tests and use evidence to answer questions.	End point - 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 the 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. - Know the difference between a conductor and an insulator; giving examples of each. - Safety when using electricity.
	<u>Enquiry type suggestions</u>	Comparative Testing - Children should compare different materials and investigate how changes affect electrical circuits. Pattern Seeking - Identify patterns in conductors and insulators. - Explore relationships between materials and their uses.



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		Identifying and Classifying - Group objects according to whether they conduct electricity. - Classify materials as conductors or insulators. - Sort electrical appliances according to how they are powered. Research Using Secondary Sources - Investigate how electricity is used safely in homes. - Research famous inventors and scientists linked to electricity. - Find examples of electrical conductors and insulators in everyday life.
	Sound	Vocab: vibration, percussion instrument, wind instrument, string instrument, frequency, volume, pitch, transverse wave, longitudinal wave, medium, vacuum, absorption, conductor, energy, insulator, particle, wave.
	<u>Children should already be able to:</u> Year 1 – Animals Including Humans - Identify the five senses. - Recognise that ears are used for hearing. Year 1 – Everyday Materials - Describe the properties of materials. - Identify materials used to make objects. Year 3 – Light - Understand that we use our senses to observe the world around us. - Identify patterns in investigations. - Understand that some phenomena cannot be seen directly but their effects can be observed. Year 3 – Forces and Magnets	By the end of this unit, children should be able to: - Explain that sounds are produced by vibrations. - Describe how vibrations travel to the ear through a medium. - Explain that sound can travel through solids, liquids and gases. - Describe the difference between pitch and volume. - Explain how vibrations affect volume. - Identify patterns between the pitch of a sound and the object producing it. - Explain why sounds become quieter as distance increases. - Use scientific vocabulary accurately when discussing sound.



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	• Understand that forces can cause movement. • Observe and identify patterns. • Carry out comparative tests and draw conclusions from evidence.	
	<u>Enquiry type suggestions</u>	Pattern Seeking • Children should investigate relationships between vibrations, pitch, volume and distance. Comparative Testing • Compare sounds produced by different materials. • Compare the volume of sounds made in different ways. • Compare how sound travels through different materials. Observation Over Time • Observe vibrations in musical instruments. • Observe how sounds change as the distance increases. Research Using Secondary Sources • Investigate how animals use sound. • Research hearing protection. • Find out how sound is used in everyday technology.
	Spring	
	Animals including humans	Vocab: digestion, excretion, peristalsis, anus, duodenum, small intestine, large intestine, stomach, rectum, oesophagus, tongue, saliva, acid, bile, enzymes, incisors, canines, molars, predator, prey, producer, consumer, primary, secondary, tertiary.
	Children should already be able to: Year 1 • Identify and name the main parts of the human body. • Identify the five senses.	<u>End point</u> • By the end of this unit, children should be able to: • Name and describe the functions of the main parts of the digestive system.



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	• Recognise that humans are animals. Year 2 • Explain that animals need food, water and air to survive. • Describe the importance of a balanced diet, exercise and hygiene. • Explain that healthy choices help the body to grow and develop. • Understand that animals depend on food to survive. Year 3 • Explain that animals obtain nutrition from the food they eat. • Describe the functions of the skeleton and muscles. • Explain that different nutrients help the body in different ways. • Use scientific vocabulary such as <i>nutrition</i>, <i>nutrients</i> and <i>vertebrate</i>.	• Explain the journey food takes through the body. • Explain why nutrients are important for health and growth. • Identify and describe the functions of incisors, canines, premolars and molars. • Explain why humans have different types of teeth. • Construct and interpret simple food chains. • Identify producers, consumers, predators and prey within food chains. • Explain that energy moves through food chains. • Use scientific vocabulary accurately when explaining digestion and food chains
	Enquiry type suggestions:	Comparative Testing • Children should compare the functions of teeth and investigate how digestion works. Pattern Seeking • Look for patterns in food chains. • Compare the diets of different animals. • Identify relationships between diet and tooth structure. Research Using Secondary Sources • Research unusual digestive systems in animals. • Investigate how different animals' teeth are adapted to their diets. • Find examples of food chains in different habitats. Observation Over Time • Observe changes to food during model digestion investigations.



