Kidsgrove Primary School

Science
Intent Document

Kidsgrove Primary School - UTW- The Natural World

Playing & Exploring - Engagement	Active Learning - Motivation	Creating & Thinking Critically - Thinking
Finding out & exploring Playing with what they know Being willing to 'have a go'	Being involved & concentrating Keep on trying Enjoying achieving what they set out to do	Having their own ideas (creative thinking) Making links (building theories) Working with ideas (critical thinking)

Understanding the World- The Natural World ELG

Explore the natural world around them, making observations and drawing pictures of animals and plants
Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class
Understand some important processes and changes in the natural world around them, including the seasons

Focus	Seasonal changes	Everyday materials	Plants	Animals including Humans	Vocabulary- To be used daily.
Nursery Skills	• Explore different habitats outdoors, e.g. scent, colour & shape of flowers attracting bees • Observe growth & decay over time • Begin to understand the need to respect & care for the natural environment & all living things • Talk about what they see, using a wide vocabulary	• Explore materials with different properties • Explore natural materials, indoors and outdoors. • Explore collections of materials with similar and/ or different properties. Talk about the differences between materials and changes that they notice.	• Observe plants closely through a variety of means e.g. magnifiers & photographs • Begin to understand the need to respect & care for the natural environment & all living things • Extend vocabulary: leaves, petals, roots, bulb, trunk, branches, stem, garden plants, wild plants, seeds • Use all the senses in hands-on exploration of plants Understand the key features of the life cycle of a plant	• Observe animals closely through a variety of means e.g. magnifiers & photographs • Look at key stages of development from birth to adult • Observe & describe in words or actions the effects of physical activity on body Understand the key features of the life cycle of a butterfly	Senses, experiment, plants – leaf, stem, root, flower, animals, humans, materials, change, growth, environment, heavy, light, baby, toddler, child, egg, caterpillar, chrysalis, seasons, melt, freeze, hard,

Nursery Knowledge	**Autumn** My Family and Me	**Autumn 2** A Special Place to Be	**Spring 1** Let's Go Exploring	**Spring 2** What a wonderful world	**Summer 1** Big and Small	**Summer 2** Superhero Adventures
	• Name & identify body parts- facials features, arms, legs, fingers and toes • Know the names of different body parts & what they do • To know how to brush their teeth correctly • Know about the different seasons & the effect they have on plants, trees &creatures. •Using images can make sense of their own life- the change from baby to child •Use all their senses in hands-on exploration of natural materials		• Most plants start growing from a seed or bulb • All plants need water & light to grow & survive • Know the correct terms to describe the life-cycle of a butterfly • Know how to care for plants • Know & talk about the life-cycle of a plant Know the names of the basic parts of a plant & tree • Can use a magnifying glass		• Know the effects of exercise on the body e.g. heart beats faster, get hotter • Know the different properties of material e.g. wood, plastic, metal To understand there are different forces such as push, pull, the weather and magnetic forces	

Children to be exposed to key vocabulary daily in provision. High quality text to be chosen for story times that allow for questioning opportunities relating to key events. The outdoor classroom will be used as a key feature in our science learning through the natural world. Trips to the farm and the zoo will be used to enhance children experiences of animals and class experiences of hatching our own chicks and caring for our own caterpillars/butterflies.

Experiences	SMSC	British Values	Our KPS Values
Chick Class caterpillars/butterflies	**Spiritual:** Children develop awe and wonder through observing life cycles, seasonal changes and natural phenomena. **Moral:** They learn right and wrong through caring for living things and respecting the environment. **Social:** Collaborative exploration teaches sharing, turn-taking and communicating scientific ideas. **Cultural:** Children learn about nature,	**Democracy:** Children share ideas and vote on choices during exploration tasks (e.g., which seeds to plant, which materials to test). **Rule of Law:** Children learn simple rules for keeping safe when exploring indoors and outdoors, including caring for living things.	**Ambition:** Children are encouraged to ask questions, explore freely and build curiosity about the natural world, fostering early scientific ambition. **Courage:** Through hands-on exploration, children show courage by trying new activities,

	animals and environments from a range of cultures and contexts.	**Individual Liberty:** Pupils are free to choose materials, habitats and investigative approaches, building confidence in making informed choices. **Mutual Respect & Tolerance:** Children learn to value differences in the natural world and listen respectfully to others' observations.	investigating unfamiliar materials and confidently sharing ideas. **One Team:** Classroom and outdoor learning promote teamwork as children observe together, work in groups during experiments and support one another's understanding. **Respect:** Pupils learn to respect living things, environments, and each other's viewpoints when exploring natural processes. **Never Give Up:** EYFS science emphasises persistence as children keep trying when investigating materials, observing changes, or growing plants.

