



Bure Park Primary School

Science

- **Overview & Rationale**
- **Scheme of Work**
- **Progression of Skills & Year Group End Points**

Overview and Rationale

At Bure Park Primary School, we recognise that our children are naturally inquisitive and aim to harness this curiosity through our Science curriculum. During their time at Bure Park, children are encouraged to develop and use a range of working scientifically skills including questioning, researching and observing. Children are guided to work scientifically as part of a group, emulating the modern world of Science. In conjunction with full coverage of the objectives of the National Curriculum, our Science teaching offers opportunities for children to develop scientific knowledge, conceptual understanding and a rich scientific vocabulary.

At Bure Park Primary School, scientific enquiry skills are embedded across the Science curriculum that are revisited and developed throughout their time at school. Topics, such as plants, are taught in Key Stage One and studied again in further detail throughout Key Stage Two. This model allows children to build upon their prior knowledge whilst embedding key 'sticky knowledge' into the long-term memory.

Early Years Foundation Stage

In EYFS, pupils have access to Understanding the World (UtW) provision daily, which are planned by class teachers through continuous provision, provision enhancements related to class themes/topics or specific, adult-led activities that focus on particular skills.

In Development Matters it states that “Understanding the world involves guiding children to make sense of their physical world. The frequency and range of children’s personal experiences increases their knowledge and sense of the world around them, for example visiting parks. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains.”

Below are the learning statements for Nursery and Reception within Development Matters related to Science:

Nursery	Reception
<p>3 and 4-year-olds will be learning to:</p> <ul style="list-style-type: none">● Use all their senses in hands-on exploration of natural materials.● Explore collections of materials with similar and/or different properties.● Talk about what they see, using a wide vocabulary.● Explore how things work.● Plant seeds and care for growing plants.● Understand the key features of the life cycle of a plant and an animal.● Begin to understand the need to respect and care for the natural environment and all living things.● Explore and talk about different forces they can feel.● Talk about the differences between materials and changes they notice.	<p>Children in reception will be learning to:</p> <ul style="list-style-type: none">● Explore the natural world around them.● Describe what they see, hear and feel whilst outside.● Understand the effect of changing seasons on the natural world around them.



End points for EYFS

Through our UtW provision, all pupils will have:

Nursery

- Frequent opportunities for play and exploration outdoors.
- Opportunity to make collections of natural materials to investigate and talk about.
- Access to scientific equipment when exploring, for example magnifying glasses.
- Observational and investigative language and thinking modelled to them e.g., “I wonder if...”.
- Been taught scientific vocabulary they can use to discuss their findings.
- Played with mechanical equipment such as wind-up toys and cogs/wheels.
- Planted a seed and explored how to care for it.
- Observed the concepts of growth, change and decay over time with their seed.
- First-hand experience with animals both within and outside of the school grounds.
- Explored forces through their play, for example playing with magnets.

Reception

- Frequent opportunities for play and exploration outdoors.
- Hands-on experiences to touch, smell and hear the natural world.
- Discussed how to care for the natural world.
- Sung songs and rhymes about the natural world.
- Drawn pictures after close observation of the natural world.
- Observed and interacted 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 and a boat floating on water.
- Opportunity to name and describe some plants and animals they are likely to see.
- Participated in a seasonal walk around our school grounds in Autumn, Winter, Spring and Summer.

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| <ul style="list-style-type: none">● Opportunity to observe changes of state e.g., through cooking or melting ice.● Explored how different materials sink and float.● Explored how you can shine light through some materials, but not others, as well as investigated shadows. | |
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Key Stages 1 & 2

Science is taught using the programme of study in the National Curriculum for Key Stages 1 and 2. We have moved to a system of blocking our foundation subjects as a school to provide pupils with the opportunity to delve deeper into units of study across a continuous time period rather than having to revisit/recap/restart on a weekly basis. Therefore, each class will take part in at least one “block” of Science learning in the Autumn, Spring and Summer terms. The overview of Science in each year group is set out below:

2024-2025			
	Autumn Term	Spring Term	Summer Term
Year 1	Animals, including humans Seasonal changes	Materials Seasonal changes	Plants Seasonal changes
Year 2	Animals, including humans Living Things and their Habitats	Materials	Plants
Year 3	Rocks and Soils Forces and Magnets	Animals including humans Light	Plants
Year 4	Animals, including Humans States of Matter	Sound	Living things and their habitats Electricity

