

Hillside Primary Science Progression Document

Use 'Big Ideas' are the crucial knowledge and skills essential to pupils achieving and exceeding the expected standard in Science. These 'Big Ideas' build progressively as pupils move throughout the school. When pupils encounter a 'Big Idea', they will revisit other units where they learnt about the same concept to enable them to make connections between different learning and build the schema they need. Below is a summary of the 'Big Ideas' for Science.

Big Ideas			
	Thread	Description	Units
Biology 	<i>Animals, including humans</i>	Pupils learn to identify and name common animals (fish, amphibians, reptiles, birds, and mammals), including their diets (carnivores, herbivores, omnivores), structures, and life cycles. They study the human body—its basic parts, senses, and functions—and understand that animals and humans need food, water, and air to survive. They explore nutrition, the role of skeletons and muscles, the digestive and circulatory systems, types of teeth, and how nutrients and water are transported. Students also learn about food chains, human development from birth to old age, and how exercise, diet, hygiene, drugs, and lifestyle affect body function.	
	<i>Living things and their habitats</i>	Pupils learn to distinguish between living, dead, and non-living things and explore how living things depend on their habitats to meet their needs. They identify and classify plants and animals, including in microhabitats, and study simple food chains. Learners group living things using classification keys, explore how environments change, and examine life cycles and reproduction in animals and plants. They also learn how and why living things are classified into broad groups based on shared characteristics.	
	<i>Plants</i>	Pupils learn to identify common plants and trees, describe their basic structures, and understand how seeds and bulbs grow into mature plants. They explore what plants need to live and grow, the functions of different parts (roots, stems, leaves, flowers), how water is transported, and the role of flowers in reproduction, including pollination, seed formation, and dispersal.	
	<i>Evolution & Inheritance</i>	Pupils learn that living things change over time, that fossils show what lived on Earth millions of years ago, that offspring resemble but differ from their parents, and that animals and plants adapt to their environments—adaptations which can lead to evolution.	

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Big Ideas			
	Thread	Description	Units
Chemistry 	<i>Materials</i>	Pupils learn to identify, name, and describe everyday materials and their physical properties, comparing their suitability for different uses. They explore how materials can change shape and investigate properties such as hardness, solubility, transparency, and conductivity. Learners study how materials dissolve, mix, and change state, how mixtures can be separated, and the difference between reversible and irreversible changes, including those that form new materials.	
	<i>Rocks</i>	Pupils learn to compare and classify rocks based on their appearance and properties, understand how fossils form in rocks, and recognize that soils are composed of rocks and organic matter.	
	<i>States of matter</i>	Pupils learn to classify materials as solids, liquids, or gases, observe how materials change state with heating or cooling, and understand evaporation and condensation in the water cycle, including the effect of temperature on evaporation rate.	

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Big Ideas			
	Thread	Description	Units
Physics 	<i>Electricity</i>	Pupils learn to identify electrical appliances, construct simple series circuits, and understand the roles of cells, wires, bulbs, switches, and buzzers. They explore how circuit completeness, switches, and conductors/insulators affect whether components work, investigate how the number and voltage of cells influence brightness and volume, compare component performance, and represent circuits using standard symbols.	
	<i>Seasonal change and Earth & Space</i>	Pupils learn to observe and describe seasonal changes, weather patterns, and variations in day length. They study the movements of the Earth, moon, and other planets, understand their roughly spherical shapes, and use Earth's rotation to explain day, night, and the sun's apparent movement across the sky.	
	<i>Forces & Magnets</i>	Pupils learn about forces and motion, including how objects move on different surfaces, the effects of contact and magnetic forces, and how magnets attract or repel. They explore gravity, air and water resistance, friction, and how simple mechanisms like levers, pulleys, and gears can amplify force.	
	<i>Sound</i>	Pupils learn how sounds are produced by vibrations, how they travel through a medium to the ear, and how pitch and volume relate to the characteristics and strength of vibrations. They also observe that sounds become fainter with increasing distance from the source.	
	<i>Light</i>	Pupils learn that light is needed to see, that darkness is the absence of light, and that light can be reflected. They study how shadows form and change size, understand that light travels in straight lines, and explain vision and shadow formation based on the path of light.	