Kidsgrove Primary School - UTW- The Natural World

Active Learning - Motivation	Active Learning - Motivation	Creating & Thinking Critically - Thinking
Being involved & concentrating Keep on trying Enjoying achieving what they set out to do	Being involved & concentrating Keep on trying Enjoying achieving what they set out to do	Having their own ideas (creative thinking) Making links (building theories) Working with ideas (critical thinking)

Understanding the World- The Natural World ELG

Explore the natural world around them, making observations and drawing pictures of animals and plants
Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class
Understand some important processes and changes in the natural world around them, including the seasons

Focus	Seasonal changes	Everyday materials	Plants	Animals including Humans	Vocabulary- To be used daily.
Reception Skills	Describe what they see, hear & feel whilst outside Observational drawings of the natural world Discuss how to care for the living things & their habitats Examine change over time Express opinions on natural & built environments & opportunities to hear different points of view on the quality of the environment. Use words such as busy, quiet, pollution Understand the effect of changing seasons on the natural world around them	Explore collections of materials with similar and/ or different properties. Talk about the differences between materials and changes that they notice Characteristics of liquids & solids e.g. cooking eggs, melting chocolate Observe & interact with natural processes, such as ice melting, a sound causing a vibration, light travelling through transparent material, an object casting a shadow, a magnet attracting an object & a boat floating on water	Extend vocabulary: blossom, buds, bulb, evergreen, deciduous Describe what they see, hear & feel whilst outside Name & describe some plants Draw pictures of plants	Shows some understanding that good practices with regard to exercise, eating, drinking water, sleeping & hygiene can contribute to good health Describe what they see, hear & feel Identify different parts of their body & animals Be able to show care and concern for living things Know the effects exercise has on their bodies Have some understanding of growth and change Talk about things they have observed including animals Observational drawings of animals	Test, fair, why, senses, world, plants – leaf, stem, root, flower, animals, humans, materials - waterproof, natural, change, growth, decay, environment, heavy, light, float, sink, stretch, snap, magnetic, baby, toddler, child, teenager, adult, egg, bark, stick, branch, seasons, melt, liquid, solid, hard, soft, kitten, puppy, foal, calf etc

	Autumn My Environment and Me / Special Times and Places	Spring Exploring and Changing / Growing and Changing	Summer Save Our World
Reception Knowledge	• Can name own body parts using the text Funny Bones as a support. All above + shoulders, ribs, backbone, knees, elbow • Can piece back together the parts of the body and locate upon request. • Can describe key function of the skeletal system • Can describe what changes occur as they change from a baby to an adult • Can name the 4 seasons • Can talk about similarities and differences between each season • Can name the characteristics of each season	• All plants need water, light and warmth to grow and survive • A seed produces roots to allow water to get into the plant and shoots to produce leaves to collects the sunlight • Can describe the lifecycle of a sunflower •Can describe the life cycle of a chick using correct terminology eg embryo, incubation, hatching •Knows that meat is produced from animals	•Know the effects of heating and cooling on ingredients such as melting and freezing •Can classify a set of objects by their materials- Wood, plastic, fabric, and glass. •Can name the characteristics of materials • •Can describe the most suitable materials for building and give explanations as to why.

Seasonal changes	Everyday materials	Plants	Animals including humans

Children to be exposed to key vocabulary daily in provision. High quality text to be chosen for story times that allow for questioning opportunities relating to key events. The outdoor classroom will be used as a key feature in our science learning through the natural world. Trips to the farm and the zoo will be used to enhance children experiences of animals and class experiences of hatching our own chicks and caring for our own caterpillars/butterflies.

Experiences	SMSC	British Values	Acorn Values
	Spiritual: Children develop awe and wonder through observing life cycles, seasonal changes and natural phenomena. **Moral:** They learn right and wrong through caring for living things and respecting the environment. **Social:** Collaborative exploration teaches sharing, turn-taking and communicating scientific ideas. **Cultural:** Children learn about nature, animals and environments from a range of cultures and contexts.	**Democracy:** Children share ideas and vote on choices during exploration tasks (e.g., which seeds to plant, which materials to test). **Rule of Law:** Children learn simple rules for keeping safe when exploring indoors and outdoors, including caring for living things. **Individual Liberty:** Pupils are free to choose materials, habitats and investigative approaches, building confidence in making informed choices. **Mutual Respect & Tolerance:** Children learn to value differences in the natural world and listen respectfully to others' observations.	**Ambition:** Children are encouraged to ask questions, explore freely and build curiosity about the natural world, fostering early scientific ambition. **Courage:** Through hands-on exploration, children show courage by trying new activities, investigating unfamiliar materials and confidently sharing ideas. **One Team:** Classroom and outdoor learning promote teamwork as children observe together, work in groups during experiments and support one another's understanding. **Respect:** Pupils learn to respect living things, environments, and each other's viewpoints when exploring natural processes. **Never Give Up:** EYFS science emphasises persistence as children keep trying when investigating materials, observing changes, or growing plants.

