



Science Year 4 Long Term Plan

Themes (Number of weeks/Term)	Autumn 1 Living Things and Their Habitats (8 weeks)	Autumn 2 States of Matter (7 weeks)	Spring 1 Sound Living Things and Their Habitats (5 weeks)	Spring 2 Electricity Sustainability (7 weeks)	Summer 1 Living Things and Their Habitats Sustainability (6 weeks)	Summer 2 Animals, Including Humans (6 weeks)
NC Content/Coverage	Biology Unit 1: Group and classify living things Unit 2: Data Collection A	Chemistry Unit 3: States of matter	Physics Unit 4: Sound Biology Unit 5: Data collection B	Physics Unit 6: Electricity Unit 7: Energy	Biology Unit 8: Data collection C Unit 9: Habitats Unit 10: Deforestation	Biology Unit 11: The Digestive System Unit 12: Food chains
Substantive knowledge teaching sequence	- I can name each animal group and explain what vertebrates and invertebrates are. - I can explain what a classification key is and how living things can be grouped and classified. - I can explain what a flowering and non-flowering plant is. - I can identify plants and animals in my local area. (Autumn) - I can present my findings from my investigation and explain what the data shows me.	- I can explain what solids, liquids and gases are and what their properties are. - I can explain what evaporation and condensation are. - I can use equipment accurately (stopwatches and thermometers) and plan an investigation to see how the temperature of water affects the time it takes for ice to melt. - I can investigate how the temperature of water affects the time it takes for ice to melt. - I can explain what the water cycle is. - I can plan an investigation to see	- I can explain how we hear sounds and how sound is measured. - I can explain how the strength of the vibrations affect the volume of a sound. - I can explain what pitch is and how it can be changed. - I can plan an investigation to see how the distance from the sound source affects the volume of the sound. - I can investigate how the distance from the sound source affects the volume of the sound. - I can evaluate the findings from my investigation.	- I can identify common appliances that use electricity and explain how electricity is generated. - I can build and draw a series circuit and explain why some circuits don't work. - I can explain what conductors and insulators are and how they affect a circuit. - I can identify ways in which we can reduce our energy usage.	- I can identify plants and animals in my local area, (summer) present my findings and explain what the data shows me. - I can explain how the living things in our local area change over the year. - I can ask questions to classify animals and use a classification key to group and classify animals in my local environment. - I can explain the impact humans have on different habitats. - I can explain what deforestation is and	- I can explain how an animal's diet influences the structure of its teeth and why humans have more than one type of tooth. - I can identify the different parts of the teeth and explain their functions. - I can explain how a build-up of 'plaque' is formed and how to look after and protect your teeth. - I can explain the process of digestion. (Labelled diagram) - I can explain what a food chain is and draw one. - I can use scientific vocabulary to describe food chains. I can explain how human



		how the temperature affects the time it takes for water to evaporate. - I can investigate how the temperature affects the time it takes for water to evaporate. - I can evaluate the findings from my experiment.	I can identify plants and animals in my local area (spring) and present my findings, explaining what the data shows me.		how humans can reduce it.	activity has affected food chains.
Disciplinary knowledge/ Working Scientifically	Gather, record and classify data I know how to gather, record and classify data about what living things are in our local environment in a variety of ways to help in answering questions. I know how to record findings about what living things there are in our local area using simple scientific language, drawings, bar charts, tables and classification keys. Asking questions I know how to ask relevant questions the differences between flowering and non-flowering plants and vertebrates and invertebrates and I can use different types of	Gather, record and classify data I know how to gather, record and classify data in a variety of ways to help in answering questions. I can measure or research the temperature - in degrees Celcius - at which some materials change state when they are heated or cooled. I know how to record findings using simple scientific language and tables. Answer questions and make conclusions I know how to use straight-forward scientific evidence to answer questions or to support my findings. I know how to use results to draw simple conclusions.	Asking questions I know how to ask relevant questions and I can use different types of scientific enquiry to answer them. Gather, record and classify data I know how to gather, record and classify data in a variety of ways to help in answering questions. I know how to record findings using simple scientific language, drawings and tables. Take measurements I know how to take accurate measurements using standard units (decibels), using decibel meters. Planning I know how to make predictions based on simple scientific knowledge.	Gather, record and classify data I know how to gather, record and classify data in a variety of ways to help in answering questions about series circuits. I know how to record findings using simple scientific language. Answer questions and make conclusions I know how to use straight-forward scientific evidence to answer questions or to support my findings. I know how to use results to draw simple conclusions. I know how to begin to identify differences, similarities or changes related to simple ideas or processes Asking questions	Gather, record and classify data I know how to gather, record and classify data in a variety of ways to help in answering questions. I can use a classification key to group and classify animals in my local environment. I know how to record findings using simple scientific language, drawings, classification keys and tables. Present findings I know how to report on findings from enquiries, including oral and written explanations and conclusions. Asking questions I know how to ask relevant questions about the living things in my local area and I can use different types of	Making observations I know how to make systematic and careful observations. Asking questions I know how to ask relevant questions and I can use different types of scientific enquiry to answer them. Planning I know how to make predictions based on simple scientific knowledge. I know how to identify what I will change, observe or measure and keep the same. I know how to set up simple practical enquiries, comparative and fair tests. Gather, record and classify data I know how to gather, record and classify data in a variety of ways to help in answering questions.