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EYFS	
Development matters : 3 & 4 year olds will be learning to;	Development matters: Children in reception will be learning to:
• Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. • Talk about what they see, using a wide vocabulary. • Explore how things work. • Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things. • Explore and talk about different forces they can feel. • Talk about the differences between materials and changes they notice.	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Recognise some environments that are different from the one in which they live. • Understand the effect of changing seasons on the natural world around them.
Early Learning goal - Understanding the world (End of Reception)	ELG: The Natural World
Children at the expected level of development will: • Explore the natural world around them, making observations and drawing pictures of animals and plants; • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class; • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	

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Disciplinary Knowledge

Working Scientifically

Asking questions

Asking questions that can be answered using a scientific enquiry.

**Making predictions**

Using prior knowledge to suggest what will happen in an enquiry.

**Setting up tests**

Deciding on the method and equipment to use to carry out an enquiry.

**Observing and measuring**

Using senses and measuring equipment to make observations about the enquiry.

**Recording data**

Using tables, drawings and other means to note observations and measurements.

**Interpreting and communicating results**

Using information from the data to say what you found out.

**Evaluating**

Reflecting on the success of the enquiry approach and identifying further questions for enquiry.



Source PSTT <https://pstt.org.uk/>

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	Working Scientifically	Asking Questions	
EYFS	Shows curiosity about objects, events and people. Questions why things happen. Asks questions to clarify understanding and aspects of their familiar world e.g. place they live or natural world.		
Y1	Explore the world around them and raise their own questions. (e.g growing, animals in their habitat, everyday materials.) Can answer questions supported by the teacher, often through scenarios and recognise questions can be answered in different ways. Can begin to ask simple questions and use simple secondary sources to find answers. Able to ask yes and no questions to sort and classify.		
Y2	Raise questions that help them become familiar with scientific processes (e.g life processes that are common to all living things, their local environment, materials) Can ask simple questions relevant to the topic. Can use a range of question stems. (e.g. Is a flame alive? Is a deciduous tree dead in winter? What makes the best habitat for a minibeast? Where in the school can we find something that is made of wood? Which animal belongs to which offspring? Do seeds grow quicker inside or out?) Know their questions can be answered in different ways. Use more than one secondary source to gather and present information clearly.		
Y3	Raise own questions about the world around them and why this happens the way they do (e.g. the role of the roots and stem in nutrition and support, or how rocks are formed) Recognise how and when to use secondary sources to answer questions that cannot be answered in practical science. Can write a range of questions relevant to the topic. Can answer questions posed by the teacher, independently or with support. Identify new questions from data. Can raise questions and carry out tests with support to find things out. Can carry out research using a small range of secondary sources.		
Y4	Can decide how to gather evidence to answer questions. Raise questions to help identify and group (such as how a habitat changes, animals and living things including plants). Can write a range of questions using the world around them and their own scientific knowledge.		

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	Working Scientifically	Asking Questions	
	They recognise when secondary sources can be used to answer questions and can select appropriate information from sources.		
Y5	Can study and raise questions to answer (including about their local environment throughout the year). Can ask relevant questions and suggest reasons for similarities and differences. Use their scientific experiences to explore ideas and raise different questions. Can create further questions from enquiries to investigate. Independently uses secondary sources to find relevant facts about a topic. Raise further questions from enquiries/research.		
Y6	Can raise questions about local animals and how they are adapted to their environment. Can raise questions about a range of phenomena e.g., rainbows, colours on soap bubbles, objects looking bent in water. Can ask questions about a range of materials in order to support classification. Asks appropriate questions to group and classify. Can use secondary sources to research (e.g., unfamiliar animals and plants from a broad range of habitats). Use ideas from secondary sources to support their ideas. Can raise questions to further prove a scientific enquiry.		