Year 5	Earth and space <i>*change made in 2025/2026</i>	Properties and changes in materials Forces	Living things and their habitats Animals including humans
Year 6	Evolution and Inheritance Animals, including humans	Living things and their habitats	Light Electricity

Year 1	Purple = Substantive Knowledge	Green = Implicit Knowledge / Skills
	<i>Scientific knowledge and understanding</i>	<i>Working Scientifically</i>
	<p>Plants</p> <ul style="list-style-type: none"> ● 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. <p>Animals, including humans</p> <ul style="list-style-type: none"> ● identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals 	<ul style="list-style-type: none"> ● asking simple questions and recognising that they can be answered in different ways ● observing closely, using simple equipment ● performing simple tests ● identifying and classifying ● using their observations and ideas to suggest answers to questions ● gathering and recording data to help in answering questions.

- 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


Everyday materials

- 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.

Seasonal changes

- observe changes across the four seasons
- observe and describe weather associated with the seasons and how day length varies

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 <p style="text-align: center;">End points for Year 1 Pupils can:</p> <p style="text-align: center;">Plants</p> <ul style="list-style-type: none"> ● Talk about and notice plants and trees throughout the year. ● Talk about and describe different plants and trees. ● Compare different plants and trees. ● Draw, label and talk about the parts of plants and trees ((including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem). 	<p style="text-align: center;">Animals including humans</p> <ul style="list-style-type: none"> ● Talk about and describe their body (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) ● Talk about their senses and how they use them in everyday life. ● Look after their own health e.g., handwashing and brushing teeth ● Talk about animals that they are interested in. ● Talk about and describe different animals. ● Compare animals and their body structures e.g., number of legs, wings or fins.
<p style="text-align: center;">Everyday materials</p> <ul style="list-style-type: none"> ● Talk about and notice objects throughout the year. ● Talk about and describe different objects/materials. ● Talk about and describe objects that we use every day. ● Talk about how everyday objects are made (in a simple way). ● Compare objects/materials. 	<p style="text-align: center;">Seasonal changes</p> <ul style="list-style-type: none"> ● Name the seasons and the time of year associated with them. ● Talk about and notice the seasons throughout the year. ● Talk about and describe the seasons. ● Talk about what we do to adapt to different seasons e.g., clothes, activities, physical environment, food ● Talk about the plants and animals of different seasons and what they do. ● Compare seasons.

Working Scientifically	

- Observe, describe and compare using simple science words.
- Sort things.
- Ask science questions.
- Collect evidence to answer some questions.
- Measure using non-standard units.
- Test out ideas with help.
- Talk about what might happen and what they found out.
- Record on a simple table

K e y V o c a b u l a r Y	<p>Plants leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, names of trees in the local area, names of garden and wild flowering plants in the local area</p>	<p>Animals, including humans head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group, parts of the human body including those within the school's RSE policy, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ears, tongue</p>	<p>Everyday materials object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through</p>
	<p>Seasonal changes weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length</p>	<p>Working scientifically observe, changes, patterns, grouping, sorting, compare, same, different, identify (name), measure, data, record results, drawing, picture, table, tally chart, present, pictogram, block chart, Venn diagram, ask questions, test, investigate, explore, equipment, resources, magnifying glass, hand lens, ruler, tape measure, metre stick, pipette, syringe, spoon, teaspoon, answer questions, interpret results, scientific enquiry, pattern seeking, comparative testing, observing over time, classifying, researching using secondary sources</p>	

Year 2	Purple = Substantive Knowledge	Green = Implicit Knowledge / Skills
	<i>Scientific knowledge and understanding</i>	<i>Working Scientifically</i>
	<p>Living things and their habitats</p> <ul style="list-style-type: none"> ● 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. <p>Plants</p> <ul style="list-style-type: none"> ● 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. 	<ul style="list-style-type: none"> ● asking simple questions and recognising that they can be answered in different ways ● observing closely, using simple equipment ● performing simple tests ● identifying and classifying ● using their observations and ideas to suggest answers to questions ● gathering and recording data to help in answering questions.

Animals, including humans

- 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

Uses of everyday materials

- identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
- find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.



End points for Year 2

Pupils can:

Living things and their habitats

- Talk about and describe different habitats.
- Explain how an animal is designed for its habitat.
- Describe how animals and plants get what they need to survive from their habitat.
- Order a simple food chain.
- Say if something is living, dead or never been alive.