	scientific enquiry to answer them. Present findings I know how to report on findings from enquiries, including oral and written explanations. I can present my findings from my investigation into what living things are in our local area and explain what the data shows me.	I know how to begin to identify differences, similarities or changes related to simple ideas or processes. Asking questions I know how to ask relevant questions, and I can use different types of scientific enquiry to answer them. Making observations I know how to make systematic and careful observations about how some materials change state when they are heated or cooled. Planning I know how to make predictions about how the temperature of the water affects the time it takes for ice to melt based on simple scientific knowledge. I know how to identify what I will change, observe or measure and keep the same. I know how to set up simple practical enquiries, comparative and fair tests.	I know how to identify what I will change, observe or measure and keep the same. I can plan an investigation to see how the distance from the sound source affects the volume of the sound. I know how to set up simple practical enquiries, comparative and fair tests. Answer questions and make conclusions I know how to use straight-forward scientific evidence to answer questions or to support my findings. I can investigate how the distance from the sound source affects the volume of the sound. I can use results to draw simple conclusions/evaluate the findings from my investigation. I can find patterns between the pitch of a sound and features of the object that produced it. I know how to begin to identify differences, similarities or changes related to simple ideas or processes. Making observations	I know how to ask relevant questions about series circuits and I can use different types of scientific enquiry to answer them.	scientific enquiry to answer them.	I can construct and interpret a variety of food chains, identifying producers, predators and prey. I know how to record findings using simple scientific language, drawings and labelled diagrams. Present findings I know how to report on findings from enquiries, including oral and written explanations and displays or presentations. Answer questions and make conclusions I know how to use straight-forward scientific evidence to answer questions or to support my findings. I know how to use results to draw simple conclusions. I know how to begin to identify differences, similarities or changes related to simple ideas or processes.
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Key vocabulary	Mammal, Bird, Fish, Amphibian, Reptile, Vertebrate, Invertebrate	Solid, Liquid, Gas, States of matter, Condensation, Evaporation, The water cycle	Vibration, Sound, Pitch, Decibel (dB), Vertebrate, Invertebrate	Circuit, Switch, Cell, Battery, Conductor, Insulator, Renewable energy, non-renewable energy	Habitat, Biodiversity, Classification key, Deforestation	Teeth, Carnivore, Herbivore, Omnivore, Plaque, Decay, Digestive system, Food chain, Producer, Predator, Prey, Consumer
Additional/ Cross Curricular and continuous opportunities	The children will use their mathematical skills to present their findings from their investigation. Pupils will have the opportunity to retrieve information from this unit as the seasons change and teachers ask them questions about the types/classification of animals and plants that they observe as this happens. <u>Continuous opportunities</u> Animal and Plant Sorting Station – cards or models of vertebrates, invertebrates, flowering, and non-flowering plants for hands-on classification activities.	The water cycle will be revisited in Geography and when studying rivers, so these are opportunities for retrieval. In DT Food there are opportunities for change of state to be mentioned and therefore terminology to be revisited and retrieved. Teachers can use incidental opportunities like observing puddles drying on a sunny day, or when it rains to ask children to use and apply their knowledge from this unit. <u>Continuous opportunities</u> States of Matter Exploration Station – trays of solids, liquids, and gases (e.g., ice, water, air in balloons) for children to observe	The children will discuss pitch in their music lessons and be asked to retrieve knowledge from this unit to explain it. <u>Continuous opportunities</u> - Sound Exploration Station – tuning forks, drums, xylophones, and string instruments for children to explore how vibrations create sound. - Volume and Pitch Investigation Area – materials such as rubber bands, varying lengths of string, and different-sized containers to explore how vibration strength and object properties affect volume and pitch. - Distance and Sound Experiment Zone – measuring tapes,	A tinker-table with circuit components could be set up in Summer 1 and 2 to allow the pupils to 'tinker' and embed their understanding of this unit. Teachers will use incidental opportunities to encourage retrieval of learning from this unit. For example, why has the classroom clock stopped? What's happening when we switch the classroom light on? <u>Continuous opportunities</u> - Electricity Exploration Station – a range of common appliances and battery-operated devices for children to identify and discuss how electricity powers them. - Circuit Construction Area – circuit kits with bulbs, buzzers,	The children will revisit their learning and terminology when studying biomes in Geography and considering which animals make their habitats in different biomes. <u>Continuous opportunities</u> - Local Area Observation Station – magnifying glasses, clipboards, identification guides, and cameras for children to record summer plants and animals in the school grounds or nearby areas. - Seasonal Change Display – visual charts or interactive digital tools to show how local flora and fauna change over the year. - Classification Key Activity Area – cards,	In DT Food units, where appropriate, teachers will encourage retrieval and application of pupils' knowledge about teeth and the digestive system. In the healthy eating units of PSHCE, pupils should be asked to retrieve information about why and how we need to look after our teeth. <u>Continuous opportunities</u> - Teeth and Diet Exploration Station – animal skulls, plastic teeth models, and pictures to investigate how diet influences tooth structure; sorting activities by herbivore, carnivore and omnivore. - Human Teeth Investigation Area – labelled diagrams, 3D models, and mirrors for