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	Working Scientifically	Making Predictions	
EYFS	Shows curiosity about objects, events and people. Questions why things happen.		
Y1	Can make basic predictions over things they can see or their own ideas. Can use some scientific vocabulary.		
Y2	Draws on knowledge from observations to make a prediction. Can begin to test predictions and later answer questions (predictions can be a guess). Ask questions about what might happen in the future.		
Y3	Uses evidence and subject knowledge to refute statements. Make predictions from questions posed. Makes further predictions from what is observed or tested.		
Y4	Use subject knowledge or research to make predictions. Raise further predictions from results based on patterns. Make predictions for new values.		
Y5	Use subject knowledge or research to make predictions. Raise further predictions from results based on patterns. Make predictions for new values.		
Y6	Develops predictions not based on results of a scientific enquiry but using own ideas and subject knowledge. Use evidence to support predictions. Gathers evidence through practical science to support predictions. Use test result to make predictions to set up further comparative and fair tests.		

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	Working Scientifically	Setting up tests	
EYFS	Find ways to solve problems/find new ways to do things. Test out ideas. Take risks through trial and error. Engage in open ended activities. Choose the resources they need for their chosen activity from their environment.		
Y1	Begin to recognise different ways they may answer scientific questions. Experience different types of enquiry including practical activities. Use practical resources provided by the teacher and can suggest some resources of their own. Can carry out simple tests to classify, compare or pattern seek.		
Y2	Carry out simple comparative tests using own ideas (May use Discovery Dog model) Experience different types of enquiry including practical activities. Within the planning frame can suggest resources they may need for the test. Can carry out simple tests linked to the types of enquiry: observation, testing, pattern seeking, identifying and classifying and research.		
Y3	Perform a range of scientific investigations including different types of scientific enquiry. Set up practical enquiries: comparative, and fair tests. (post it note approach scaffolded by the teacher). Children investigate and answer own questions linked to shared post it note planning frame Understand there are different variables to be controlled. (Can identify some variables e.g. what was changed and what was kept the same) Follow basic instructions scaffolded by the teacher to conduct investigation.		

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	Working Scientifically	Setting up tests	
	Use a range of equipment using thermometers and data loggers (with support).		
Y4	Can identify the type of enquiry needed to answer a question. Follow a plan to carry out observations and tests. Can select from a range of resources to gather evidence and answer questions, to classify, compare and perform fair tests. Use post it note planning approach with more independence in identifying variables and what needs measuring. Children choose their method to carry out the investigation.		
Y5	Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and changed. Can identify independent and dependent variables to identify causal relationships. Understand what type of scientific enquiry is needed to answer and prove/disprove scientific questions or phenomenon.		
Y6	Children choose the type of enquiry needed to carry out their investigation. Children can pose and answer their own questions, controlling variables where necessary independently. Decide whether they need to increase the sample size for validity. Children understand how to gather data to prove a prediction. Can identify a range of factors which may affect their investigation.		

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	Working Scientifically	Observing & Measuring	
	<i>Observing</i>	<i>Measuring</i>	
EYFS	Explore the natural world making observations (e.g seasons) Explore different equipment and finding out what its uses are. Know similarities and differences between the natural world around them. Observe and describe what they see using everyday language.	Take measurements initially by comparisons then begin to use non-standard units. Make links and notice patterns in their experiences.	
Y1	Uses appropriate senses aided by equipment such as magnifying glasses and digital microscopes to make observations. With help and prompting, observe changes over time and can describe the changes. Can identify and group, compare and contrast using observations, video and photographs.	Use discrete e.g., counting and continuous data e.g. liquid to manageable common standard units. Can use simple measurements and equipment such as hand lenses and egg timers to gather data. Can use non-standard measures to compare.	
Y2	Observe closely, using simple equipment. Can identify a variety of plants and animals using observations. Observe how different plants grow and record findings including similar plants at different stages of growth and notice similarities and differences. Use their observations and ideas to suggest answers to questions. Observe through video, first-hand observations and measurement how different animals including humans grow and offer explanations. Compare objects based on observable features.	Use standard units to estimate and measure length, height, temperature, and capacity. Can use rulers, scales, thermometers and measuring vessels with some degree of accuracy. Make decisions about what measurements to use and how long to make them for.	
Y3	Make systematic and careful observations. Look for naturally occurring patterns and relationships. Collect data from their own observations and measurements. Closely observe stages of plant lifecycle over a period of time, noting patterns. Observe how water is transported in plants. Observe patterns in the way magnets behave in relation to each other. Can make observations and decide how to record them to answer a question.	Take accurate measurements using standard units, can measure and compare. (e.g., amount of liquid and height of a plant to nearest 1/2 cm) Use a range of equipment for measuring time, length, capacity and temperature. Begin to use a range of scales. Can read digital measurements from data loggers appropriately.	

