Bleak Hill Primary School
Science Long Term Plan and Progression

Vision	Intent	Implementation	Impact
At Bleak Hill, we aim to deepen children's understanding of the world in which we live and everything around them. Through our Science curriculum, we hope that this will produce curious, excited and motivated life-long learners, who will be able to understand how science can be used to explain, predict and analyse in line with the National Curriculum (2014) (for more detail, please see our subject specific policy).	We believe that science education 'provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics.' Science changes our lives and is vital to the world's future. As a result of this, all pupils will be taught essential aspects of the subject in terms of knowledge, understanding, methods, processes and the ability to apply each of these to the real world. Through building up knowledge and by developing a range of progressive skills, children at Bleak Hill will be challenged to explore scientific theories through practical activities.	Following the National Curriculum as a basis, with statutory content, with a minimum of 1 and a half discrete science teaching a week throughout school. Independent learning is encouraged, misconceptions are addressed and discussed as key teaching points. Scientific enquiry is promoted at the core of the subject and referred to every lesson building on skills progression across year groups. Topics build systematically on previous topics which contain over-arching transferable concepts. Our science curriculum builds our children's **science capital** and allows them to experience science in the real world.	Retrieval based learning techniques for every lesson in the sequence (at least 2 formally evidenced per topic). Evaluations for each lesson to provide formative assessment Exit tasks to gain a summative judgment (alongside teaching assessment of scientific enquiry skills). Judgements for every lesson: • Working towards • Working at • Working above

<table>
<tr><td>Threshold Concepts & Strands</td><td colspan="2">Biology Strand</td><td>Chemistry Strand</td><td colspan="2">Physics Strand</td></tr>
<tr><td rowspan="5">Knowledge Categories

Non-statutory</td><td colspan="2">Animals including humans</td><td>Materials / Properties of materials /Properties and changes to materials</td><td>Seasonal changes</td><td>Forces (and magnets)</td></tr>
<tr><td>Plants</td><td>The Environment</td><td>Rocks & Soils</td><td>Light</td><td>Sound</td></tr>
<tr><td colspan="2">Living things and habitats</td><td rowspan="2"></td><td>Electricity</td><td>Earth and Space</td></tr>
<tr><td colspan="2">Evolution and inheritance</td><td colspan="2"></td></tr>
<tr><td colspan="4">Throughout all topics, children will be 'Working Scientifically'</td></tr>
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Chemistry	Physics	Biology	Influential Scientists

Whole School Plan	Autumn A	Autumn B	Spring A	Spring B	Summer A	Summer B
Reception	**Growing** **Senses** **Keeping healthy** **Where does food come from?**	**Space** **Light and dark**	**Seasons** **Changes that can be reversed – ice experiment**	**Growing plants** **Life cycle of sunflowers**	**Mini beasts** **Habitats** **Life cycles**	**Habitats**
Year 1	**Animals, including Humans** What is the difference between a bird and a fish?	**Seasonal Changes (Autumn & Winter)** How can you tell which season it is?	**Everyday Materials** What is the best material to use to make an umbrella?	**Super Scientists** Who is the most influential scientist/inventor and why?	**Seasonal Change (Spring & Summer)** How are Spring and Summer different from Autumn and Winter?	**Living Things and Their Habitats Plants** How is a plant similar and different from a tree?
Year 2	**Uses of Everyday materials** What makes a good house?	**The Environment** How can we protect our environment?	**Animals, including Humans** What do we need to survive?	**Living Things and their Habitats** What is the difference between a rock and a human?	**Plants** What do plants need to survive?	**Super Scientists** What evidence is there in daily life that is influenced by these scientists and inventors?
Year 3	**Rocks and Soils** How is chalk different to granite?	**Scientists and Inventors** Why do you think these scientists/inventors have been chosen to study?	**Forces and Magnets** Why aren't all metals attracted to magnets?	**Plants** What part do plants play in the food chain?	**Animals including Humans** What would happen if humans didn't have skeletons?	**Light and Shadows** Why do shadows change?
Year 4	**Changing Sound** Why is sound a form of energy?	**Living Things & Their Habitats** When environments change, how can this pose dangers to living things?	**States of Matter** When do materials change state?	**Eating and Digestion** Why do we need different shaped teeth?	**Circuits and Conductors** What material is the best conductor?	**Scientists and Inventors** How is daily life influenced by these scientists and inventors?
Year 5	**Properties and Changes of Materials** Is making bread a reversible or irreversible change and why?	**Earth and Space** Why can't humans survive on other planets?	**Forces** How do mechanisms make our lives easier?	**Living Things in Their Habitats** How is a human life cycle similar to a plant life cycle?	**Animals, including Humans** How have you changed since you were born?	**Scientists and Inventors** Who is the most influential scientist or inventor and why?
Year 6	**Living Things and Their Habitats – Classification** Can we have 'good' bacteria?	**Animals including Humans- Healthy Bodies** How does your diet affect the way the body functions?	**Evolution and Inheritance** What evidence do we have for evolution?	**Seeing Light** Why can't we see around corners?	**Scientists and Inventors** How has your life been affected by these scientists and inventors?	**Changing Circuits** What is the difference between a cell and a battery?