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		Observe the effects of sugar or acidic drinks on model teeth over time.
	States of Matter	Vocab: bond, condensation, evaporation, reversible, boiling point, melting point, liquid, gas, thermometer, water cycle, continuous precipitation, transpiration, surface runoff process, sublimation, freezing, particle, absorption, dissolving.
	Children should already be able to: Year 1 – Everyday Materials - Identify and name a variety of everyday materials. - Describe simple properties of materials. - Group materials according to observable properties. Year 2 – Uses of Everyday Materials - Explain that materials can change shape. - Compare materials and describe their suitability for different uses. - Observe how materials respond to squashing, bending, twisting and stretching. Year 3 – Rocks - Compare and group materials according to physical properties. - Describe and measure properties such as hardness and permeability. - Understand that materials have different characteristics. Year 3 – Light and Forces - Measure carefully and identify patterns in investigations.	<u>By the end of this unit, children should be able to:</u> - Identify whether materials are solids, liquids or gases. - Explain the characteristics of each state of matter. - Compare and group materials according to their state. - Describe how heating and cooling can cause changes of state. - Explain the processes of melting, freezing, evaporation and condensation. - Measure and record temperature using degrees Celsius. - Explain the stages of the water cycle. - Describe how temperature affects the rate of evaporation. - Use scientific vocabulary accurately when discussing states of matter and the water cycle.
	Enquiry type suggestions:	Observation Over Time Children should observe materials changing state and investigate the water cycle over time. Comparative Testing



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		• Compare rates of melting and evaporation. • Compare how different materials change state. • Investigate how temperature affects evaporation. Pattern Seeking • Identify relationships between temperature and state changes. • Look for patterns in evaporation. Research Using Secondary Sources • Investigate the water cycle in different parts of the world. • Research freezing and boiling points. • Find examples of evaporation and condensation in everyday life.
	Summer	
	Living things and their habitat	Vocab: kingdom, classification key, species, fungi, bacteria, climate change, characteristics, offspring, extinction, pollution, decay, energy, habitat, freezing plant, structure, herbivore, carnivore, omnivore, microhabitat, environment, reproduction, vertebrate
	Children should already be able to: Year 1 – Animals Including Humans • Identify and name common animals. • Group animals into mammals, birds, fish, amphibians and reptiles. • Identify carnivores, herbivores and omnivores. Year 2 – Living Things and Their Habitats • Distinguish between living, dead and never-living things. • Identify that most living things live in habitats to which they are suited.	<u>By the end of this unit, children should be able to:</u> • Explain that living things can be grouped in different ways. • Group living things according to observable characteristics. • Use and create simple classification keys. • Identify living things in local and wider environments. • Explain why organisms live in particular habitats. • Describe ways environments can change.



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	- Describe how different habitats provide for the basic needs of living things. - Describe simple food chains. Year 3 – Plants - Explain that flowering plants have life cycles and reproduce. - Understand that different plants have different requirements for survival Year 4 – Animals Including Humans - Construct and interpret food chains. - Identify producers, predators and prey. - Explain that living things depend upon one another.	- Explain how environmental changes can affect living things. - Use scientific vocabulary accurately when classifying organisms and discussing habitats.
	Enquiry type suggestions:	Identifying and Classifying - Group living things using observable characteristics. - Use classification keys to identify organisms. - Create their own branching keys. Observation Over Time - Observe changes in habitats throughout the year. - Monitor changes in microhabitats. - Observe seasonal changes in local environments. Pattern Seeking - Identify patterns between organisms and their habitats. - Look for relationships between environmental conditions and the living things found there. Research Using Secondary Sources - Investigate endangered habitats. - Research environmental issues affecting living things. - Find out about conservation projects.



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Y5	Autumn	
	Earth and Space	Vocabulary: Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation, waxing, waning, crescent, gibbous. Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, planets, solar system, day, night, rotate, orbit, axis, spherical, geocentric, heliocentric.
	<u>Required prior knowledge</u> Children should already be able to: Year 1 – Seasonal Changes • Observe changes across the four seasons. • Observe changes in weather associated with the seasons. • Observe changes in the length of the day. Year 1 – Everyday Materials and Light • Understand that we use our senses to observe changes in the world around us. Year 3 – Light • Understand that light travels from a light source. • Explain how shadows are formed. • Recognise that the Sun is a source of light. Year 4 – States of Matter • Explain that the water cycle is driven by energy from the Sun.	<u>End point:</u> By the end of this unit, children should be able to: • Understand that stars, planets and moons have so much mass they attract other things, including each other due to a force called gravity. Gravity works over distance. • Understand that objects with larger masses exert bigger gravitational forces. • Identify that Earth and the other planets orbit the Sun. • Explain that the Moon orbits the Earth. • Understand and explain that stars produce vast amounts of heat and light. • Explain that the Sun is a star at the centre of the solar system. • Describe the Sun, Earth and Moon as approximately spherical bodies. • Explain that Earth rotates on its axis. • Explain how Earth's rotation causes day and night. • Explain why the Sun appears to move across the sky. • Use scientific vocabulary accurately when discussing Earth and space.