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	Working Scientifically	Observing & Measuring	
	Observing	Measuring	
Y4	Make systematic and careful observations to identify plants and animals in their habitats and how the habitat changes throughout the year. Use observations to ask questions and group objects using classification keys. Observe closely and describe processes such as changes of state. Observe and record evaporation over a period of time. Identify differences, similarities or changes related to simple scientific ideas or processes.	Uses a range of scales. Takes and records accurate measurements using standard units. Can record measurements to 2dp. Use thermometers to explore the effects of temperature on substances. Use data loggers to record sound in decibels and notice patterns. Begin to gather repeat readings to increase accuracy.	
Y5	Observe and compare the life cycles of plants and animals in their local environment with other plants and animals around the world. Observe changes over a period of time. (e.g. animals) Make own decisions about what to observe.	Take repeat measurements where appropriate. Can choose the middle value or finds mean average. Select measuring equipment to give most precise results e.g., ruler, tape measure, trundle wheels, force metres with suitable scales. Can explain advantages and disadvantages of different measuring equipment. Children make quantitative measurements about conductivity and insulation.	
Y6	Children answer their own and others' questions on observations they have made. Their answers are based on evidence. Observe and raise questions about animals and how they are adapted to their environment. Observe properties of materials to group and classify based on their characteristics and properties.	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate. When collecting measurements, the decide whether they need to increase sample size for validity and reliability. Can record measurements to 3dp. Can use protractors and rulers and force metres to measure accurately choosing correct units. Use volt metres to measure voltage in a circuit to observe patterns and answer questions.	

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	Working Scientifically		Recording data	
	<i>Recording</i>	<i>Tables</i>	<i>Sorting</i>	<i>Charts & Graphs</i>
EYFS	Draw pictures of objects in their own environment. Can take photos of things of interest to them.	Can count results. Start to mark make to record results.	Can order items. Can sort in more than 2 groups using familiar categories.	Can create a class chart using pictures and objects.
Y1	Begin to show accuracy in drawings and simple labels. Use key scientific vocabulary provided by the teacher.	Can complete a simple table of results. (Prepared) Can add marks to a chart to collect data.	Can use sorting rings to classify in more than 2 groups answering yes or no questions. Can sort using a simple 2 criteria Venn diagram.	Can complete a prepared block graph/pictogram.
Y2	The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. Record findings using scientific language. Gather and record data to help in answering questions.	Count results using a tally chart. Use prepared tables to record results.	Can identify and classify. Use simple keys based and yes or no questions. Can sort into 2 groups explaining their reasons clearly.	Can record using prepared vertical bar charts. Can use results from tally charts.
Y3	Record findings using scientific language, drawings and labelled diagrams.	Can complete a table (with given template) where they add headings and results.	Can use simple classification keys and Venn diagram with 2 sorting criteria and 1 intersecting. Begin to use Carroll diagrams.	Can produce vertical and horizontal bar charts adding own labels and bars.