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EYFS	3-4 Years	Reception	Early Learning Goals
Key Stage End Points	**Communication & Language** Understand 'why' questions, like: "Why do you think the caterpillar got so fat?" **Personal, Social and Emotional Development** Make healthy choices about food, drink, activity and toothbrushing. **Understanding the World** 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. Begin to make sense of their own life-story and family's history. 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.	**Communication and Language** Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use new vocabulary in different contexts. **Personal, Social and Emotional Development** Know and talk about the different factors that support their overall health and wellbeing: -regular physical activity -healthy eating -toothbrushing - sensible amounts of 'screen time' - having a good sleep routine - being a safe pedestrian **Understanding the World** Explore the natural world around	**Personal Social and Emotional Development - Managing Self** Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices **Communication & Language Listening, Attenton and understanding** Make comments about what they have heard and ask questions to clarify their understanding. **Understanding the World** 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

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	Talk about the differences between materials and changes they notice.		them. Describe what they feel, hear and see whilst outside. Recognise some environments that are different to the one in which they live in. Understand the changing seasons on the natural world around them.	world around them, including the seasons and changing states of matter.
Curriculum Links Future Learning	- Y1 Science – Materials (exploring materials) - Y2 Science – Materials (changes using force)	- Y1 Science – Plants (identifying parts) - Y1 Science – Materials (properties) - Y1 Science – Animals Including Humans (using senses) - Y2 Science – Animals Including - Humans (exercise, nutrition & hygiene) - Y2 Science – Environment (looking - after ours) - Y4 Science – Sound	- Y1 Science – Seasonal Changes (changing seasons) - Y1 Science – Animals Including Humans (using senses) - Y2 Science – Animals Including - Humans (exercise, nutrition & hygiene) - Y2 Science – Environment (looking after ours)	- Y1 Science – Animals Including Humans (observations) Y1 & Y2 Science – Plants (observations) - Y1 Science – Seasonal Changes (observations) - Y2 Science – Environment (world around them)

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Year 1	Animals including Humans	Seasonal Changes Autumn & Winter	Materials	Seasonal Changes Spring & Summer	Living Things and Their Habitats - Plants
Working Scientifically – We are Scientists. Talk like a scientist.	<u>During year 1, pupils should begin to:</u> Ask simple questions and recognise that they can be answered in different ways Observe closely, using simple equipment Perform simple tests Identify and classify Use their observations and ideas to suggest answers to questions Gather and record data to help in answering questions				
	Pupils should:	Pupils should:	Pupils should:	Pupils should:	Pupils should:
Year Group End Points NC Skills	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	Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies	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	Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies.	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.

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	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 Compare and group together a variety of everyday materials on the basis of their simple physical properties.		
Lesson sequence to progress skills and knowledge	1. What are the names of some common animals? 2. How can we compare animals? 3. What do animals eat? 4. What are the basic parts of the human body? 5. What are the five senses? 6. How can we sort animals into different groups?	1. How does the weather change over a year? 2. What is the weather like in autumn? 3. What changes can we see around us? 4. How does the length of a day vary from autumn to winter? 5. What is the weather like in winter? 6. How do some animals adapt to survive throughout the winter?	1. What is the name of this material? 2. What is the difference between an object and material? 3. How would you describe how a material looks and feels? 4. How can you test the properties of a material? 5. What is the best material for Ted's umbrella?	1. How does day length vary from winter to spring? 2. What is the weather like in spring? 3. What changes can we see around us? 4. How does day length vary from spring to summer? 5. What is the weather like in summer? 6. How can we stay safe in summer?	1. How do you plant a bean? 2. What is a wild plant? 3. What plants might I find in my garden? 4. How can you identify a tree from looking at its leaves? 5. What is the difference between deciduous and evergreen? 6. What conditions are best for plants to grow?