Biology	Chemistry	Physics
Plants **Animals including humans**	**Everyday materials**	**Seasonal Changes**

Key Stage 1

Cycle A	Animals including humans					Materials
	The human body (year 1)	Animals (year 1)	Animals need for survival (year 2)	Humans (year 2)	Growing up (Year 2 both units)	Materials (year 1 & 2)
Cycle B	Plants			Living things and their habitats	Sustainability	
	Planting A (year 1) Plants (year 1)	Planting B (year 1) Plants – light and dark (all units year 2)	Planting C (year 1) Bulb and seeds (year 2)	Living things and their habitats (year 2)	Caring for the planet (year 1) Plastic (year 2)	Growing and cooking (year 1) Wildlife (year 2)
	x4 seasonal changes units to be done in autumn, winter, spring and summer					

KS1: Science skills progression

Year 1 Topics

Autumn

The human body	Ask questions
The human body	Answer questions and make conclusions
The human body	Take measurements
The human body	Take measurements
The human body	Take measurements
The human body	Take measurements
The human body	Take measurements
Seasonal changes	Ask questions
Seasonal changes	Gather, record and classify data
Materials	Gather, record and classify data
Materials	Make observations
Materials	Gather, record and classify data
Materials	Take measurements
Materials	Gather, record and classify data
Materials	Answer questions and make conclusions
Materials	Answer questions and make conclusions
Seasonal changes	Ask questions
Seasonal changes	Gather, record and classify data

Spring

Planting A	Ask questions
Animals	Ask questions
Animals	Gather, record and classify data
Animals	Gather, record and classify data
Animals	Gather, record and classify data
Animals	Answer questions and make conclusions
Animals	Gather, record and classify data
Animals	Gather, record and classify data
Animals	Gather, record and classify data
Animals	Gather, record and classify data
Caring for the planet	Ask questions
Caring for the planet	Answer questions and make conclusions
Seasonal changes	Ask questions
Seasonal changes	Gather, record and classify data
Planting B	Make observations
Planting B	Gather, record and classify data
	Consolidation

Summer

Plants	Gather, record and classify data
Plants	Gather, record and classify data
Plants	Make observations
Plants	Gather, record and classify data
Plants	Gather, record and classify data
Plants	Gather, record and classify data
Plants	Answer questions and make conclusions
Planting C	Make observations
Planting C	Gather, record and classify data
Growing and cooking	Ask questions
Growing and cooking	Answer questions and make conclusions
Seasonal changes	Ask questions
Seasonal changes	Gather, record and classify data
Seasonal changes	Answer questions and make conclusions
	Consolidation

Year 2 Topics

Autumn

Animals' needs for survival	Ask questions; Gather, record and classify data; Gather, record and classify data; Gather, record and classify data; Gather, record and classify data; Answer questions and make conclusions
Humans	Gather, record and classify data; Gather, record and classify data; Make observations
Materials	Make observations; Gather, record and classify data; Gather, record and classify data; Ask questions; Gather, record and classify data; Gather, record and classify data; Make observations; Answer questions and make conclusions; Take measurements; Ask questions; Answer questions and make conclusions
Plastic	Ask questions; Answer questions and make conclusions

Spring

Plants (light and dark)	Make observations; Make observations; Ask questions; Ask questions; Take measurements
Living things and their habitats	Gather, record and classify data; Answer questions and make conclusions; Answer questions and make conclusions; Answer questions and make conclusions; Gather, record and classify data; Make observations; Gather, record and classify data; Gather, record and classify data; Gather, record and classify data
Plants	Gather, record and classify data
	Consolidation

Summer

Plants (bulbs and seeds)	Make observations; Gather, record and classify data; Ask questions; Take measurements
Growing up	Gather, record and classify data; Ask questions; Gather, record and classify data; Gather, record and classify data; Make observations; Answer questions and make conclusions
Plants	Make observations
Growing up	Make observations
Wildlife	Ask questions; Answer questions and make conclusions
	Consolidation

Key Vocabilary					
Strand	**Living things and their habitats**	**Everyday materials**	**Plants**	**Animals including humans**	**Seasonal Changes**
Vocabulary	**Year 2:** Arctic plants, hibernate, habitat, cactus, desert, rainfall, ocean, seagrass, woodland, fern, moss, microhabitat, spider, snail, diet, food chain, living, dead, never alive	**Year 1:** material, shiny, dull, rock, heavy, light, object, wood, metal, plastic, glass, wool, solid, liquid, melt, freeze, ice, float, sink, absorb, transparent, opaque **Year 2:** natural material, human-made material, recycle, flexible, rigid, stone, pebble, brick, brittle, flexible, translucent, tough, lightweight, strong, breakable, waterproof	**Year 1:** plant, flower, leaf, petals, stem, roots, branch, trunk, roots, wildflower, daisy, garden plant, sunflower, nettle, buttercup, dandelion, deciduous tree, horse chestnut, oak, sycamore, evergreen tree, pine, holly, needles, seed, soil, growth **Year 2:** sunlight, compost, herb, blossom, bulb, shoot	**Year 1:** hair, eyes, face, nose, ears, teeth, mouth, head, neck, arm, elbow, hand, leg, knee, foot light, dark, blind, hear, loud, quiet, noisy, sweet, salty, sour, bitter, savoury, skin, rough, smooth, hard, soft, smell, scent, sniff, stench animal, mammal, fur, wild mammal, pet, bird, wings, beak, feathers, webbed feet, flippers, tail, fins, scales, gills, amphibian, frog, toad, newt, reptile, lizard, crocodile, turtle, carnivore, sharp teeth, herbivore, plants, vegetable, fruit, omnivore **Year 2:** shelter, heart, exercise, physical health, mental health, healthy diet, unhealthy diet, meat, sugar, germs, hygiene, doctor, disease, plaque, gums, filling offspring, egg, parent, baby, child, teenager, life cycle, adolescent, frogspawn, tadpole, froglet, caterpillar, pupa, butterfly, insect, adult	**Year 1:** autumn, daylight, night, weather, season, rainfall, weather, rain gauge, winter, rainy, snowy, windy, cloudy, frosty, sunny, spring, summer