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	<u>Enquiry type suggestions:</u>	Pattern Seeking - Children should identify patterns in the movement of celestial bodies and the changes they observe in the sky. Observation Over Time - Observe the apparent movement of the Sun. - Observe changes in shadows throughout the day. - Observe phases of the Moon over several weeks. - Observe seasonal changes in daylight hours. Research Using Secondary Sources - Research the planets in the solar system. - Investigate the work of astronomers and space scientists. - Explore current developments in space exploration. Modelling Although not a formal enquiry type, modelling is particularly important in this unit. - Use physical models to demonstrate Earth's rotation and orbit. - Use models to explain day and night. - Use models to explain the relationship between the Earth, Moon and Sun.
	Animals including humans	Vocabulary: Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty, Hormone, Physical, Emotional
	Children should already be able to: Year 1 – Animals Including Humans - Identify and name the main parts of the human body. - Recognise that humans are animals. Year 2 – Animals Including Humans - Explain that animals, including humans, have offspring which grow into adults.	End point By the end of this unit, children should be able to: - Describe the stages of the human life cycle from birth to old age. - Explain that growth and development occur throughout life. - Sequence the stages of human development accurately.



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	- Describe the importance of exercise, healthy eating and hygiene. Year 3 – Animals Including Humans - Explain that humans need nutrition to survive. - Describe the functions of the skeleton and muscles. Year 4 – Animals Including Humans - Explain that nutrients are absorbed through the digestive system. - Understand that living things have life cycles and depend on one another.	- Describe some physical and emotional changes associated with puberty. (PSHE) - Explain that people experience puberty differently and at different rates. (PSHE) - Compare the needs and abilities of people at different stages of life. - Use scientific vocabulary accurately when discussing human growth and development.
	<u>Enquiry type suggestions:</u>	Observation Over Time - Children should explore how humans grow and change over time. Pattern Seeking - Identify patterns in growth and development. - Compare similarities and differences between life stages. Research Using Secondary Sources - Research stages of human development. - Investigate average milestones in childhood. - Explore changes associated with puberty. Identifying and Classifying - Group characteristics according to life stages. - Sort changes into physical and emotional categories.
	Spring	
	Properties and changes of materials	Vocabulary: Solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, temperature, process, condensation, evaporation, water vapour, energy, precipitation, collection.



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		Hardness, Solubility, Transparency, Conductivity, Magnetic, Filter, Evaporation, Dissolving, Mixing Material, conductor, dissolve, insoluble, suspension, chemical, physical, irreversible, solution, reversible, separate, mixture, insulator, transparent, flexible, permeable, soluble, property, magnetic, hard.
	<u>Required prior knowledge</u> Children should already be able to: Year 1 – Everyday Materials - Identify and name everyday materials. - Describe simple physical properties of materials. Year 2 – Uses of Everyday Materials - Compare materials according to their suitability for different purposes. - Observe how materials can change shape. Year 3 – Rocks - Compare and group materials according to their properties. - Describe characteristics such as hardness and permeability. Year 3 – Forces and Magnets - Group materials according to whether they are magnetic. Year 4 – States of Matter - Identify solids, liquids and gases. - Describe melting, freezing, evaporation and condensation. - Understand that some changes of state are reversible. Year 4 – Electricity - Recognise conductors and insulators.	<u>End point:</u> By the end of this unit, children should be able to: - Compare and group materials according to their properties. - Explain what solubility means and identify soluble and insoluble materials. - Describe how solutions form. - Recover dissolved substances through evaporation. - Explain how mixtures can be separated using filtering, sieving and evaporation. - Explain why certain materials are chosen for particular uses. - Identify reversible changes and explain why they are reversible. - Identify irreversible changes and explain that they often form new materials. - Use evidence from investigations to justify explanations. - Use scientific vocabulary accurately when discussing materials and changes.