Animals including humans

- Talk about and describe how to look after themselves – what foods are best to eat; why we need to exercise; why and how to rest.
- Make comparisons between themselves and people that are older and younger than them.
- Look after their own health e.g., brushing their teeth, washing hands, drinking water, choosing appropriate clothing, bedtimes etc.
- Talk about how to look after a pet.
- Talk about baby animals and their parents.
- Describe how baby animals change as they grow.

Plants

- Talk about how to grow a variety of plants.
- Grow a variety of plants from seeds and bulbs.
- Care for a variety of houseplants/plants over the year.
- Describe different seeds – what they look like, what they grow in to and how we use the plant.
- Describe different bulbs – what they look like, what they grow in to and how we use the plant.

Use of everyday materials

- Talk about and describe different objects/materials.
- Talk about the properties of everyday objects that we use.
- Talk about how they've made objects and things that went well or could be improved.
- Investigate which object is the most suitable for a task.
- Investigate which material is the most suitable for an object.

- Compare baby animals with their parents and other baby animals.

Working Scientifically

- Observe, describe and compare using science words.
- Sort and order observations.
- Ask scientific questions and use information to help answer them.
- Plan how to collect data to answer questions, with help.
- Measure using non-standard, then standard units.
- Talk about what might happen and compare it to what did happen.
- Plan a simple fair test, with help.
- Test out their own/someone else's ideas.
- Explain why (in a simple way).
- Record information on tables and bar charts

K e y V o c a b u l a r Y	<p>Living things and their habitats living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, names of local habitats (e.g., pond, woodland etc.), names of micro-habitats (e.g., under logs, in bushes etc.), conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold, names of living things in the habitats and micro-habitats studied</p>	<p>Plants light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling</p>	<p>Animals, including humans offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g., chick/chicken, kitten/cat, caterpillar/butterfly), survive, survival, water, food, air, exercise, heartbeat, breathing, hygiene, germs, disease, food types (e.g., meat, fish, vegetables, bread, rice, pasta, dairy)</p>
	<p>Uses of everyday materials opaque, transparent, translucent, reflective, non-reflective, flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching</p>	<p>Working scientifically observe, changes, patterns, grouping, sorting, compare, same, different, identify (name), measure, data, record results, drawing, picture, table, tally chart, present, pictogram, block chart, Venn diagram, ask questions, test, investigate, explore, equipment, resources, magnifying glass, hand lens, ruler, tape measure, metre stick, pipette, syringe, spoon, teaspoon, answer questions, interpret results, scientific enquiry, pattern seeking, comparative testing, observing over time, classifying, researching using secondary sources</p>	

Year 3	Purple = Substantive Knowledge	Green = Implicit Knowledge / Skills
	<i>Scientific knowledge and understanding</i>	<i>Working Scientifically</i>
	<p>Plants</p> <ul style="list-style-type: none"> ● 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. 	<ul style="list-style-type: none"> ● asking relevant questions and using different types of scientific enquiries to answer them ● setting up simple practical enquiries, comparative and fair tests ● making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers ● gathering, recording, classifying and presenting data in a variety of ways to help in answering questions ● recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables

Animals, including humans

- identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat
- identify that humans and some other animals have skeletons and muscles for support, protection and movement

Rocks

- compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
- describe in simple terms how fossils are formed when things that have lived are trapped within rock
- recognise that soils are made from rocks and organic matter.

Light

- 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


- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

- 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.

Forces and magnets

- compare how things move on different surfaces
- notice that some forces need contact between two objects, but magnetic forces can act at a distance
- observe how magnets attract or repel each other and attract some materials and not others
- compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
- describe magnets as having two poles
- predict whether two magnets will attract or repel each other, depending on which poles are facing