○ Classification Key Area – ready-made or child-created keys for grouping plants and animals based on observable features. ○ Local Area Investigation Zone – magnifying glasses, clipboards, and identification guides for recording plants and animals found outside during autumn. ○ Observation and Recording Station – worksheets, data tables, or digital tablets for children to collect, present and analyse their findings. ○ Reference Books / Field Guides – age-appropriate guides for identifying local flora and fauna and understanding classification. ○ Interactive Charts / Posters – visual aids to compare vertebrates vs invertebrates, flowering vs non-flowering plants and examples of local species.	○ Evaporation and Condensation Demonstration Area – bowls of water, hot plates or safe warm surfaces, and cling film to model evaporation and condensation. ○ Temperature Investigation Station – thermometers, stopwatches, ice cubes, and containers to explore how water temperature affects melting and evaporation rates. ○ Water Cycle Models – simple practical models (e.g., terrariums, jars with water and cling film) to show evaporation, condensation and precipitation. ○ Observation and Recording Zone – worksheets, data tables, or clipboards for children to plan, record and evaluate investigations. ○ Reference Books / Digital Tablets – age-appropriate guides and videos explaining states of matter, water cycle	- and describe properties. ○ Observation and Recording Station – worksheets, clipboards, or digital tablets for planning, recording, and evaluating results from sound investigations. ○ Local Area Biodiversity Station – magnifying glasses, identification guides, and clipboards for children to observe and record spring plants and animals in the school grounds or nearby environment. ○ Charts / Posters – visual aids showing sound waves, vibration patterns, pitch, and volume, and tables for classifying plants and animals. ○ Practical Modelling Activities – making string telephones, constructing simple musical instruments, or mapping local wildlife sightings and data. ○ Investigation Journals – for children to plan	- stopwatches, and simple sound sources (bells, buzzers, or speakers) for children to investigate how distance affects sound volume. ○ Observation and Recording Station – worksheets, clipboards, or digital tablets for planning, recording, and evaluating results from sound investigations. ○ Local Area Biodiversity Station – magnifying glasses, identification guides, and clipboards for children to observe and record spring plants and animals in the school grounds or nearby environment. ○ Charts / Posters – visual aids showing sound waves, vibration patterns, pitch, and volume, and tables for classifying plants and animals. ○ Practical Modelling Activities – making string telephones, constructing simple musical instruments, or mapping local wildlife sightings and data. ○ Investigation Journals – for children to plan	- switches, batteries and wires for building and testing simple series circuits. ○ Circuit Drawing and Labelling Zone – worksheets and diagrams for children to draw circuits, identify components and explain why some circuits may not work. ○ Conductors and Insulators Station – a collection of materials for testing conductivity, with magnets or bulbs to show how current flows. ○ Energy Awareness and Conservation Area – posters, interactive displays, or roleplay activities on reducing energy usage at home and in school. ○ Observation and Recording Station – clipboards, worksheets, or digital tablets for planning experiments, recording observations and explaining findings. ○ Reference Books / Digital Resources – age-appropriate guides and videos on electricity generation, energy sources and safe circuit use.	- mats, and recording sheets for children to classify animals and plants, using simple classification keys to group species by observable features. ○ Habitat Investigation Zone – mini-habitats, posters, and case studies to explore the impact of human activity on local environments, including pollution, construction, or habitat loss. ○ Deforestation Awareness Area – images, models, and discussion prompts about forests, deforestation and ways humans can reduce environmental damage. ○ Observation and Recording Station – worksheets, clipboards, or digital tablets for children to present findings, explain data, and reflect on environmental changes and conservation strategies. ○ Practical Modelling Activities – creating mini-ecosystems, food webs, or seasonal	- children to identify parts of the teeth and explain their functions. ○ Oral Hygiene Station – plaque simulations (e.g., using disclosing tablets or models) to explore how plaque forms and how to clean teeth properly. ○ Digestion Modelling Station – labelled diagrams, interactive models, or simple “digestion in action” experiments to explore the human digestive system. ○ Food Chain Investigation Area – cards, pictures, and mini-ecosystem models for children to construct and draw food chains using scientific vocabulary. ○ Human Impact Discussion Zone – posters or case studies showing how human activities like pollution, deforestation and overfishing affect food chains. ○ Observation and Recording Station – worksheets, journals, or digital tablets for children to record observations, draw diagrams and explain findings.