KS1 – End Points					
	Living things and their habitats	**Materials**	**Plants**	**Animals including humans**	**Seasonal Changes**
	Year 2: • Explore and compare the differences between things that are living, dead, and things that have never been alive • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • Identify and name a variety of plants and animals in their habitats, including microhabitats • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.	**Year 1:** • 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 a variety of everyday materials • Compare and group together a variety of everyday materials on the basis of their simple physical properties **Year 2:** • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	Year 1: • Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • Identify and describe the basic structure of a variety of common flowering plants, including trees Year 2: • Observe and describe how seeds and bulbs grow into mature plants • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	**Year 1:** • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • Identify and name a variety of common animals that are carnivores, herbivores and omnivores • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense **Year 2:** • Notice that animals, including humans, have offspring which grow into adults • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	Year 1: • Observe changes across the 4 seasons • Observe and describe weather associated with the seasons and how day length varies

	Living things and their habitats	Everyday materials (uses)	Plants	Animals including humans (Classification)
Key Scientists	**Sylvia Earle** – marine biologist and explorer **Sir Earnest Shackleton** – Antarctic explorer	**Robert Gair** – inventor **Ole Kirk Christiansen** - inventor	**Jane Colden** – botanist **Agnes Arbour** - botanist	**Jane Goodall** – primatologist **Joan Beauchamp Procter** – Zoologist **Maria Sibylla Merian** – Scientific illustrator and entomologist **Louis Pasteur** – biologist and chemist
Linked Texts	**The Big Book of Bugs** – Yuval Zammer	**Somebody Swallowed Stanley** – Sarah Roberts & Hannah Peck	**Sunflower Shoots and Muddy Boots** – Katherine Halligan & Grace Easton	**Lots: The Diversity of Life on Earth** – Nicola Davies & Emily Sutton

Experiences	SMSC	British Values	Acorn Values
	Spiritual: Pupils reflect on the natural world, discovering how living things grow, survive and interact. **Moral:** They learn to make responsible choices, such as protecting habitats and caring for animals. **Social:** Group investigations promote cooperation, discussion and mutual support. **Cultural:** Children explore global habitats, weather patterns and materials, learning about diversity in the natural world.	**Democracy:** Pupils discuss and decide on scientific questions to investigate, taking turns and valuing group decisions. **Rule of Law:** Children follow science safety rules, use equipment responsibly and learn about environmental responsibility. **Individual Liberty:** Pupils can express preferences for investigative methods and make scientific choices within a safe framework. **Mutual Respect & Tolerance:** Learning about diverse global habitats and animal diets promotes tolerance and appreciation for differences.D	**Ambition:** KS1 builds ambition through structured scientific enquiry, encouraging high-quality recording, classification and observation. **Courage:** Pupils show courage by predicting outcomes, testing ideas and learning from mistakes in practical investigations. **One Team:** Group tasks such as sorting materials, exploring habitats and investigating seasonal changes rely on teamwork and cooperation. **Respect:** Children develop respect for the environment, animals, and different scientific viewpoints while learning how to care for the planet. **Never Give Up:** KS1 science reinforces perseverance when results don't go as expected, linking to fair testing and repeated observation.

Lower Key Stage 2

Cycle A	Animals including humans		Living things and their habitat	Rocks	States of matter	Forces and Magnets
	Skeletons (year 3) Movement (year 3) Nutrition and diet (Year 3)	The digestive System (year 4)	Group and Classify Living things (year 4) Habitats (year 4) Food chains (year 4)	Rocks (year 3) Fossils (year 3) Soils (year 3)	States of matter (year 4)	Forces (year 3) Magnets (year 3)
Cycle B	Electricity	Light	Data	Sound	Plants	Sustainability
	Electricity (year 4)	Light (year 3)	Data Collection A (Year 4) Data Collection B (Year 4) Data Collection C (Year 4)	Sound (year 4)	Plants A (Year 3) Plants B (Year 3)	Food Waste (year 3) Biodiversity (Year 3) Deforestation (Year 4) Energy (Year 4)

Lower KS2: Science skills progression

Year 3:

Autumn

Skeletons	Ask questions; Gather, record and classify data; Gather, record and classify data; Gather, record and classify data; Present findings
Movement	Answer questions and make conclusions; Present findings
Nutrition and diet	Gather, record and classify data; Answer questions and make conclusions; Present findings; Answer questions and make conclusions; Answer questions and make conclusions
Food waste	Ask questions; Present findings
Rocks	Make observations; Gather, record and classify data; Make observations; Gather, record and classify data
	Consolidation

Spring

Fossils	Ask questions; Present findings
Soils	Gather, record and classify data; Answer questions and make conclusions; Take measurements; Take measurements; Answer questions and make conclusions
Light	Make observations; Gather, record and classify data; Gather, record and classify data; Gather, record and classify data; Ask questions; Plan; Gather, record and classify data; Answer questions and make conclusions
	Consolidation

Summer

Plants A	Answer questions and make conclusions; Gather, record and classify data; Ask questions; Plan; Plan; Make observations; Gather, record and classify data; Present findings; Make observations; Answer questions and make conclusions
Forces	Make observations; Answer questions and make conclusions; Plan; Answer questions and make conclusions
Magnets	Gather, record and classify data; Make observations; Plan; Present findings
Plants B	Answer questions and make conclusions
Biodiversity	Ask questions; Present findings

Empowering Learners...Growing Minds

Year 4:

Autumn

Group and classify living things	Gather, record and classify data
Group and classify living things	Ask questions
Group and classify living things	Gather, record and classify data
Group and classify living things	Gather, record and classify data
Group and classify living things	Present findings
Data collection A	Gather, record and classify data
Data collection A	Gather, record and classify data
States of matter	Gather, record and classify data
States of matter	Answer questions and make conclusions
States of matter	Ask questions
States of matter	Make observations
States of matter	Plan
States of matter	Gather, record and classify data
States of matter	Answer questions and make conclusions
States of matter	Ask questions
States of matter	Make observations
States of matter	Answer questions and make conclusions
	Consolidation

Spring

Sound	Ask questions
Sound	Gather, record and classify data
Sound	Take measurements
Sound	Plan
Sound	Answer questions and make conclusions
Sound	Plan
Sound	Make observations
Sound	Answer questions and make conclusions
Data collection B	Gather, record and classify data
Data collection B	Gather, record and classify data
Electricity	Gather, record and classify data
Electricity	Gather, record and classify data
Electricity	Answer questions and make conclusions
Electricity	Ask questions
Electricity	Answer questions and make conclusions
Energy	Gather, record and classify data
Energy	Answer questions and make conclusions
	Consolidation

Summer

Data collection C	Gather, record and classify data
Data collection C	Gather, record and classify data
Data collection C	Present findings
Habitats	Ask questions
Habitats	Gather, record and classify data
Habitats	Gather, record and classify data
Habitats	Present findings
Deforestation	Ask questions
Deforestation	Present findings
The digestive system	Make observations
The digestive system	Ask questions
The digestive system	Plan
The digestive system	Plan
The digestive system	Gather, record and classify data
The digestive system	Present findings
The digestive system	Answer questions and make conclusions
Food chains	Answer questions and make conclusions
Food chains	Answer questions and make conclusions
Food chains	Gather, record and classify data
Food chains	Present findings

Key Vocabulary									
	States of matter	**Plants**	**Animals including humans**	**Rocks**	**Living things and their habitat**	**Electricity**	**Sound**	**Light**	**Forces and magnets**
Vocabulary	**Year 4:** solid, liquid, gas, states of matter, pouring solid, ooblek, flow, freezing, melting, boiling, condensation, evaporation, melting point, water cycle, precipitation, atmosphere, petri dish	**Year 3:** water transportation, seedling, seed coating, germination, stamen, pistil, pollen, reproductive organs, pollination, pollinators, wind dispersal, animal dispersal, water dispersal, explosion dispersal, seed dispersal	**Year 3:** skeleton, skull, ribcage, pelvis, femur, spine, antennae, exoskeleton, joint, hinge joint, ball-and socket joint, muscle, biceps, triceps, contract, relax carbohydrates, proteins, dairy products, fats, fruit and vegetables, balanced diet, balanced meal, nutrition, Eatwell Guide, vegan diet, vegetarian diet, omnivorous diet, pescatarian diet **Year 4:** incisors, canines, premolars, molars, enamel, root, decay, digestive system, mouth, oesophagus, stomach, small intestine, large intestine, rectum, saliva producer, consumer, prey, predator, farming, overfishing, hunting	**Year 3:** granite, pumice, sandstone, chalk, marble, gneiss, crystals, grains, layers, texture, hardness, weathering, fossil, shell, fossilisation, sediment, sandy soil, clay soil, peat soil, chalky soil, organic matter, nutrients, deforestation, habitat loss	**Year 4:** vertebrate, invertebrate, softbodied invertebrate, flowering plant, non-flowering plant, seasonal changes, natural resources, rewilding, nature reserve	**Year 4:** appliances, plug, socket, cell, electrocuted, circuit, switch, battery, buzzer, conductor, insulator	**Year 4:** vibration, sound, volume, pitch, outer ear, ear bones, cochlea, ear drum, ear canal, decibel, insulate, high-pitched, low-pitched, background noise	**Year 3:** light sources, natural light sources, artificial light sources, Sun, sunglasses, protect, reflection, shadow	**Year 3:** push, pull, force, contact force, friction, magnet, magnetic, poles, magnetic force, non-metal, iron, aluminium, steel, attract, repel