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	<u>Enquiry type suggestions:</u>	Comparative Testing - Children should compare materials and investigate how their properties affect their uses. Observation Over Time - Observe dissolving and evaporation over time. - Observe changes during reversible and irreversible reactions. Pattern Seeking - Identify relationships between properties and uses. - Recognise patterns between materials and their behaviours. Research Using Secondary Sources - Investigate industrial uses of materials. - Research recycling and sustainability. - Explore examples of reversible and irreversible changes in everyday life.
Summer		
	Forces	Vocabulary: Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys, force, push, pull, opposing, streamline, brake, mechanism, lever, cog, machine, pulley.
	<u>Required prior knowledge</u> Children should already be able to: Year 1 – Everyday Materials - Describe the properties of materials. - Explain that materials are chosen for different purposes. Year 2 – Uses of Everyday Materials - Investigate how materials can be changed by forces such as squashing, twisting, bending and stretching. Year 3 – Forces and Magnets	<u>End point:</u> By the end of this unit, children should be able to: - Explain that gravity is a force that pulls objects towards the Earth. - Explain that gravity is a non-contact force. - Describe the effects of friction on moving objects. - Explain how air resistance affects movement. - Explain how water resistance affects movement. - Explain why streamlined shapes reduce resistance.



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	• Explain that a force is a push or a pull. • Compare how objects move on different surfaces. • Explain that friction is a force. • Distinguish between contact and non-contact forces. • Understand that magnetic forces act at a distance.	• Describe how levers, pulleys and gears can make work easier. • Explain that mechanisms allow a smaller force to have a greater effect. • Use scientific vocabulary accurately when discussing forces.
	Enquiry type suggestions:	Comparative Testing • Children should compare the effects of different forces on movement. Pattern Seeking • Identify relationships between shape and resistance. • Observe patterns between surfaces and friction. • Explore relationships between mechanisms and force. Observation Over Time • Observe changes in movement caused by resistance. • Observe the effects of repeated investigations. Research Using Secondary Sources • Investigate how forces are used in everyday life. • Research inventions that use mechanisms. • Explore examples of streamlined designs.
	Living things and their habitat	Vocabulary: Reproduction, Sexual, Asexual, Pollination, Dispersal, reproduction, cell, fertilisation, pollination, male, female, pregnancy, young, mammal, metamorphosis, amphibian, insect, egg, embryo, bird, plant
<u>Required prior knowledge</u> Children should already be able to:		<u>End point</u> By the end of this unit, children should be able to:



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	Year 1 – Plants • Identify and name common plants. • Identify the basic parts of flowering plants. Year 2 – Animals Including Humans • Explain that animals, including humans, have offspring which grow into adults. • Describe the basic stages of a human life cycle. Year 2 – Living Things and Their Habitats • Identify that living things live in habitats to which they are suited. • Explain that living things depend upon one another. Year 3 – Plants • Describe the life cycle of flowering plants. • Explain pollination, seed formation and seed dispersal. Year 4 – Living Things and Their Habitats • Group living things using classification keys. • Explain that environments can change and affect living things.	• Describe and compare the life cycles of mammals, amphibians, insects and birds. • Explain that life cycles differ between groups of organisms. • Describe the stages of metamorphosis in insects and amphibians. • Explain that reproduction is a life process that enables species to continue. • Describe sexual reproduction in flowering plants in simple terms. • Describe examples of asexual reproduction in plants. • Compare different methods of reproduction in plants and animals. • Use scientific vocabulary accurately when discussing life cycles and reproduction.
	<u>Enquiry type suggestions:</u>	Observation Over Time • Children should observe growth and changes in living things over time. Pattern Seeking • Compare similarities and differences between life cycles. • Identify patterns between reproduction methods and the environments organisms live in. Research Using Secondary Sources • Research unusual life cycles. • Investigate the life cycles of endangered species. • Compare reproductive strategies in plants and animals. Identifying and Classifying • Group organisms according to life cycle characteristics. • Classify organisms according to reproductive methods.