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	○ Practical Modelling Activities – building simple mini-ecosystems, sorting animals and plants into groups, or creating a display of local species observations. ○ Investigation Journals – for planning, recording, and evaluating investigations, including reflections on seasonal changes and data interpretation.	processes and temperature effects. ○ Practical Modelling Activities – creating water cycle wheels, investigating ice melting at different temperatures and predicting evaporation times. ○ Investigation Journals – for children to note predictions, record results, and evaluate the outcomes of experiments with solids, liquids, gases and the water cycle.	experiments, predict outcomes, record observations, and evaluate findings in both sound and local habitat studies.	○ Practical Modelling Activities – creating simple circuits, testing different materials, or designing “energy-saving” campaigns to reduce electricity use.	biodiversity charts, or simulating deforestation and reforestation to demonstrate human impact. ○ Reference Books / Digital Resources – age-appropriate guides on plants, animals, habitats and conservation strategies.	○ Practical Modelling Activities – building mini food chains, simulating digestion with simple household items, or roleplay predator-prey relationships. ○ Reference Books / Digital Resources – age-appropriate guides on teeth, digestion, food chains and human impact on ecosystems.
	• Each science lesson will start with a ‘Quick Quiz’ which will recall information taught in the last lesson, last week, two or three weeks ago and last term or last year. • Exit quizzes will be used as and when appropriate. • Wherever possible, a quick verbal quiz of scientific knowledge, e.g. lining up at the door, waiting to get their things for home time. • Teachers will display the vocabulary related to their particular units on their working wall as well as the types of enquiry so children can relate to this when completing activities in class as well as retrieval activities. • Vocabulary Bingo! Teachers to create bingo cards with science terms or concepts and call out definitions or descriptions. This could be used within science lessons or as a recall activity at an opportune time for the class teacher.					
Commentary: Why are we teaching what we are teaching, in the order we are teaching it?	Group and classify living things This is taught here as the pupils have a good understanding of animals and plants from Y3 as well as from Year	States of matter In Year 3, learners explored a variety of materials and grouped them based on their characteristics, which may have included solids,	Sound Sound is taught now - for the first time - after the states of matter block - as pupils learn that sounds travel through a medium to the ear. Learners can	Electricity Although pupils will have made a simple circuit in Year 3 for their DT topic, this is the first time that they are	Data collection C Here, learners continue their observation over time enquiry from the autumn and spring terms by naming and identifying the living things in the local	The digestive system The digestive system is taught at the end of the year as it involves learning and applying complex biological terms. At the beginning of this unit,



What does each unit build on/prepare children for? How are resources and skills changing over time?	2 where they looked at animals (including humans) to identify their needs for survival, life cycles and offspring. They also looked at examples of mammals, birds, fish, amphibians and reptiles. Building upon this prior learning, the learners will start by looking at the groups into which animals can be sorted as well as the terms 'vertebrate' and 'invertebrate' so they have a sound understanding to prevent cognitive overload when they start learning about classification keys as this will be the first time that they have been exposed to these as a way of sorting animals. The pupils will use their knowledge from KS1 about common wildflowers, garden plants and deciduous and evergreen trees to group plants in different ways and revisit the skills they learnt when classifying animals previously. This unit will help with learning in Year 5	liquids or gases. Pupils will now take a deeper dive into the states of matter focussing on how materials change state when heated or cooled. This knowledge will then be applied in Year 5 when they explore reversible and irreversible changes. This will be built on further in KS3 when pupils learn about particles and changes of state.	use their understanding of solids, liquids and gases to help understand this concept. Pupils look at vibrations first and then build on this understanding to explore how the ear drum vibrates. They will be able to link this concept to their exploration of how sounds are made using musical instruments. Learners then move on to exploring volume and will again be able to relate this to their music lessons and use instruments to explore this concept. This unit provides the foundational knowledge for KS3 where pupils learn in more detail about the nature of sound, how sound travels and hearing and the human ear. Data collection B Learners will use their knowledge of plants and animals from unit 1 and 2, and use classification keys, which were also introduced in unit 1, to help them identify familiar plants and animals.	