Lower KS2 - End points									
	States of matter	**Plants**	**Animals including humans**	**Rocks**	**Living things and their habitat**	**Electricity**	**Sound**	**Light**	**Forces and magnets**
End points	**Year 4:** • Compare and group materials together, according to whether they are solids, liquids or gases • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	**Year 3:** • Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant • Investigate the way in which water is transported within plants • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	**Year 3:** • Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat • Identify that humans and some other animals have skeletons and muscles for support, protection and movement **Year 4:** • Describe the simple functions of the basic parts of the digestive system in humans • Identify the different types of teeth in humans and their simple functions • Construct and interpret a variety of food chains, identifying producers, predators and prey	**Year 3:** • Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • Describe in simple terms how fossils are formed when things that have lived are trapped within rock • Recognise that soils are made from rocks and organic matter	**Year 4:** • Recognise that living things can be grouped in a variety of ways • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • Recognise that environments can change and that this can sometimes pose dangers to living things	**Year 4:** • Identify common appliances that run on electricity • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • Recognise some common conductors and insulators, and associate metals with being good conductors	**Year 4:** • Identify how sounds are made, associating some of them with something vibrating • Recognise that vibrations from sounds travel through a medium to the ear • Find patterns between the pitch of a sound and features of the object that produced it • Find patterns between the volume of a sound and the strength of the vibrations that produced it • Recognise that sounds get fainter as the distance from the sound source increases	**Year 3:** • Recognise that they need light in order to see things and that dark is the absence of light • Notice that light is reflected from surfaces • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes • Recognise that shadows are formed when the light from a light source is blocked by an opaque object • Find patterns in the way that the size of shadows change	**Year 3:** • Compare how things move on different surfaces • Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance • Observe how magnets attract or repel each other and attract some materials and not others • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials • Describe magnets as having 2 poles • Predict whether 2 magnets will attract or repel each other, depending on which poles are facing

Lower KS2 – Taking it further									
	States of matter	**Plants**	**Animals including humans**	**Rocks**	**Living things and their habitat**	**Electricity**	**Sound**	**Light**	**Forces and magnets**
Key Scientists	**Charles Mackintosh** – chemist and inventor **Jon Dunlop** – inventor	**Beatrix Potter** – botanist and natural scientist **John Ray** – naturalist	**Joan Beauchamp Procter** – Zoologist **Maria Sibylla Merian** – Scientific illustrator and entomologist **Louis Pasteur** – biologist and chemist	**Marie Tharp** – geologist	**Jane Goodall** – primatologist	**Nikola Tesla** – engineer	**Marin Mersenne** – mathematician **Alessia Milo** – virtual acoustics specialists	**Isaac Newton** – Physicist **Donna Strickland** – optical Physicist	**Michael Faraday** – Physicist
Linked Texts	**Change it! Solids, liquids gases and you** – Adreienne Mason	**Plants to the rescue** - Dr Vikram Baliga	**My encyclopaedia of very important animals** - DK	**My book of rocks and minerals** - Devin Dennie	**My encyclopaedia of very important animals** - DK	**How it works: Electricity** – V.M. Williams	**The Science of Sound: Projects and Experiments with Music and Sound Waves**	**The Simple Science of Light** – Emily James	**Get Into Science: Forces Around Us**

Experiences	SMSC	British Values	Acorn Values
	Spiritual: Pupils develop curiosity through deeper study of processes such as forces, sound, and plant biology. **Moral:** They reflect on the impact of human actions such as pollution, waste and habitat destruction. **Social:** Team-based investigations emphasise scientific roles, collaboration and shared responsibility. **Cultural:** Learning about scientists from different backgrounds broadens cultural understanding and appreciation.	**Democracy:** Pupils contribute to planning investigations, vote on questions to explore and evaluate findings democratically. **Rule of Law:** Science provides clear expectations around safety and ethical behaviour (e.g., caring for living things, responsible waste disposal). **Individual Liberty:** Pupils confidently choose methods, tools and ways to present results, developing scientific independence.	**Ambition:** LKS2 encourages ambitious scientific thinking through more complex enquiry, fair tests and systematic recording. **Courage:** Pupils develop courage to challenge misconceptions, propose scientific explanations and attempt demanding investigations. **One Team:** Scientific enquiry is often collaborative, requiring effective communication, shared responsibility and mutual support.