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 <p style="text-align: center;">End points for Year 3 Pupils can:</p>	<p>Animals, including humans</p>
<p style="text-align: center;">Plants</p> <ul style="list-style-type: none"> ● Describe the functions of parts of a plant/tree. ● Explain how a variety of plants need different things to live. ● Describe the life cycle of plants and the role of the flower. ● Compare different factors on plant growth e.g., the amount of light. ● Observe and explain how water moves around a plant. 	<ul style="list-style-type: none"> ● Talk about their skeleton and the job it does. ● Identify and name some bones in the human skeletal system. ● Talk about and identify the major muscles in the body. e.g., quads, hamstrings, calves, glutes, triceps, biceps. ● Talk about how the muscles work. ● Compare human and animal skeletons. ● Research different food groups. ● Design healthy and nutritious meals. ● Explain how animals, including humans, get their food.
<p style="text-align: center;">Rocks</p> <ul style="list-style-type: none"> ● Name some famous rock formations, mountains and volcanoes around the world. ● Describe how rocks are formed in a simple way. ● Explore the environment and identify things made from rocks. ● Observe, describe and compare rocks. ● Group and order rocks (hardness, weight, length). ● Explain why rocks have been used for a specific purpose. e.g., marble for statues. ● Describe how fossils were formed. ● Explain how soil is made. 	<p style="text-align: center;">Light</p> <ul style="list-style-type: none"> ● Talk about how light helps us in everyday life. ● Name some sources of light. ● Talk about materials that reflect light and how this can be useful/not useful. ● Talk about how dark is the absence of light. ● Talk about how to protect our eyes from the sun and why this is important. ● Explain how to make a variety of shadows e.g., vary size, clarity and shape

<p style="text-align: center;">Forces and magnets</p> <ul style="list-style-type: none"> ● Explore forces in the environment e.g., playing with toys, kicking/throwing balls, opening doors, climbing. ● Make observations on how we use forces in everyday life. ● Describe forces and their effect on things. ● Spot and talk about simple patterns in our observations e.g., the harder the kick the further the ball went. ● Investigate how things move on different surfaces. ● Observe and describe magnetic forces. ● Test objects to see if they are magnetic. ● Explore magnetism using two magnets – do they attract or repel? 	<p style="text-align: center;">Working scientifically</p> <ul style="list-style-type: none"> ● Observe, describe and compare using Year 3 scientific vocabulary. ● Group and order observations giving scientific reasons. ● Ask scientific questions and use information/collect data to answer them. ● Predict what might happen and begin to explain why using everyday ideas. ● Measure in standard units. ● Test out their own/someone else’s ideas. ● Plan a fair test with help. ● Explain observations using cause and effect. ● Draw simple tables and bar charts to record their own observations/data. ● Talk about observations/results and begin to use scientific facts to explain them.

	<ul style="list-style-type: none"> ● Find and talk about simple patterns in results. ● Communicate findings in a variety of ways. ● Talk about how to improve their own work. 		
K e y V o c a b u l a r y	Plants photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil, absorb, transport	Animals, including humans nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine	Rocks rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorbs water, fossil, bone, flesh, minerals, marble, chalk, granite, sandstone, slate, types of soil (e.g., peaty, sandy, chalky, clay)
	Light light, light source, dark, absence of light, surface, shadow, reflect, mirror, Sun, sunlight, dangerous	Forces and magnets force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole	Working scientifically practical work, fair testing, relationships, accurate, thermometer, data logger, stopwatch, timer, estimate, data, diagram, identification key, chart, bar chart, prediction, similarity, difference, evidence, information, findings, criteria, values, properties, characteristics, conclusion, explanation, reason, evaluate, improve

Year 4	Purple = Substantive Knowledge	Green = Implicit Knowledge / Skills
	<i>Scientific knowledge and understanding</i>	<i>Working Scientifically</i>
	<p>Living things and their habitats</p> <ul style="list-style-type: none"> ● 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. <p>Animals, including humans</p> <ul style="list-style-type: none"> ● 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. <p>States of Matter</p> <ul style="list-style-type: none"> ● compare and group materials together, according to whether they are solids, liquids or gases 	<ul style="list-style-type: none"> ● asking relevant questions and using different types of scientific enquiries to answer them ● setting up simple practical enquiries, comparative and fair tests ● making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers ● gathering, recording, classifying and presenting data in a variety of ways to help in answering questions ● recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables ● reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

- 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.


Sound

- identify how sounds are made, associating some of them with something vibrating
- recognise that vibrations from sounds travel through a medium to the ear
- find patterns between the pitch of a sound and features of the object that produced it
- find patterns between the volume of a sound and the strength of the vibrations that produced it
- recognise that sounds get fainter as the distance from the sound source increases.