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Y6	Autumn	
	Animals including humans	Vocabulary: Oxygenated, Deoxygenated, Valve, Exercise, Respiration Circulatory system, heart, lungs, blood vessels, blood, artery, vein, pulmonary, alveoli, capillary, digestive, transport, gas exchange, villi, nutrients, water, oxygen, alcohol, drugs, tobacco.
	Children should already be able to: Year 1 – Animals Including Humans - Identify and name basic parts of the human body. - Identify the five senses and associated body parts. Year 2 – Animals Including Humans - Explain the importance of exercise, healthy eating and hygiene. - Describe the basic needs of animals, including humans. Year 3 – Animals Including Humans - Explain that humans need nutrition and cannot make their own food. - Describe the functions of the skeleton and muscles for support, protection and movement. Year 4 – Animals Including Humans - Describe the simple functions of the digestive system. - Explain that nutrients are absorbed from food in the intestines. Year 5 – Animals Including Humans - Describe the stages of human growth and development. - Explain how healthy lifestyles contribute to wellbeing.	End point: By the end of this unit, children should be able to: - Identify the main parts of the circulatory system. - Explain the functions of the heart, blood vessels and blood. - Explain that blood transports oxygen, nutrients and water around the body. - Describe how nutrients absorbed by the digestive system are transported in the blood. - Explain the impact of exercise on heart rate and overall health. - Describe how diet can affect the body's functioning. - Explain how drugs and lifestyle choices can positively or negatively affect health. - Use scientific vocabulary accurately when discussing the circulatory system and healthy lifestyles.
	Enquiry type suggestions:	Comparative Testing Children should investigate how different activities affect the body. Pattern Seeking



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		• Identify patterns between exercise and pulse rate. • Investigate relationships between lifestyle choices and health. Research Using Secondary Sources • Research the effects of smoking, alcohol and drugs. • Investigate how athletes keep their circulatory systems healthy. • Explore diseases that affect the circulatory system. Observation Over Time • Observe changes in pulse during exercise and recovery. • Monitor lifestyle habits and discuss long-term health effects.
	Electricity	Vocabulary: Electricity, neutrons, protons, electrons, nucleus, atom, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator, conductor.
	Children should already be able to: Year 1 – Everyday Materials • Identify materials and describe their properties. • Recognise that different materials are used for different purposes. Year 2 – Uses of Everyday Materials • Explain why materials are suitable for particular uses. Year 4 – Electricity • Identify common appliances that run on electricity. • Construct simple series circuits. • Identify and name cells, wires, bulbs, buzzers and switches. • Recognise whether a lamp will light in a simple circuit. • Identify conductors and insulators. • Safety with electricity	<u>End point:</u> By the end of this unit, children should be able to: • Construct and explain simple series circuits. • Explain how changing the number of cells affects bulbs and buzzers. • Compare different circuits and explain variations in how components function. • Explain why bulbs vary in brightness. • Explain why buzzers vary in volume. • Explain how switches control a circuit. • Draw simple circuit diagrams using recognised symbols. • Interpret simple circuit diagrams. • Draw diagrams using the correct electrical symbols.



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Enquiry type suggestions:	Comparative Testing - Children should investigate how changing components affects a circuit. Pattern Seeking - Identify relationships between cells and circuit output. - Identify patterns in how different components affect circuits. Observation Over Time - Observe changes in circuits as components are altered. - Observe how batteries gradually lose energy. Research Using Secondary Sources - Investigate how electricity is used in everyday life. - Research careers involving electrical engineering. - Explore how circuit diagrams are used by scientists and engineers.
Spring	
Light	Vocabulary: Light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, opaque, shadow, block, transparent, translucent. Reflect Absorb Emitted Scattered Refraction
<u>Required prior knowledge</u> Year 1 – Seasonal Changes - Observe changes in daylight throughout the year. - Recognise that the Sun is associated with daylight. Year 3 – Light - Recognise that they need light to see things. - Explain that dark is the absence of light. - Recognise that light is reflected from surfaces. - Recognise that sunlight can be dangerous and understand ways to protect their eyes.	<u>End point:</u> By the end of this unit, children should be able to: - Explain that light travels in straight lines. - Explain how light travels from sources to our eyes. - Explain that we see objects because they reflect light into our eyes. - Distinguish between objects that produce light and those that reflect it. - Explain why shadows are formed. - Explain why shadows have the same shape as the object creating them.