		Mutual Respect & Tolerance: Understanding different ecosystems and global environmental issues builds respect for other communities and cultures.	**Respect:** Children deepen respect for global environments, biodiversity and the work of scientists past and present. **Never Give Up:** Investigations requiring repeated trials, detailed observation or problem-solving help pupils develop resilience.

Upper Key Stage 2

Cycle A	Animals including humans		Living things and their habitat		Materials	Sustainability
	Animals including humans (Year 5)	Circulatory System (Year 6) Drugs, Diet and Lifestyle (Year 6)	Life Cycles (year 5) Reproduction A & B (year 5)	Living things and their habitat (Year 6)	Properties of materials (year 5) Reversible and Irreversible changes (Year 5)	Global Warming (Year 5) Plastic Pollution (year 5) Renewable Energy (Year 6) Light Pollution (year 6)
Cycle B	Electricity	Earth and Space	Light	Forces and Magnets	Evolution and Inheritance	
	Electricity (Year 6)	Space (Year 6)	Light (year 6)	Forces (Year 5)	Variation (Year 6)	Adaptations (Year 6) Fossils (Year 6)

Upper KS2: Science skills progression
Year 5:

Autumn	Forces	Present findings; Plan; Plan; Take measurements; Present findings; Plan; Take measurements; Answer questions and make conclusions; Answer questions and make conclusions
Autumn	Space	Answer questions and make conclusions; Gather, record and classify data; Present findings; Gather, record and classify data; Present findings; Answer questions and make conclusions; Answer questions and make conclusions; Gather, record and classify data
Autumn	Global warming	Gather, record and classify data; Answer questions and make conclusions
Autumn		Consolidation
Spring	Properties of materials	Gather, record and classify data; Gather, record and classify data; Plan; Take measurements; Evaluate; Answer questions and make conclusions
Spring	Animals including humans	Ask questions; Gather, record and classify data; Ask questions; Answer questions and make conclusions; Gather, record and classify data; Present findings
Spring	Life cycles	Present findings; Gather, record and classify data; Gather, record and classify data; Present findings
Summer	Reproduction A	Present findings; Gather, record and classify data; Present findings; Answer questions and make conclusions; Plan; Take measurements
Summer	Reversible and irreversible changes	Evaluate; Gather, record and classify data; Take measurements; Present findings; Present findings; Evaluate
Summer	Plastic pollution	Answer questions and make conclusions; Present findings
Summer	Reproduction B	Evaluate; Evaluate
Summer		Consolidation

Year 6:

Autumn

Living things and their habitats	Answer questions and make conclusions; Gather, record and classify data; Gather, record and classify data; Gather, record and classify data; Answer questions and make conclusions; Present findings; Present findings
Electricity	Gather, record and classify data; Gather, record and classify data; Gather, record and classify data; Plan; Take measurements; Evaluate
Renewable energy	Answer questions and make conclusions; Present findings

Spring

Light	Answer questions and make conclusions; Gather, record and classify data; Gather, record and classify data; Plan; Take measurements; Gather, record and classify data; Answer questions and make conclusions; Answer questions and make conclusions
Light pollution	Answer questions and make conclusions; Present findings
The circulatory system	Ask questions; Answer questions and make conclusions; Make observations; Ask questions; Present findings; Evaluate
Diet, drugs and lifestyle	Answer questions and make conclusions; Answer questions and make conclusions; Answer questions and make conclusions; Plan; Take measurements; Evaluate

Summer

Variation	Gather, record and classify data; Gather, record and classify data
Adaptations	Answer questions and make conclusions; Answer questions and make conclusions; Plan; Present findings; Plan; Present findings
Fossils	Answer questions and make conclusions; Present findings; Present findings
	Consolidation
Themed projects	Ask questions; Plan; Make observations; Take measurements; Gather, record and classify data; Answer questions and make conclusions; Evaluate

Upper KS2: Key Vocabulary								
	Evolution and inheritance	**Animals including humans**	**Earth and Space**	**Living things and their habitat**	**Electricity**	**Materials**	**Light**	**Forces and magnets**
Vocabulary	**Year 6:** variation, species, inheritance, desirable characteristics, polar habitat, desert habitat, adaptations, evolution, common ancestor, natural selection, finch, Galapagos Islands, decompose, Charles Darwin, palaeontologist, Mary Anning	**Year 5:** foetus, elderly adult, milestone, womb, period, reproduce, hormone, puberty, life expectancy, gestation period, gestation **Year 6:** circulatory system, blood vessels, arteries, veins, capillaries, red blood cells, white blood cells, lungs, plasma, oxygen, atria, ventricles, right atrium, left atrium, right ventricle, left ventricle, oxygenated blood, deoxygenated blood calories, saturated fats, unsaturated fats, trans fats, drug, painkiller, depressant, stimulant, cigarette, tar, nicotine, vape, carbon monoxide, addiction, heart rate	**Year 5:** Solar System, orbit, Sun, planets, Pluto, celestial body, gravity, heliocentric model, geocentric model, rotate, axis, North Pole, South Pole, Earth, night, day, moon, gravitational force, satellite	**Year 5:** monotreme, mammary gland, metamorphosis, larva, chrysalis, hatchling, nestling, fledgling, fertilisation, embryo, sperm cells, egg cells, sexual reproduction, anther, stigma, style, filament, ovary, ovule, clone, runner, tuber, asexual reproduction, cutting, parent plant **Year 6:** organism, excretion, reproduction, mollusc, arachnid, classification, coniferous tree, microorganism, bacteria, virus, fungi, characteristics	**Year 6:** series circuit, voltage, current, complete circuit, incomplete circuit	**Year 5:** electrical conductor, electrical insulator, thermal insulator, properties, lifespan, dissolve, soluble, insoluble, solution, mixture, reversible changes, reverse, chemical reaction, irreversible change, burning, heating, vinegar, bicarbonate of soda	**Year 6:** retina, iris, pupil, lens, ray diagram, solar eclipse, refraction, medium, rainbow, prism, coloured filter, spectrum of light	**Year 5:** frictional force, motion, air resistance, parachute, surface area, water resistance, streamlined, non-contact force, gravity, weight, lever, gear, pulley, machine