introduced to the concept of electricity in science in any real detail. The learners begin this unit by looking at common electrical appliances which they are likely to have some experience of from home. They then move on to looking at series circuits. Whilst conventional circuit symbols are not introduced until Year 6, pupils need to think about how they can make their representations as accurate as possible. Once learners have a good understanding of circuits, they will move on to looking at conductors and insulators. The children will revisit this knowledge in Year 6 where they extend their knowledge by using the conventional circuit symbols and learning about series circuits and the impact of increases in the voltage of cells. Pupils build upon this learning further in KS3 when the focus shifts from basic circuits to looking at circuit behaviour, electrical charge and current. Energy	area. At first pupils will collect data to gain a deeper understanding of how seasonal changes affect plant and animal life. After the collection and evaluation of their summer data, learners will analyse the three sets collected across the year. This will enable them to make conclusions, linking their data and ideas about how seasonal change influences plant and animal life in their local area. Habitats Following the final data collection unit, learners use their knowledge of living things in their local area to explore human impacts on habitats. This builds on learning from Y2 where pupils explored different types of habitat and how these usually provide everything a plant or animal needs for survival, and from the Y3 biodiversity sustainability unit. In this unit, pupils will continue to explore and create classification keys with increasing independence building on the learning from unit 1 this year.	pupils will build upon their knowledge of animal groups introduced in Year 1, focussing on common carnivores, herbivores and omnivores. Learners will build upon their prior knowledge and will now begin to explore how an animal's diet influences the structure of its teeth. Building upon learning from Y2 where pupils were introduced to teeth and their function, in this unit they will learn the names of the different teeth and their functions. When looking at the layers of the teeth, learners can still use the term 'germs' to describe bacteria in the mouth, but, in Year 6 they will build on this understanding and use the term 'microorganisms'. This unit provides a good deal of the foundational knowledge for KS3 where pupils extend their learning about the digestive system, beginning to explore enzymes, absorption and organ functions. Food chains Food chains is taught after the digestive system because pupils will have explored the teeth
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	where the life cycles of mammals, amphibians and birds are studied. In Year 6, the pupils will also revisit their knowledge of classification keys to look at classification systems in more detail. In KS3, the pupils learn to classify and group living things based on shared characteristics. They will also recognise different groups of animals (vertebrates and invertebrates) and plants using classification keys to identify organisms. Data collection A There are three data collection sessions over the year (autumn, spring and summer) to conduct a scientific enquiry that is an observation over time. This helps the learners understand how seasonal changes influence plant and animal life. They will use classification keys and their knowledge of plants and animals from this unit to help them identify familiar plants and animals.			This first Y4 sustainability unit is placed here as it gives pupils the opportunity to use and apply their knowledge from the previous unit, considering their energy usage, how they can reduce it and how it impacts the planet.	In KS3, learners then further extend this knowledge by studying habitats, but in a more scientific and ecological context, learning how habitats work as systems and-exploring how organisms survive, interact and respond to environmental change. Deforestation In this second sustainability unit in Year 4, learners will be able to use their prior knowledge from the Y3 soils unit where they were introduced to how human activities such as deforestation and construction work may cause soil loss and the impact this has on both animals and plants.	structure of carnivores, herbivores and omnivores and will now use this knowledge to understand food chains. This unit also builds upon work from Y2 where pupils were introduced to the concept of a food chain. They learned that a food chain is an order of living things, to show how energy is transferred when one living thing eats another. Learning from these units will be further built upon in Year 6 where pupils look at more complex ecosystems or environmental changes and in KS3 when they will also study food chains, but with a focus on developing a deeper understanding of food webs and ecosystems.