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	Working Scientifically		Recording data	
	<i>Recording</i>	<i>Tables</i>	<i>Sorting</i>	<i>Charts & Graphs</i>
			Can give reasons for their sorting criteria.	
Y4	Record findings using systematic and careful observational drawings and labelled diagrams. Children supported to present the same data in different ways- choice over recording.	Can create own tables with own headings. Can convert between units of measure.	Can record using classification keys. Can use Venn and Carroll diagrams for classification, choosing own criteria.	Can use discrete and continuous data, presenting data in a line/scatter graph. Can construct a pictogram/bar chart independently.
Y5	Children decide how to record data from a choice of familiar approaches. Present results in a variety of ways to help in answering questions.	Can produce own results table indicating cause and effect. Records results systematically.	Use and develop classification keys and other information records to identify, classify and describe. Can classify in a number of ways.	Use line or scatter graphs to calculate range in a set of data. (Different scales used) Can produce bar graphs with various increments.
Y6	Children present the same data in different ways to help answer the question. Record data and results with increasing complexity e.g accuracy of measurements, multiple data sets and different scales. Use scientific diagrams and labels.	They can calculate the mean and range of a set of data. Use multiple data sets.	Can use and produce classification keys independently by posing questions.	Can independently collect data and produce scatter and line graphs using various scales and multiple data. Can create bar charts and pie charts to present data.

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	<i>Working Scientifically</i>	Interpreting & Communicating Results	
EYFS	Offer explanations for why things happen- making use of some recently introduced scientific vocabulary. Develop own narrative and explain by connecting ideas or events. Develop vocabulary which meets the breadth of their experiences		
Y1	Can use evidence from simple tests when answering questions. With help begin to notice patterns and relationships. Talk about what they have found out and how they found it out. Can make comparisons and recognise biggest/smallest, most effective/least effective from data.		
Y2	Communicate findings to an audience using relevant scientific language and illustrations. Can identify casual relationships and patterns in results. Can identify which results do not fit the overall pattern and explain findings. Refers to the table of results when describing what has happened. Draws a basic conclusion (with support from the teacher) using own scientific knowledge, observations and comparisons. Uses results of investigations to answer enquiry questions.		
Y3	Begin to look for naturally occurring patterns and relationships from data. Draws conclusions based on observations. Can compare something using results and the conclusion is consistent with the data. Able to adjust opinion and predictions based on results. Can give reasons for results including any anomalies. Uses findings and results to answer questions raised. Use simple scientific language to discuss ideas and communicate their findings in ways appropriate for different audiences orally and written. Apply their knowledge of the topic when evaluating. Explain any amendments and how this impacted the investigation/test.		
Y4	Draws simple conclusions from results to answer questions and support their ideas. Look for casual relationships in data and identify evidence that refutes/supports ideas. Report on findings to an audience orally and in writing using appropriate scientific vocabulary for a range of audiences.		

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	<i>Working Scientifically</i>	Interpreting & Communicating Results	
	Children use evidence to suggest values for different items tested using the same method. Draw conclusions based on straightforward evidence and current subject knowledge to support their findings, Suggest improvements and raise further questions.		
Y5	Identify patterns and casual relationships that may be found in the natural environment. Children interpret data to generate simple comparative statements based on evidence. Use results to draw conclusions and can identify external factors that cannot be controlled e.g. temperature inside and outside. Use scientific language and illustrations to discuss, communicate and justify scientific ideas. Use results to make predictions and identify whether further observations, comparative tests, fair tests, pattern seeking, or research might be needed. Can use comparative statements to explain results and how things work. Evaluates how effectively variables were controlled.		
Y6	Look for patterns and relationships using a suitable sample. Use oral and written forms such as displays to report conclusions, casual relationships and give an explanation of the degree of trust in their results. Children can pose further questions which can be answered by extending the enquiry. Makes suggestions for ideas that can be explored using pattern seeking. Can spot anomalies and identify results that do not fit the overall pattern. Use data to refute or support ideas or arguments. Focuses on scientific reasons for overall pattern rather than a comparison. Uses labelled diagrams to support their explanation. Use ideas from secondary sources to support their ideas, choosing appropriate websites.		