Upper KS2: End Points

	Evolution and inheritance	Animals including humans	Earth and Space	Living things and their habitat	Electricity	Materials	Light	Forces and magnets
	Year 6: • Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution	**Year 5:** • Describe the changes as humans develop to old age **Year 6:** • Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • Describe the ways in which nutrients and water are transported within animals, including humans	**Year 5:** • Describe the movement of the Earth and other planets relative to the sun in the solar system • Describe the movement of the moon relative to the Earth • Describe the sun, Earth and moon as approximately spherical bodies • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky	**Year 5:** • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • Describe the life process of reproduction in some plants and animals **Year 6:** • Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • Give reasons for classifying plants and animals based on specific characteristics	**Year 6:** • Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • Use recognised symbols when representing a simple circuit in a diagram	**Year 5:** • Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • Demonstrate that dissolving, mixing and changes of state are reversible changes • Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	**Year 6:** • Recognise that light travels in straight lines • Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them	**Year 5:** • Explain that unsupported objects fall towards the Earth because of the force of gravity • acting between the Earth and the falling object • Identify the effects of air resistance, water resistance and friction, that act between • moving surfaces • Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect

Upper KS2: Taking it further								
	Evolution and inheritance	**Animals including humans**	**Earth and Space**	**Living things and their habitat**	**Electricity**	**Materials**	**Light**	**Forces and magnets**
Key Scientists	**Charles Darwin** – Naturalist	**Ms Rashmi Yadav** – Heart Surgeon	**Tim Peake –** Astronaut	**Carl Linnaeus –** biologist	**Lynn Conway** – electrical engineer	**Michelle Manuel** – materials science	**Isaac Newton** – Physicist	**Isaac Newton** – Physicist
Texts	**Charles Darwin's On the Origin of Species: Big Ideas for Curious Minds –** Dr Michael Leach	**The Circulatory System** - Roxanne Troup	**Children's Encyclopaedia of Space** – Giles Sparrow	**Get your animals in order** – Michael Bright	**Electricity For Kids: Exploring Electricity and Electric Circuits From Bulbs To Capacitors and From Statics To Current**	**Oil and Water Won't Mix and Other Mixture Separation Techniques - Chemistry Book for Kids**	**Isaac Newton and his apple (dead famous) – Kjartan poskitt**	**Isaac Newton and his apple (dead famous) – Kjartan poskitt**

Experiences	SMSC	British Values	Acorn Values
	Spiritual: Pupils explore profound scientific ideas such as evolution, space and the human body, encouraging deeper reflection. **Moral:** They consider ethical implications of scientific issues such as climate change, plastic pollution and lifestyle choices. **Social:** Complex investigations and debates strengthen teamwork, communication and scientific reasoning. **Cultural:** Studies include global scientific contributions and environmental issues affecting different cultures worldwide.	**Democracy:** Pupils engage in scientific debate, share viewpoints and collectively review evidence, mirroring democratic processes. **Rule of Law:** Understanding environmental law, health rules (e.g., drugs, lifestyle) and ethical scientific practices strengthens their appreciation of societal rules. **Individual Liberty:** Pupils make informed choices during independent investigations and explore topics that interest them. **Mutual Respect & Tolerance:** Studies of global warming, biodiversity, evolution and human impact nurture empathy, respect	**Ambition:** UKS2 pushes pupils to think like scientists—critiquing evidence, analysing data and exploring advanced concepts such as evolution and electricity. **Courage:** Children are encouraged to take intellectual risks, form hypotheses and discuss controversial or complex scientific issues. **One Team:** Research projects, debates and investigations strengthen teamwork and collaborative problem-solving. **Respect:** UKS2 places strong emphasis on respectful discussion around sensitive topics (e.g.,

		for all cultures and appreciation of scientific diversity.	reproduction, drugs, environmental responsibility). **Never Give Up:** Pupils build scientific resilience when refining experiments, troubleshooting errors or revising conclusions based on evidence.