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Vocabulary Working Scientifically	arm, ears, elbow, eyes, face, fingers, foot, hair, hand, head, hearing, human body, knee, leg, mouth, neck, nose, sense, shoulder, sight, sound, smell, taste, teeth, texture, thumb, toes, touch amphibians, animals, birds, carnivores, fish, habitat, herbivore, mammals, omnivore, pets, reptiles compare, contrast, diagram, draw, group, identify, label, name, observe	autumn, changes, day length, overcast, rain, seasons, snow, spring, summer, sun, sunny, temperature, weather, wind, winter charts, describe, observe, tables	absorbent, bendy, dull, glass, hard, material, metal, object, opaque, plastic, properties, rock, rough, shiny, smooth, soft, stiff, stretchy, transparent, water, waterproof, wood compare, describe, discuss, group, identify, name	autumn, changes, day length, overcast, rain, seasons, snow, spring, summer, sun, sunny, temperature, weather, wind, winter charts, describe, observe, tables	blossom, branch, bud, bulb, deciduous, evergreen, flower, flowering, fruit, garden, leaves, petals, roots, seed, stem, trunk, vegetables, wild compare, contrast, diagram, identify, name, observe
Curriculum Links Previous Learning In this year	EYFS 3 – 4 years & Reception – UW (use senses to describe observations) EYFS 3 – 4 years – EAD	EYFS Reception & ELG – UW (understanding changes in natural environment) Y1	EYFS 0 – 3 years & 3 – 4 years – UW (exploring materials and their properties) Y1 History – Toys	EYFS Reception & ELG – UW (understanding changes in natural environment) Y1 Geography	EYFS 3 – 4 years – UW (planting seeds and caring for plants) EYFS ELG – UW (observing and drawing pictures of animals and plants) Y1 DT – Picnic Snacks Y2 & 3 Science – Plants Y2 DT – Dips and Dippers

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Future Learning	(listening with increased attention to sounds – sensory link) EYFS ELG – UW (observing and drawing pictures of animals and plants) Y1 PSHE – Healthy Me, Changing Me & Celebrating Difference Y2-6 Science – Animals Including Humans	Geography – Weather Patterns Y1 Science – Plants Y2 & 3 Science - Plants Y5 Science - Earth and Space Y5 Geography – Climate Zones and Tectonic Plates Y6 Geography Rivers–Climate Zones and Tectonic Plates Y6 Geography Rivers	Y1 DT – Fabric Faces (textiles) Y1 DT – Moving Pictures (materials /structures) Y2 Science – Materials Y2 DT –Fabric Bunting (textiles) Y3 DT – Juggling Balls (textiles) Y5 DT – Felt Phone Cases (textiles) Y3 Science – Rocks Y4 Science – Properties of Materials Y5 Science – Properties and Changes to Materials	– Weather Patterns Y1 Science – Plants Y2 & 3 Science - Plants Y5 Science - Earth and Space Y5 Geography – Climate Zones and Tectonic Plates Y6 Geography Rivers	Y3 DT – Edible Garden Y4 DT – American Food Y5 DT – Bread Y5 Geography – Enough for Everyone Y6 DT – Global Food Y6 History – WW2 (Dig for Britain)

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Year 2	Materials	The Environment	Animals including Humans	Living Things and Their Habitats	Plants
Working Scientifically – We are Scientists. Talk like a scientist.	During year 2, pupils should (with increasing confidence) continue to: Ask simple questions and recognise that they can be answered in different ways Observe closely, using simple equipment Perform simple tests Identify and classify Use their observations and ideas to suggest answers to questions Gather and record data to help in answering questions				
	Pupils should:	Pupils should:	Pupils should:	Pupils should:	Pupils should:
Year Group End Points NC Skills	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	Ask simple questions and recognise that they can be answeredin different ways Observe closely, usingsimple equipment Perform simple tests Identify and classify Use their observationsand ideas to suggest answers to questions Gather and record data to help in answering questions (Working Scientifically unit)	Notice that animals, including humans, have offspring whichgrow into adults Find out about and describe the basic needs of animals, including humans, forsurvival (water, food and air) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	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 dependon each other Identify and name a variety of plants and animalsin their habitats, including micro-habitats Describe how animals obtain their food fromplants and other animals, using the idea of a simple food chain, and identify and name different sources of food	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