Electricity

- identify common appliances that run on electricity

	<ul style="list-style-type: none"> ● 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. 	
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 <p style="text-align: center;">End points for Year 4 Pupils can:</p>	<p>Animals, including humans</p>
<p style="text-align: center;">Living things and their habitats</p> <ul style="list-style-type: none"> ● Talk about and describe range of habitats and their plants & animals (building on from Y2 work). ● Compare animals and plants. ● Identify plants and animals using a classification key. ● Group animals & plants in a variety of ways and give reasons. ● Construct classification keys to help others to identify animals & plants. 	<ul style="list-style-type: none"> ● Talk about their teeth and how to care for them. ● Describe the functions of the different types of teeth. ● Explain how food/drinks can affect teeth. ● Identify and name the main parts of the digestive system. ● Describe what happens in each part of the digestive system. ● Explain how to keep their digestive system healthy. ● Make their own variety of food chains.

- Give examples of how an environment has changed due to human impact or natural phenomena.
- Talk about actions they could take to protect our planet.

- Identify producers, predators and prey in a food chain.

States of matter

- Talk about solids, liquids and gases.
- Describe the properties of solids, liquids and gases.
- Describe what happens when objects melt, freeze or solidify.
- Give everyday examples of melting and freezing.
- Describe what happens when liquids evaporate and condenses.
- Give everyday examples of evaporation and condensation.
- Describe the water cycle.
- Talk about temperature being how hot or cold something is.
- Talk about how we measure temperature.
- Measure temperature using a variety of thermometers.

Sound

- Experience a variety of sounds around us, observe and describe how they are made.
- Order sounds in a variety of ways e.g., loudest to quietest, highest to lowest.
- Compare sounds using words and decibels.
- Explain how we use sounds in everyday life.
- Consider how sounds help or hinder us.
- Be able to explain how sounds travels.
- Describe how volume and pitch are produced by a variety of simple instruments.
- Describe how sounds get fainter as the distance from the sound source increases.
- Explain how we can protect our hearing.

Electricity

- Talk about objects that use electricity.
- Talk about how electricity is used to produce heat, warmth, movement and light and give examples.
- Make an electrical circuit and name the components.
- Control a circuit using a switch.
- Identify and classify conductors and insulators.
- Understand how to work safely with electricity.

Working scientifically

- Observe, describe and compare using Year 4 scientific vocabulary.
- Group and order observations giving scientific reasons.
- Collect evidence/find information to test out an idea/prediction or answer a question.
- Predict what might happen and begin to explain why using everyday ideas and scientific facts/ideas.
- Measure in standard units.
- Select equipment, with help.
- Plan ways to test out their own/someone else's ideas.
- Set up a fair test and explain why it is important to do so.
- Draw tables and bar charts to record observations/data.
- Explain observations/results using cause and effects and scientific facts and ideas.
- Explain what the evidence shows and whether it supports any predictions.
- Identify and explain simple trends and patterns in results.
- Communicate findings in a variety of ways.
- Talk about how to improve their own work

K e y V o c a b u l a r y	Living things and their habitats classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate	Animals, including humans digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, incisor, canine, molar, premolar, herbivore, carnivore, omnivore, producer, predator, prey	States of matter solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle
	Sound sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, quiet, loud, insulation	Electricity electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non- metal, symbol	Working scientifically practical work, fair testing, relationships, accurate, thermometer, data logger, stopwatch, timer, estimate, data, diagram, identification key, chart, bar chart, prediction, similarity, difference, evidence, information, findings, criteria, values, properties, characteristics, conclusion, explanation, reason, evaluate, improve


Year 5	Purple = Substantive Knowledge	Green = Implicit Knowledge / Skills
	<i>Scientific knowledge and understanding</i>	<i>Working Scientifically</i>
	<p>Living things and their habitats</p> <ul style="list-style-type: none"> ● 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. <p>Animals, including humans</p> <ul style="list-style-type: none"> ● describe the changes as humans develop to old age. <p>Properties and changes of materials</p> <ul style="list-style-type: none"> ● 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 	<ul style="list-style-type: none"> ● planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary ● taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate ● recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graph ● using test results to make predictions to set up further comparative and fair tests ● reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations ● identifying scientific evidence that has been used to support or refute ideas or arguments.

- 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.

Earth and space

- describe the movement of the Earth, and other planets, relative to the Sun in the solar system

	<ul style="list-style-type: none"> ● 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 <p>Forces</p> <ul style="list-style-type: none"> ● 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. 	
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	<p>End points for Year 5 Pupils can:</p>	<p>Animals, including humans</p>
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Living things and their habitats

- Describe the life cycles of a mammal.
- Describe the life cycles of an amphibian.
- Describe the life cycles of an insect.
- Describe the life cycles of a bird
- Compare the life cycles of mammals, amphibians, insects and birds.
- Explain how offspring are produced e.g., live, eggs.
- Explain how some young undergo a further change before becoming adults – metamorphosis.
- Describe the sexual reproduction of animals.
- Describe the sexual reproduction of plants.
- Describe the asexual reproduction of plants.
- Explain the difference between asexual and sexual reproduction in plants.