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- Explain how shadows are formed and investigate how shadows change. Year 5 – Earth and Space - Recognise that the Sun is a source of light. - Use models to explain scientific ideas. - Explain the apparent movement of the Sun across the sky	- Use diagrams and models to represent the movement of light. - Use scientific vocabulary accurately when discussing light and vision.
<u>Enquiry type suggestions:</u>	Pattern Seeking - Children should investigate patterns involving light, reflection and shadows. Comparative Testing - Compare materials according to how they interact with light. - Investigate which surfaces reflect light best. Observation Over Time - Observe changes in shadows throughout the day. - Observe how light behaves using mirrors and periscopes. Modelling - Use ray diagrams to represent light travelling in straight lines. - Model reflection using mirrors. - Model how light enters the eye.
Evolution and inheritance	Vocabulary: Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics, Variation, Inherited, Environmental, Mutation, Competition, Survival of the Fittest, Evidence.
<u>Required prior knowledge</u> Children should already be able to: Year 1 – Animals Including Humans - Identify and name common animals. - Identify basic body parts.	<u>End point</u> By the end of this unit, children should be able to: - Explain that fossils provide evidence that living things have changed over time. - Describe how fossils help scientists understand the past.



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	Year 1 – Plants - Identify and name common plants. Year 2 – Animals Including Humans - Explain that animals have offspring which grow into adults. Year 2 – Living Things and Their Habitats - Explain that living things live in habitats to which they are suited. - Describe how habitats provide for basic needs. Year 3 – Rocks - Explain that fossils are formed when living things become trapped in rock over millions of years. Year 4 – Living Things and Their Habitats - Explain that environments can change and affect living things. Year 5 – Living Things and Their Habitats - Describe life cycles and reproduction in plants and animals. Year 6 – Living Things and Their Habitats - Classify organisms according to observable characteristics. - Recognise that characteristics are used to identify organisms.	- Explain that offspring inherit characteristics from their parents. - Explain that variation exists within species. - Identify examples of inherited and non-inherited characteristics. - Explain how plants and animals are adapted to their environments. - Explain how adaptations improve survival. - Explain, in simple terms, that successful adaptations may become more common over many generations and can lead to evolution. - Use scientific vocabulary accurately when discussing evolution and inheritance.
	Enquiry type suggestions:	Research Using Secondary Sources - Children should investigate evidence for evolution and adaptation using books, videos, images and other sources. Pattern Seeking - Identify patterns in inherited characteristics. - Explore relationships between adaptations and environments. Identifying and Classifying



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		• Classify characteristics as inherited or acquired. • Compare adaptations in different organisms. Observation Over Time This enquiry type is less prominent because evolution occurs over extremely long periods. However, children can: • Observe variation in plants. • Observe similarities and differences between organisms.
Summer		
	Living things and their habitat	Vocabulary: Variation Organisms Populations. Classification Characteristics Environment, flowering, nonflowering, plants, animals, vertebrates, fish, amphibians, reptiles, mammals, invertebrate, human impact, nature reserves, deforestation. Classify, compare, bacteria, microorganism, organism, invertebrates, vertebrates, Linnaean.
	Children should already be able to: Year 1 – Animals Including Humans • Identify and name common animals. • Group animals into fish, amphibians, reptiles, birds and mammals. Year 1 – Plants • Identify common wild and garden plants. • Identify deciduous and evergreen trees. Year 2 – Living Things and Their Habitats • Identify that things are living, dead or have never been alive. • Identify that living things live in habitats to which they are suited. • Describe how habitats provide for basic needs. Year 4 – Living Things and Their Habitats	<u>End point:</u> By the end of this unit, children should be able to: • Explain that living things are classified according to their characteristics. • Group organisms into broad groups including plants, animals and micro-organisms. • Describe characteristics of vertebrates and invertebrates. • Explain that vertebrates can be grouped into mammals, birds, reptiles, amphibians and fish. • Recognise that micro-organisms are living things. • Use classification keys to identify organisms. • Construct simple classification keys and branching databases.



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	• Recognise that living things can be grouped in a variety of ways. • Use classification keys to identify and group living things. • Explain how environments can change. Year 5 – Living Things and Their Habitats • Compare life cycles of mammals, birds, insects and amphibians. • Explain different methods of reproduction in plants and animals.	• Justify why organisms have been classified in particular ways. • Use scientific vocabulary accurately when discussing classification.
	Enquiry type suggestions	Identifying and Classifying • Children should identify similarities and differences and use these to classify organisms. Research Using Secondary Sources • Research micro-organisms. • Investigate how scientists classify living things. • Explore how classification systems have changed over time. Pattern Seeking • Identify patterns in characteristics across groups. • Recognise relationships between classification groups. Comparative Testing • This enquiry type is less prominent in this unit but may be used when comparing observable features.