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Lesson sequence to progress skills and knowledge	1. What are the uses of different materials? 2. What materials do we have in our local area? 3. How can we compare materials and decide which is most suitable for a job? 4. How do shapes change? 5. How can materials be recycled? 6. Who is John McAdam?	1. What is climate change and how can it be investigated in class? 2. How can we change our daily habits to help the environment? 3. What are the different types of energy? 4. How can rainforest animals be identified and classified? 5. How can water be saved? (investigate, measure and report) 6. What are endangered animals and what can we do?	1. How do animals change as they grow? 2. Do you get faster as you get older? 3. What are the basic needs of humans and animals? 4. What foods does my body need to be healthy? 5. What are the benefits of exercise? 6. How and why should I keep myself clean?	1. Living, dead or never alive? 2. How can a specific habitat provide for the basic needs of the things living there? 3. How can we identify minibeasts? 4. What do habitats look like around the world? 5. How are living things and their habitats suited to each other? 6. What is a food chain?	1.What do plants in our local environment look like? 2.How do seeds and bulbs grow into plants? 3. What is the life cycle of a plant? 4. What doe plants need to grow? 5. Which fruit and vegetables come from seeds? 6. Can I investigate and find out the best conditions for healthy plant growth?
Vocabulary Working Scientifically	bending, brick, cardboard, changed,glass, materials, metal, paper, plastic, properties, purpose, rock, shapes,squashing stretching, suitability, suitable, twisting, unsuitable,uses, wood classify, compare, discuss, find out, identify, observe closely, record	atmosphere, climate change, endangered, energy, environment,fossil fuel, global warming, greenhouse gas, habitat, incineration, landfill, litter, non-renewable, rainforest, recycle, reduce, renewable, reuse, water conservation answer, ask, classify,gather, identify, measure, observe, recognise, record, research, sort,	adult, air, animals, baby, basic needs, child, exercise, food,growth, humans, hygiene, nutrition, offspring, reproduction, survival, teenager,toddler, water describe, notice, observe, question,research	alive, animals, basic needs, characteristics, conditions, dead, depend on, environment, food, food chain, habitat, healthy, living, micro-habitat,plants, provide, shelter, sources, suited, desert, freshwater, grassland, meadow, mountain, ocean, polar, rainforest, seashore, woodland Charts, classify, compare, describe, explore,identify, name, observe, sorting, study	bulbs, environment, germination, grow, healthy, light, matureplants, reproduction, seeds, store of food, survival, temperature, water Change over time, compare, describe, observe, record

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Curriculum Links Previous Learning In this year Future Learning	EYFS 3 – 4 years – UW (talk about the different forces they can feel) Y1 Science – Materials Y1 DT – Our Fabric Faces (textiles) Y1 DT – Moving Pictures Y2 History – Great Fire of London Y2 DT – Tudor Houses (structures) Y2 DT – Fabric Bunting (textiles) Y3 Science – Rocks Y3 DT – Juggling Balls (textiles) Y4 Science – Properties of Materials Y5 Science – Properties and Changes to Materials Y5 DT Felt Phone Cases (textiles)	EYFS Reception – UW (different environments) EYFS ELG – UW (similarities and differences in natural world and contrasting environments) Y1 Science – materials (properties and names link to recycling) Y2 Science – Living Things and Habitats (link to rainforest and endangered animals) Y5 & 6 PSHE – Being Me In My World Y4 & 6 Science – Electricity Y5 Geography – Tectonic Plates & Climate Zones Enough for Everyone Y6 Science – Evolution and Inheritance	EYFS 3 – 4 years (key features of life cycles) EYFS 3 – 4 years & Reception – PD (healthy choices and different factors supporting overall health) Y1 Science – Animals including Humans Y2 PSHE – Healthy Me (nutrition) Y3 PSHE – Healthy Me (exercise) Y3 DT – Edible Garden (food) Y3-6 Science – Animals Including Humans	Y1 Science – Animals Including Humans & Plants Y2 Science – Animals Including Humans & Plants Y2 Geography – Kenya Y4&6 Science – Living Things and Habitats	Y1 Science – Plants Y2 Science – Environment Y2 DT – Sensational Salads (food) Y3 Science – Plants Y3 DT – Edible Garden (food)

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Year 3	Rocks & Soils	Forces & Magnets	Plants	Animals including Humans	Light & Shadows
Working Scientifically – We are Scientists. Talk like a scientist.	<u>During year 3, pupils should begin to:</u> Ask relevant questions and use different types of scientific enquiries to answer them Set up simple practical enquiries, comparative and fair tests Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Gather, record, classify and present data in a variety of ways to help in answering questions Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Identify differences, similarities or changes related to simple scientific ideas and processes Use straightforward scientific evidence to answer questions or to support their findings.				
	Pupils should:	Pupils should:	Pupils should:	Pupils should:	Pupils should:
Year Group End Points NC Skills	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.	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	Identify and describe the functions of different parts of flowering plants: roots,stem/trunk, leaves andflowers Explore the requirements of plantsfor 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	Identify that animals, including humans, needthe 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.	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 fromthe sun can be dangerousand that there are ways to protect their eyes Recognise that shadows are formed when the light from a light source is

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		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.	plants Explore the part that flowers play in the life cycle.		blocked by a solid object Find patterns in the waythat the size of shadowschange.
Lesson sequence to progress skills and knowledge	1. Which rocks are natural and which are man-made? 2. What types of rock are there? 3. How are rocks similar and different? 4. Which rocks are used for different purposes? 5. How is soil formed? 6. What effects the permeability of soil? 7. What are fossils?	1. What are forces? 2. How do things move differently on different surfaces? 3. How do magnet forces work? 4. Which materials are magnetic? 5. When are magnets useful? 6. How can we use magnets in our daily life?	1. What are plants? 2. What do plants need to grow? (part 1 & 2) 3. How does water move around plants? 4. What is pollination? 5. What is the life cycle of a flowering plant?	1. What are the different types of nutrition? 2. What types of skeleton are there? 3. What are the names of bones? 4. What are the functions of skeletons? 5. What are muscles? 6. How do muscles work?	1. How do we get day and night? 2. What is light and dark? 3. What is reflection? 4. What is a mirror? 5. How are shadows made? 6. How can shadows change?