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Adaptations for LA pupils	• Pre-teach key vocabulary using pictures, word banks and simple definitions. • Use visual classification charts, photographs and real-life examples of plants and animals. • Break learning into small, manageable steps with clear modelling and repetition. • Provide scaffolded classification keys with fewer choices before introducing more complex examples. • Use practical sorting and matching activities to group vertebrates, invertebrates, flowering and non-flowering plants. • Encourage paired talk before independent work to support understanding and confidence.	• Pre-teach key vocabulary using visuals, word banks and simple definitions. • Use practical demonstrations and real-life examples to explore solids, liquids, gases and changes of state. • Break learning into small, manageable steps with clear modelling and repetition. • Provide scaffolded investigation sheets with prompts for predictions, observations and conclusions. • Model how to use scientific equipment (e.g. thermometers and stopwatches) before independent investigations. • Use sequencing cards and diagrams to support understanding of evaporation, condensation and the water cycle. • Encourage paired talk before recording	• Pre-teach key vocabulary using pictures, word banks and simple definitions. • Use practical demonstrations and investigations (e.g. tuning forks, elastic bands, drums) to explore vibrations, volume and pitch. • Break learning into small, manageable steps with clear modelling and regular repetition. • Use visual diagrams and videos to show how sound travels through a medium to the ear. • Provide structured recording sheets with prompts for observations and simple data collection during fieldwork. • Encourage paired talk before independent recording to develop understanding and confidence. • Provide sentence stems and key words	• Pre-teach key vocabulary using labelled diagrams, word banks and simple definitions. • Use practical, hands-on activities to build and test simple electrical circuits with adult support where needed. • Break learning into small, manageable steps with clear modelling and repetition. • Provide scaffolded circuit diagrams with partially completed labels and symbols. • Use structured investigations to identify why circuits work or do not work, with clear prompts and checklists. • Provide sorting activities for conductors and insulators using real objects and picture cards. • Encourage paired talk before recording ideas to develop understanding and confidence.	• Pre-teach key vocabulary using pictures, word banks and simple definitions. • Use photographs, videos and local fieldwork to support understanding of habitats, classification and environmental change. • Break learning into small, manageable steps with clear modelling and repetition. • Provide scaffolded classification activities using picture cards and simple classification keys. • Use structured recording sheets with prompts to help pupils collect and present data from local observations. • Encourage paired talk before independent work to build confidence and understanding. • Provide sentence stems and key words	• Pre-teach key vocabulary using labelled diagrams, picture cards and word banks. • Use models, videos and practical demonstrations to support understanding of teeth, digestion and food chains. • Break learning into small, manageable steps with clear modelling and frequent repetition. • Provide scaffolded labelled diagrams of the teeth and digestive system for pupils to complete. • Use practical sorting and matching activities (e.g. tooth types and functions, stages of digestion, food chain sequencing). • Encourage paired talk before independent recording to develop understanding and confidence. • Provide sentence stems and key words (e.g. "The function of the molars is...", "Digestion begins...",
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	• Provide sentence stems and key words (e.g. “A vertebrate is...”, “This plant is flowering because...”). • Allow alternative recording methods such as drawing, labelling, matching or oral explanation. • Reinforce key concepts through regular retrieval practice and recap activities.	• Provide sentence stems and key words (e.g. “Evaporation is...”, “I noticed that...”). • Allow alternative recording methods such as drawing, labelling, matching, tables or oral explanations instead of extended writing. • Reinforce key scientific vocabulary and concepts through regular recap and retrieval activities.	• (e.g. “Sound is made when...”, “The pitch changed because...”). • Allow alternative recording methods such as drawing, labelling, matching, tables or oral explanations instead of extended writing. • Reinforce key scientific vocabulary and concepts through regular retrieval practice and recap activities.	• Provide sentence stems and key words (e.g. “The circuit works because...”, “A conductor is...”). • Allow alternative recording methods such as drawing, labelling, matching or oral explanations instead of extended writing. • Reinforce key scientific vocabulary and concepts through regular recap and retrieval activities.	• (e.g. “I noticed...”, “This animal belongs to...”, “Deforestation is...”). • Allow alternative recording methods such as drawing, labelling, matching, tables or oral explanations instead of extended writing. • Use practical activities to explore seasonal changes and human impact on habitats. • Reinforce key scientific vocabulary and concepts through regular recap and retrieval activities.	• “A food chain shows...”). • Allow alternative recording methods such as drawing, labelling, matching, sequencing or oral explanations instead of extended writing. • Use visual food chain templates to support pupils in constructing and explaining simple food chains. • Reinforce key scientific vocabulary and concepts through regular recap and retrieval activities.
	○ Use structured investigation templates and sentence stems to scaffold explanations and presentation of data. ○ Use structured investigation templates with clear, step-by-step guidance to scaffold planning, observations, data recording and evaluations when carrying out experiments/investigations. ○ Break tasks and practical activities into small, clear, manageable steps with adult support and frequent checks for understanding. ○ Provide visual supports (diagrams, labelled images, and word banks) and practical demonstrations to reinforce understanding.					