- Describe the changes of humans from birth to death.
- Name and order the different stages of human life e.g., foetus, baby, child, adolescent, adult, old age.
- Describe how a baby changes physically as it grows and what it is able to do.
- Explain the changes during puberty for boys.
- Explain the changes during puberty for girls.
- Explain some of the difficulties associated with old age.
- Explain the gestation period of different animals and comparing this with humans.

Properties and changes of materials

- Explain what thermal conductivity is and which materials provide insulation.
- Describe what a solution is.
- Describe what a mixture is.
- Explain the difference between soluble and insoluble.
- Explain what dissolving means and give examples.
- Explain what filtering and sieving are and give examples.
- Explain how materials can be recovered from solutions or mixtures through evaporation, filtering and sieving.

Earth and space

- Explain the shape and relative sizes of the Earth, Sun and Moon.
- Explain why our shadows change and why we have day and night.
- Explain about the Earth's orbit around the Sun.
- Describe the Moon's phases and orbit of the Earth.
- Describe that the sun is a star at the centre of our solar system.

- Describe reversible and non-reversible changes e.g., burning wood, rusting, mixing vinegar and bicarbonate of soda.
- Investigate and explain the uses of everyday materials.

- Name the 8 planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto reclassified as a 'dwarf planet in 2006).
- Understand the moon is as a celestial body that orbits a planet (Earth has one moon; Jupiter has four large moons and numerous smaller ones).

Forces

- Explain the effects of friction on different materials.
- Explain that friction can occur when two surfaces are in contact with each other.
- Identify and explain the effects of air resistance.
- Identify and explain the effects of water resistance.
- Explain how a lever, a pulley and a gear work.
- Explain that levers and pulleys allow a smaller force to have a greater effect.
- Explain that gears allow a smaller force to have a greater effect.
- Explain that gravity is a force that acts between earth and a falling object.
- Explain there are large forces and small forces.
- Measure forces using a force meter (newton meter).
- Explain the unit of force is a newton- named after Isaac Newton.

Working scientifically

- Observe, describe and compare in careful detail.
- Sort and classify with precise reasons.
- Make predictions and explain why.
- Plan how to collect evidence/information/data to test out an idea/prediction or answer a question.
- Measure precisely in standard units.
- Select the most suitable equipment for the task.
- Plan ways to test out their own/someone else's ideas.
- Set up and carry out fair tests.
- Repeat observations and measurements.
- Draw tables, bar charts and simple line graphs to record observations/data.
- Interpret and predict from bar charts and line graphs.
- Explain observations/results using cause and effects and scientific facts and ideas.

	<ul style="list-style-type: none"> ● Explain what the evidence shows and whether it supports any predictions. ● Identify trends and patterns in data and explain using scientific facts and ideas. ● Begin to identify scientific evidence that has been used to support or refute ideas or arguments. ● Select the most appropriate way to communicate findings, evaluating the evidence as well as describing it. ● Talk about how to improve their own work giving reasons. 		
K e y V o c a b u l a r y	Living things and their habitats life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, cuttings	Animals, including humans puberty, the vocabulary to describe sexual characteristics in line with the school's RSE policy	Properties and changes in materials thermal insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material
	Earth and space Sun, Moon, Earth, planets (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, Solar System, rotate, star, orbit	Forces force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears	Working scientifically variables, independent variable, dependent variable, control variable, evidence, justify, argument (science), causal relationship, accuracy, precision, scatter graphs, bar graphs, line graphs, force meter

Year 6	Purple = Substantive Knowledge	Green = Implicit Knowledge / Skills
	<i>Scientific knowledge and understanding</i>	<i>Working Scientifically</i>
	<p>Living things and their habitats</p> <ul style="list-style-type: none"> describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals 	<ul style="list-style-type: none"> planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate

- give reasons for classifying plants and animals based on specific characteristics

Animals, including humans

- 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.

Evolution and inheritance

- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
- recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
- identify how animals and plants are adapted to suit their environment in

- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graph
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments.

different ways and that adaptation may lead to evolution.