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Vocabulary Working Scientifically	appearance, buildings, crystals, formed, fossils, grains, gravestones, igneous rock, metamorphic rock, organic matter, physical properties, rocks, sedimentary rock, soils, trapped classify, compare, describe, discuss, explore, group, identify, investigate, observe, recognise, research	attract, compass, contact, distance, forces, magnetic, materials, move, objects, poles, properties, pull, push, repel, strength, surface, uses compare, describe, explore, gather, group, notice, observe, predict, record, sort, test	air, anchor, fertiliser, flowering plants, flowers, functions, growth, leaves, life, lifecycle, light, nutrients, nutrition, plants, pollination, reproduction, requirements, room to grow, roots, seedling, seed dispersal, seed formation, soil, stem, support, transported, transpiration, trunk, water compare, describe, discover, explore, identify, investigate, observe	amount, animals, body parts, carbohydrates, diet, eat, endoskeleton, exoskeleton, fats, fibre, food, food groups, functions, healthy, humans, invertebrates, joints, meals, minerals, movement, muscles, nutrition, protection, protein, skeletons, support, types, vertebrates, vitamins compare, contrast, decide, design, explore, group, identify, observe, research	absence, beam, blocked, danger, dark, distance, glare, light, light source, mirror, opaque, patterns, protect, ray, reflect, shadows, sun, surfaces answer, explore, look for, notice, question, recognise
Curriculum Links Previous Learning In this year Future Learning	Y1 & 2 Science – materials Y3 History – Stone, Bronze and Iron Age Y3 DT – Let's Go Fly A Kite (materials/ construction) Y3 Geography – UK (mountains) Y4 Science –	EYFS 0 – 3 years – UW (repeat actions that have an effect) Y2 Science – Materials (changes through force) Y2 DT – Moving Pictures (mechanics) Y3 DT – Let's go Fly a Kite	Y1 & 2 Science – Plants Y2 Science – Living Things and Habitats Y3 DT – Edible Garden Y4,5 & 6 Science – Living Things and Habitats	Y1 & 2 Science – Animals Including Humans Y2 PSHE – Healthy Me (nutrition) Y3 PSHE – Healthy Me (exercise) Y3 DT – Edible Garden (food) Y4,5&6 Science – Animals Including	Y1 Science – Seasonal Changes Y1 Geography – Weather Patterns Y3 Science – Plants Y3 DT – Edible Garden Y4 DT – Battery operated Lights

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	Properties of Materials Y5 Science – Properties and Changes to Materials Y6 Science – Evolution and Inheritance (fossils)	Y5 Science – Earth and Space Y5 Science – Forces Y5 DT – Marbulous Marble Runs Y6 DT – Building Bridges		Humans	Y5 Science – Earth and Space Y6 Science – Light

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Year 4	Changing Sound	Living Things & Their Habitats	States of Matter	Eating and Digestion	Circuits and Conductors
Working Scientifically – We are Scientists. Talk like a scientist.	<u>During year 4, pupils should (with increasing confidence) continue to:</u> Ask relevant questions and use different types of scientific enquiries to answer them Set up simple practical enquiries, comparative and fair tests Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Gather, record, classify and present data in a variety of ways to help in answering questions Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Identify differences, similarities or changes related to simple scientific ideas and processes Use straightforward scientific evidence to answer questions or to support their findings.				
	Pupils should:	Pupils should:	Pupils should:	Pupils should:	Pupils should:
Year Group End Points NC Skills	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	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.	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	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.	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

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	the volume of a sound and the strength of the vibrations that produced it Recognise that sounds get fainter as the distance from the soundsource increases.		condensation in the water cycle and associate the rate of evaporation with temperature.		battery Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple seriescircuit Recognise some common conductors and insulators, and associate metals with being good conductors.
Lesson sequence to progress skills and knowledge	1. How are sounds made? 2. Can sounds travel through different materials? 3. How do we hear sounds? 4. How can pitch change? 5. How can we change pitch? 6. How do sounds travel over distance? 7. How can we use what we know about materials to help with soundproofing?	1. How do we know if something is alive or not? 2. How can you group animals? 3. What are vertebrate and invertebrates? 4. What habitats do we have in our locality? 5. How can we classify plants and animals? 6. How can we look after our environments?	1. What are the three states of matter? 2. Do al liquids behave in the same way? 3. How do we measure temperature? 4. What happens to a substance when it melts or cools? 5. What is the water cycle? 6. How can we investigate evaporation?	1. What organs are in the digestive system? 2. How do the organs work in the digestive system? 3. What type of teeth are there? 4. What is tooth decay (part 1 & 2) 5. What is a food chain?	1. Where does electricity come from? 2. What needs electricity? 3. How do we know a circuit is complete?? 4. What are conductors and insulators? 5. Why do we use switches? 6. How can we use a switch in a circuit?