Adaptations for GD pupils	• Encourage pupils to explain <i>why</i> living things are classified in certain ways, not just how to use a classification key. • Use higher-order questioning (e.g.	• Encourage pupils to explain <i>particle behaviour</i> to justify the properties of solids, liquids and gases, not just describe them. • Use higher-order questioning (e.g. “Why do materials	• Encourage pupils to explain <i>how and why</i> sound travels, linking vibrations, the medium and hearing, rather than simply describing the process. • Use higher-order questioning (e.g.	• Encourage pupils to explain <i>how and why</i> electrical circuits work, rather than simply identifying their components. • Use higher-order questioning (e.g. “Why does a	• Encourage pupils to analyse and interpret data from local fieldwork, identifying patterns, trends and possible reasons for their findings. • Use higher-order questioning (e.g.	• Encourage pupils to explain <i>how and why</i> teeth are adapted for different diets, linking structure to function. • Use higher-order questioning (e.g. “How would an animal’s teeth change if its diet



	“How do classification systems help scientists understand living things?” “Why might some organisms be difficult to classify?”). • Challenge pupils to design their own classification keys and justify the choices they make. • Encourage pupils to compare different habitats and explain how classification links to adaptation and survival. • Explore similarities and differences between plant groups in greater depth, including reasoning for flowering vs non-flowering classification. • Encourage pupils to explain how environmental change impacts ecosystems, using	change state?” “What happens to particles during evaporation and condensation?”). • Challenge pupils to plan and refine fair tests, independently selecting variables, equipment and methods. • Expect pupils to justify predictions using scientific reasoning and prior knowledge. • Extend investigations by comparing multiple variables (e.g. different temperatures or materials) and explaining patterns in results. • Encourage pupils to evaluate the reliability and accuracy of their findings and suggest improvements. • Explore the water cycle in greater depth, linking it to changes of state and environmental systems.	“Why can't sound travel through a vacuum?” “How do changes in vibration affect volume and pitch?”). • Challenge pupils to plan and carry out investigations into sound, making justified predictions and explaining results using scientific reasoning. • Encourage pupils to interpret, analyse and present data collected from local plants and animals, identifying patterns, trends and anomalies. • Explore how environmental changes affect biodiversity, using evidence to explain cause and effect. • Challenge pupils to evaluate human impacts on local habitats and propose evidence-based actions to protect living things. • Expect pupils to use precise scientific	complete circuit allow electricity to flow?” “How do conductors and insulators affect a circuit’s performance?”). • Challenge pupils to predict, test and explain why different circuits work or fail, using scientific reasoning. • Encourage pupils to design, build and refine their own circuits to solve simple problems or meet a specific purpose. • Explore the properties of different materials, explaining why some are better electrical conductors than others. • Encourage pupils to evaluate different ways of generating and using electricity, considering efficiency and environmental impact. • Challenge pupils to propose evidence-	“Why do living things change throughout the year?” “How might different habitats be affected by seasonal changes?”). • Challenge pupils to create and justify their own classification questions and keys using scientific reasoning. • Encourage pupils to compare habitats and explain how environmental conditions influence the organisms that live there. • Explore the short- and long-term impacts of human activity, including deforestation, on biodiversity and ecosystems. • Challenge pupils to evaluate different conservation strategies and justify which would have the greatest positive impact. • Expect pupils to use precise scientific	changed?” “Why are food chains important for healthy ecosystems?”). • Challenge pupils to compare the teeth and digestive systems of herbivores, carnivores and omnivores, explaining how these adaptations support survival. • Encourage pupils to explain the digestive process using accurate scientific vocabulary and justify the role of each organ. • Explore the effects of changes in one part of a food chain on the rest of the ecosystem, using cause-and-effect reasoning. • Challenge pupils to evaluate how human activities can disrupt food chains and propose evidence-based conservation solutions. • Expect pupils to use precise scientific vocabulary and support explanations with observations,
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	cause and effect reasoning. Extend thinking by evaluating human impact on environments and suggesting informed ways to protect living things.	Encourage pupils to draw evidence-based conclusions and communicate findings clearly using scientific vocabulary.	vocabulary and draw well-reasoned conclusions supported by data and observations.	based strategies for reducing energy consumption at home or school and justify their recommendations. Expect pupils to use precise scientific vocabulary and support conclusions with observations, data and evidence.	vocabulary and draw evidence-based conclusions from observations, data and research.	evidence and scientific reasoning.