Light

- recognise that light appears to travel in straight lines
- use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye
- explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes
- use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

Electricity

- associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit
- compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of

	<p>buzzers and the on/off position of switches</p> <ul style="list-style-type: none"> ● use recognised symbols when representing a simple circuit in a diagram. 	
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 <p>End points for Year 6 Pupils can:</p>	<p>Animals, including humans</p>
<p>Living things and their habitats</p> <ul style="list-style-type: none"> ● Describe the characteristics of amphibians, reptiles, birds, fish and mammals (building on work in Year 4). ● Compare the characteristics of animals in different groups, including vertebrates and invertebrates. ● Talk about the two main groups of plants (flowering and non-flowering) and give examples of each. ● Create classification keys for plants and animals and micro-organisms. ● Explain what micro-organisms are and how they help or hinder us. ● Talk about the work of Carl Linnaeus and why his work was influential. ● Use classification materials to identify unknown plants, animals and microbes. ● Create an imaginary living thing (animal, plant or microbe) that has characteristics from more than one classification group and give its classification. 	<ul style="list-style-type: none"> ● Explain how the heart works and its different parts and their functions. ● Explain the process of blood circulation around the body. ● Locate the different parts of the circulatory system. ● Describe the functions of blood and blood vessels. ● Explain the impact of exercise on heart rate. ● Explain the impact of different things on their bodies such as drugs, alcohol, smoking, diet and exercise. ● Explain how nutrients and water move around the body of animals, including humans.

Evolution and inheritance

- Explain the process of evolution by natural selection.
- Explain how Darwin developed the theory of natural selection.
- Explain and identify features that individuals have inherited from their parents.
- Explain offspring are not identical to their parents.
- Explain how some animals are adapted to their environment.
- Explain how adaptation is important to the survival of species.
- Explain some of the strategies animals adopt to survive winter and adaptations exhibited by animals in polar regions.
- Explain how some plants are adapted to their environments.
- Explain what fossils are and how they were formed.
- Explain how what information fossils give us.
- Explain the job of a palaeontologist.

Light

- Explain how the shape and size of a shadow are determined.
- Explain how moving an object changes the size of its shadow.
- Explain how we see light sources and non-light sources.
- Explain that light travels in a straight line.
- Use knowledge of reflection to place mirrors to make light follow a path.
- Explain how we see things.

Electricity

- Identify and name the basic parts of a simple electric circuit (cells, wires, bulbs, switches, batteries).
- Draw and construct working circuits.
- Recognise symbols for various common circuit components.
- Describe the function of electrical components and match them to their symbols.

Working scientifically

- Observe, describe and compare in careful detail.
- Sort and classify with precise reasons.
- Make predictions and explain why.
- Plan how to collect evidence/information/data to test out an idea/prediction or answer a question.
- Measure precisely in standard units.
- Select the most suitable equipment for the task.
- Plan ways to test out their own/someone else's ideas.

<ul style="list-style-type: none"> ● Explain the effect of changing the number and voltage of cells in an electrical circuit. ● Explain how the brightness of a bulb can be altered by changing the wires and or circuit. 	<ul style="list-style-type: none"> ● Set up and carry out fair tests. ● Repeat observations and measurements. ● Draw tables, bar charts and simple line graphs to record observations/data. ● Interpret and predict from bar charts and line graphs. ● Explain observations/results using cause and effects and scientific facts and ideas. ● Explain what the evidence shows and whether it supports any predictions. ● Identify trends and patterns in data and explain using scientific facts and ideas. ● Begin to identify scientific evidence that has been used to support or refute ideas or arguments. ● Select the most appropriate way to communicate findings, evaluating the evidence as well as describing it. ● Talk about how to improve their own work giving reasons.
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<p>K e y V o</p>	<p>Living things and their habitats vertebrates, fish, amphibians, reptiles, birds, mammals, warm-blooded, cold-blooded, invertebrates, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers</p>	<p>Animals, including humans heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, cycle, circulatory system, diet, drugs, lifestyle</p>	<p>Evolution and inheritance offspring, sexual reproduction, vary, characteristics, adapted, inherited, species, evolve, evolution</p>
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c a b u l a r y	Light straight lines, light rays	Electricity circuit diagram, circuit symbol, voltage	Working scientifically variables, independent variable, dependent variable, control variable, evidence, justify, argument (science), causal relationship, accuracy, precision, scatter graphs, bar graphs, line graphs, force meter
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