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Vocabulary Working Scientifically	distance, ear, fainter, features, high, instruments, insulation, loud, low, pitch, quiet, sound, sound source, strength, travel, vibrating, volume explore, find patterns, identify, investigate, make, play, recognise	amphibians, birds, change, classification key, danger, deforestation, development, environment, fish, flowering, habitat, human impact, invertebrates, litter, living things, mammals, nature reserve, negative, non-flowering, population, positive, reptiles, vertebrates answer, explore, group, identify, make, name, question, recognise, research, study	change state, condensation, condense, cooled, degrees Celsius, escape, evaporation, everyday materials, gases, heated, liquids, melt, pool, shape, solids, substance, temperature, water cycle classify, compare, explore, group, identify, investigate, measure, observe, record, research	canine, carnivore, consumers, damages, digestive system, food chain, functions, herbivore, humans, incisor, large intestine, molar, mouth, esophagus, predators, premolar, prey, producers, small intestine, stomach, teeth, tongue compare, construct, describe, discuss, draw, explore, find out, identify, interpret, suggest	appliances, battery, brighter, bulb, buzzer, cell, components, conductor, device, electricity, insulator, lamp, loop, metals, motor, parts, series circuit, switch, wire construct, create, draw, identify, name, observe patterns, recognise
Curriculum Links Previous Learning In this year Future Learning	EYFS 3 – 4 years – EAD (listen with increased attention to sounds) Y1 – 3 Music Y1 History – Toys Y2 Science – Environment (use of energy Y4 Music Y6 Science –	Y2 Science – Environment Y2 Science – Living Things and Habitats Y3 Science – Animals Including Humans Y3 History – Early Civilisations: Ancient Egypt Y4 Geography - Counties (UK) North America Australia	Y1 Science – Seasonal Changes Y1& 2 Science – Materials Y3 Science – Rocks Y3 DT – Juggling Balls Y4 Geography – Counties (Coasts) Y5 Science –	Y1, 2 & 3 Science – Animals Including Humans Y1, 2 & 3 Science – Plants Y2 & Y3 PSHE – Healthy Me Y3 DT- Edible Garden Y4 DT – American Food	EYFS 3 – 4 years – EAD (listen with increased attention to sounds) Y1 – 3 Music Y1 History – Toys Y2 Science – Environment (use of energy Y4 DT – Battery Operated Lights (electricity)

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	Electricity Y6 DT – Fairground Rides	Y6 Science – Evolution and Inheritance Y5&6 Science – Living Things and Habitats	Properties and Changes to Materials Y6 Geography – Rivers	Y5&6 Science – Animals Including humans	Y4 Music Y6 Science – Electricity Y6 DT – Christmas Decorations (electricity)

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Year 5	Properties & Changes of Materials	Earth & Space	Forces	Living Things in Their Habitats	Animals including Humans
Working Scientifically – We are Scientists. Talk like a scientist.	<u>During year 5, pupils should begin to:</u> Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Use test results to make predictions to set up further comparative and fair tests Report and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust inresults, in oral and written forms such as displays and other presentations Identify scientific evidence that has been used to support or refute ideas or arguments.				
	Pupils should:	Pupils should:	Pupils should:	Pupils should:	Pupils should:
Year Group End Points NC Skills	Compare and group together everyday materials on the basis of their properties,including their hardness, solubility, transparency, conductivity (electrical andthermal), and response to magnets Know that some materials will dissolve in liquid to form a solution, and describe how torecover a substance from a solution Use knowledge of solids, liquids and gases todecide how mixtures might be separated, including through filtering, sieving andevaporating Give reasons, based on evidence from comparative	Describe the movement of the Earth, and other planets, relative to the Sun in the solar system Describe the movement of the Moonrelative to the Earth Describe the Sun, Earthand Moon as approximately spherical bodies Use the idea of the Earth's rotation to explain day and nightand the apparent movement of the sunacross the sky	Explain that unsupported objects fall towards the Earth because of the force ofgravity acting betweenthe Earth and the falling object Identify the effects of air resistance, water resistance and friction, that act betweenmoving surfaces Recognise that some mechanisms, includinglevers, pulleys and gears, allow a smaller force to have a greatereffect.	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird Describe the life process of reproductionin some plants and animals.	Describe the changes as humans develop to old age.