Resources/approaches	Rosenshine's principles BBC Bitesize (KS2 Science – Living Things & Classification) – explanations and interactive content on vertebrates, invertebrates, plant types, and classification keys. Oak National Academy – ready-made KS2 lessons on classification, plants and animals, and presenting investigation findings. Royal Institution / Science Museum – videos and practical demonstrations on grouping animals, plant identification,	Rosenshine principles BBC Bitesize (KS2 Science – States of Matter & Water Cycle) – explanations and interactive content on solids, liquids, gases, evaporation, condensation, and the water cycle. Oak National Academy – ready-made KS2 lessons on states of matter, the water cycle, and practical investigations. Royal Institution / Science Museum – videos and demonstrations showing evaporation, condensation, melting, and water cycle experiments.	Rosenshine principles BBC Bitesize (KS2 Science – Sound & Living Things) – explanations and interactive content on how sound is produced, vibrations, pitch, volume, and local plant and animal identification. Oak National Academy – ready-made KS2 lessons on sound, pitch, volume, and practical investigations, plus local habitat studies. Royal Institution / Science Museum – videos and demonstrations of sound production, measuring pitch and	Rosenshine principles BBC Bitesize (KS2 Science – Electricity & Energy) – explanations and interactive content on electricity generation, circuits, conductors, insulators, and energy conservation. Oak National Academy – ready-made KS2 lessons on electricity, circuits, conductors and insulators, and ways to reduce energy consumption. Royal Institution / Science Museum – videos and demonstrations showing electricity generation, circuit	Rosenshine principles BBC Bitesize (KS2 Science – Living Things & Habitats) – explanations and interactive content on local plants and animals, classification keys, habitat changes, and human impact. Oak National Academy – ready-made KS2 lessons on local biodiversity, classification, and environmental conservation. Royal Institution / Science Museum – videos and practical demonstrations on species identification, classification, and conservation strategies.	Rosenshine principles BBC Bitesize (KS2 Science – Teeth, Digestion & Food Chains) – explanations and interactive content on types of teeth, their functions, digestion, plaque formation, and food chains. Oak National Academy – ready-made KS2 lessons on teeth, oral hygiene, digestion, food chains, and the impact of human activity. Royal Institution / Science Museum – videos and practical demonstrations on teeth structure, digestive systems, and ecosystems. Practical resources / visuals (tooth models, labelled diagrams, food



	and using classification keys. o Practical resources / visuals (local flora and fauna, identification guides, magnifying glasses, charts for recording observations) – to support hands-on investigations and presenting data from the local environment.	o Practical resources / visuals (ice cubes, thermometers, stopwatches, water trays, heat sources, diagrams of the water cycle) – to support hands-on experiments and observation of changes in states of matter.	volume, and observing local flora and fauna. o Practical resources / visuals (tuning forks, speakers, measuring equipment, local plant and animal guides, charts for recording observations) – to support hands-on sound experiments and biodiversity investigations.	building, and energy-saving methods. o Practical resources / visuals (circuit kits, batteries, bulbs, wires, conductors/insulators samples, energy meters, posters on energy conservation) – to support hands-on experimentation and understanding of electricity in everyday life.	o Practical resources / visuals (local plant and animal guides, identification keys, data recording sheets, maps, posters on deforestation and habitat protection) – to support fieldwork, classification, and discussion of human impacts.	chain charts, images of animals and plants, plaque models, posters on oral hygiene and ecosystems) – to support hands-on learning and observation.
Career links	Scientist: Dian Fossey Unit 1 careers: Taxonomist Botanist Zoologist Science educators Unit 2 careers: Data analyst Data scientist Data engineer Environmental statistician	Scientist: Joseph Priestley Unit 3 careers: Materials scientist Chemical engineer Chemist Product/Process development scientist Environmental scientist	Scientist: Aristotle Unit 4 careers: Sound technician Music producer Game audio engineer Composer DJ Unit 5 careers: Data analyst Data scientist Data engineer Environmental statistician	Scientist: Thomas Edison Unit 6 careers: Electrician Optical engineer Lighting designer/technician Aerospace engineer	Scientist: Joan Beauchamp Procter Unit 7 careers: Data analyst Data scientist Data engineer Environmental statistician Unit 8 careers: Ecologist Conservation scientist Wildlife biologist Environmental scientist Unit 9 careers: Forester Environmental scientist Ecologist Climate scientist Soil scientist	Scientist: Paul Sharpe Unit 10 careers: Gastroenterologist General Practitioner Surgeon Endoscopy nurse Dietician/Nutritionist Unit 11 careers: Ecologist Wildlife biologist Conservationist Zoologist Marine biologist Environmental scientist