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	and fair tests, for the particular uses of everyday materials, including metals, wood and plastic Demonstrate that dissolving, mixing andchanges of state are reversible changes Explain that some changes result in the formation of new materials, and that this kindof change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.				
Lesson sequence to progress skills and knowledge	1. How does a material dissolve to form a solution and what is a mixture? 2. How can we separate materials through filtering, sieving or evaporation? 3. Why are some changes irreversible? 4. Which changes are reversible and which changes are irreversible and how do we know? 5. How can we compare and group materials? 6. How do we use materials in our everyday life based on their properties?	1. What is an approximate spherical body? 2. What are the names of the planets in our solar system and how are they classified? 3. What is a satellite? 4. How does the Earth's rotation explain how we experience day and night? 5. How can we use data to draw conclusions about the sun? 6. How do the planets in our solar system move relative to the Sun? 7. How has our understanding of the solar system changed?	1. What is a force? 2. Why do things fall to the floor? 3. What makes a great parachute? 4. How does shape affect water resistance? 5. What is friction? 6. How do gears, pulleys and levers work?	1. What are the 7 life processes? (Recap- MRSGREN) 2. How can we make new plants? (part 1 &2) 3. What is the life cycle of a mammal like? 4. Who is Jane Goodall and why is she important? 5. What happens during metamorphosis? 6. How are life cycles vary in different types of animal?	What are the six stages of human development? 2. How can we show how babies grow? 3. What changes take place as we age? 4. How do gestation periods vary? 5. What is life expectancy and how can our actions affect it? (Puberty taught through PSHE & RSE scheme)

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Vocabulary Working Scientifically	acid, bicarbonate of soda, burning, chemical changes, chemists, dissolve, electrical conductivity, evaporate, everyday materials, filter, formation, gas, hardness, irreversible, liquid, magnets, melt, metal, mixtures, new materials, plastic, properties, reactions, reversible changes, rusting, separate, sieve, solid, solubility, solution, suspension, thermal conductivity, transparency, wood carry out, compare, demonstrate, describe, discuss, explain, explore, find out, give reasons, group, know, observe, research, use evidence	astronomical clock, axis, celestial body, day, Earth, geocentric, heliocentric, Jupiter, Mars, Mercury, Moon, movement, Neptune, night, orbit, phases, planets, rotation, Saturn, shadow clock, solar system, spherical, star, Sun, sundial, Uranus, Venus calibrate, compare, construct, create, describe, explain, find out	air resistance, Earth, fall, faster, force, friction, gear, gravity, greater, level, machines, mechanism, movement, object, opposing, parachute, pulley, slow down, smaller, stop, surface, theory of gravitation, unsupported, water resistance carry out, design, determine, experience, explain, explore, find out, identify, make, observe, question, recognise	amphibians, animals, asexual, birds, bulb, changes, cuttings, differences, dispersal, fertilisation, gestation, habitats, insects, life cycle, life process, mammals, parent plant, plants, pollination, reproduction, root, seed, sexual, similarities, stem, tuber compare, describe, find out, observe, question, study, suggest	adolescent, adult, animals, baby, changes, develop, embryo, foetus, gestation, growth, hormones, humans, old age, puberty, teenager, timeline, toddler describe, find out, indicate, record, research
Curriculum Links Previous Learning In this year Future	Y1 Science – Materials (everyday) Y2 Science – Materials (change with force) Y3 Science – Forces and Magnets (response to magnets)	Y1 Science – Seasonal Changes Y3 Science – Light Y3 Science – Forces and Magnets Y4 Geography – Australia (time	Y3 History – Victorian St Helens (railways and industry) Y2 DT – Moving Pictures (mechanics) Y3 Science – Forces and Magnets	Y2 & Y4 Science – Living Things and Habitats Y4 PSHE – Changing Me (changes to make reproduction possible)	Y1 – 4 Science – Animals Including Humans Y4 PSHE – Changing Me (changes to make reproduction possible)

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Learning	Y3 Science – Light (transparency) Y4 Science – Electricity (conductivity) Y4 Science – Properties of Materials (states of matter) Y5 DT – Marbulous Structures (materials) Y5 DT – Felt Phone Cases (textiles) Y5 DT – Bread (irreversible changes) Y6 Science – Electricity (variations in function of components)	zones) Y5 Science – Forces Y5 Geography – Climate zones and tectonic plates Y6 Science – Light	Y3 DT – Mechanical Posters (mechanics) Y5 Science – Earth and Space Y6 DT – Building bridges Fairground Rides	Y5 PSHE – Changing Me (puberty) Y5 Geography – Enough for Everyone Y6 PSHE – Changing Me (puberty and pregnancy)	Y5 PSHE – Changing Me /Healthy Me (puberty) Y6 PSHE – Changing Me (puberty and pregnancy)

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Year 6	Living Things and Their Habitats – Classification	Animals including Humans – Healthy Bodies	Evolutions and Inheritance	Light	Electricity
Working Scientifically – We are Scientists. Talk like a scientist.	<u>During year 6, pupils should (with increasing confidence) continue to:</u> Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Use test results to make predictions to set up further comparative and fair tests Report 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 Identify scientific evidence that has been used to support or refute ideas or arguments.				
	Pupils should:	Pupils should:	Pupils should:	Pupils should:	Pupils should:
Year Group End Points NC Skills	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.	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,	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	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	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

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		including humans.	Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	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.	Use recognised symbols when representing a simple circuit in a diagram.
Lesson sequence to progress skills and knowledge	1. How do we group organisms according to their characteristics? 2. Who was Carl Linnaeus and why is he important? 3. How can we use classification keys to identify species? 4. What are micro-organisms? 5. How can we classify plants? 6. How can we classify organisms from our local area?	1. What is the circulatory system? 2. What are the functions of different parts of the circulatory system? 3. How do muscles work? 4. What is the digestive system? (recap from Y4) 5. How can we keep healthy? 6. How does exercise affect your heart rate? 7. What impact do drugs and alcohol have on our bodies?	1. How do living things produce offspring? 2. How are animals and plants adapted to suit their environment? 3. How does the adaptation of plants and animals lead to evolution? 4. Who is Charles Darwin? 5. How can we learn about evolution from fossils? 6. What is selective and cross breeding?	1. How does light help us to see? 2. How do reflections help us to see? 3. How does refraction change how we see things? 4. Why do prisms change rays of light? 5. How does light enable us to see colour? 6. Why do shadows has the same shape as the object that casts them?	1. What are the major discoveries in electricity? 2. What do different scientific symbols mean in a diagram? 3. What happens to a circuit if we change the voltage? 4. How can we design an investigation to test the output of a circuit? 5. How can we report data from investigations? 6. How can we investigate results and make conclusions from investigations?

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Vocabulary Working Scientifically	amphibians, animals, bacteria, birds, characteristics, classification system, classified, differences, fish, groups, habitats, insects, invertebrates, key, living things, micro-organisms, organisms, plants, reptiles, similarities, snails, spiders, subdivided, variation, vertebrates, worms classify, describe, directly observe, discuss, give reasons, identify	animals, artery, blood, blood vessels, circulatory system, damaged, deoxygenated, diet, digestive system, drugs, exercise, functions, harm, health, heart, human, impact, internal organs, lifestyle, muscular system, nutrients, oxygenated, respiration, skeletal system, substances, transported, valve, veins, water describe, explore, identify, name	adapted, adaptation, breed, changed, characteristics, competition, environment, evolution, fossils, identical, inhabited, inherited, living things, mutation, offspring, parents, produce, reproduction, suit, survive, survival of the fittest, variation, vary appreciate, consider, find out, identify, recognise	beam, cast, coloured filters, emitted, eye, glare, light, light source, periscope, rainbows, reflect, reflection, shadows, straight lines, Sun, travel, visible decide, design, explain, extend, investigate, make, predict, recognise, talk about	brightness, bulb, buzzer, cells, circuits, components, diagram, function, insulator, lamp, loudness, motor, series circuit, switches, symbols, variations, voltage, volume associate, compare, construct, design, give reasons, identify, make, represent, systematically
Curriculum Links Previous Learning In this year Future Learning	Y1 – 3 Science – Plants Y1 – 5 Science – Animals Including Humans Y2, 4 & 5 Science – Living Things and Habitats Y6 Science – Animals Including Humans Y6 Science – Evolution and	Y1 – 5 Science – Animals Including Humans Y2 PSHE – Healthy Me (diet) Y3 PSHE – Healthy Me (importance of heart and lungs / fitness) Y4 PSHE – Healthy Me (smoking and alcohol) Y5 PSHE – Healthy	Y1 – 5 Science – Animals Including Humans Y2 Science – Environment Y2, 4 & 5 Science – Living Things and Habitats Y3 Science – Rocks (fossils) Y5 Geography – Migration and	Y3 Science – Light Y5 Science – Earth and Space Y6 DT – Christmas Decorations (electricity) KS3 Physics – Waves (light waves) / Space Physics	Y3 Science – Light Y4 Science – Sound Y4 Science – Electricity Y4 DT – Battery Operated Lights (electricity) Y6 DT – Christmas Decorations (electricity)

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	Inheritance KS3 Biology – Relationships in an Ecosystem	Me (smoking) Y5 PSHE – Healthy Me (emergency situations) Y6 PSHE – Healthy Me (substances and impact on the body) KS3 Biology – Cellular Respiration	Immigration Y6 Art – Birds (different species) KS3 Biology – Inheritance, Chromosomes, DNA and Genes		KS3 Physics – Electricity and Electromagnetism