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	<i>Working Scientifically</i>	Evaluating	
EYFS	Develop own narrative and explanations by connecting ideas or events. Talk about what I have found and say what worked well. Describe how things work in simple terms and make basic alterations and suggest things that did not work (e.g. this button does not work so press this one) Questions why things happen. Children will come up with alternative ways of doing this through exploration. Children can say or indicate by smiley faces/scale if they have achieved the learning objective.		
Y1	With scaffolding and prompting can suggest improvements to their enquiries. Talk about some changes that could be made. Use simple success ladders to evaluate their tests or understanding against the learning objective.		
Y2	With support can suggest improvements to their enquiries. Suggest some things that could be changed and evaluate why things went wrong. Use success ladders with multiple criteria to evaluate the test or their understanding against the learning objective.		
Y3	Suggest improvements and raises further questions Uses evidence and subject knowledge to refute statements. Make suggest improvements from enquiries. Make basic statements about what worked well and what they would change. Use success ladders confidently to evaluate their tests or understanding against multiple criteria and suggest simple next steps.		
Y4	Evaluate and communicate their methods and findings. Suggest ways to improve what they have already done. Begin to evaluate different aspects of their enquiries such as equipment. Begin to understand how the enquiry improves outcomes from their questions. Use different charts to evaluate such as ranking scales, star diagrams and success ladders. Suggest points for development based on the weakest aspects.		

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	<i>Working Scientifically</i>	Evaluating	
Y5	Evaluate and decide when further observations, comparative and fair tests might be needed. Evaluate different aspects of their enquiries such as equipment and accuracy of measurements. State how the enquiry improves outcomes from their questions. Children can relate their results to the question and state if their test has enabled them to answer it. Use a range of charts to evaluate such as ranking scales, star diagrams including those with negative numbers. Suggest next steps based on the weakest aspects and state how this will help them or the test progress or give different results.		
Y6	Children can describe and evaluate their own and other people's scientific ideas using evidence from a range of sources. Evaluate their choice of method, the control of variables, the precision and accuracy of measurements and the credibility of secondary sources. Children use scientific language and evaluates how their enquiry has answered the question.		

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Progression in Substantive Knowledge								
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
BIOLOGY 	Plants 	Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant Begin to understand the need to respect and care for the natural environment and all living things.	identify & name a variety of common wild & garden plants, including deciduous & evergreen trees identify & describe the basic structure of a variety of common flowering plants, including trees	observe & describe how seeds & bulbs grow into mature plants find out & describe how plants need water, light & a suitable temperature to grow & stay healthy	identify & describe the functions of different parts of the flowering plants: roots, stem/trunk, leaves & flowers explore the requirements of plants for life & growth (air, light, water, nutrients from soil, & room to grow) & how they vary from plant to plant investigate the way in which water is transported within plants explore the part that flowers play in the life cycle of flowering plants, including pollination, seed			

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Progression in Substantive Knowledge

		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
					formation & seed dispersal			
BIOLOGY 	Key Vocab: Plants 		names of locally found wild plants names of locally found garden plants names of locally found flowering plants names of locally found trees, deciduous & evergreen, leaf/leaves, flower, blossom, petal, fruit, berry, root, bulb, seed, trunk, branch, stem, bark, stalk, vegetable, names of flowers grown, names of vegetables grown	seeds, bulbs, fully grown mature water, light, damp/wet/dry, dark/light, hot/warm/cool/cold temperature use comparatives e.g. hotter, grow/growth, healthy, shoot, seedling, germinate/germination wither/limp, die, dry/crispy, soil, earth	Part, structure, role, function, leaf/leaves, flower, blossom, petal, fruit, berry, root, bulb, seed, trunk, branch, stem, bark, stalk, water, light, air, nutrients, soil, fertiliser, damp/wet/dry dark/light, hot/warm/cool/cold temperature, use comparatives e.g. hotter, grow/growth, healthy, transported, life cycle, pollination, seed formation, seed dispersal			

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Progression in Substantive Knowledge								
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
BIOLOGY   	Animals including humans	Understand the key features of the life cycle of an animal. Begin to understand the need to respect and care for the natural environment and all living things.	identify & name a variety of common animals including fish, amphibians, reptiles, birds & mammals identify & name a variety of common animals that are carnivores, herbivores & omnivores describe & compare the structure of a variety of common animals (fish, amphibians, reptiles, birds & mammals, including pets) identify, name, draw & label the basic parts of the human body & say which part of the body is	notice that animals, including humans, have offspring which grow into adults find out about & describe the basic needs of animals, including humans, for survival (water, food & air) describe the importance for humans of exercise, eating the right amounts of different types of food, & hygiene	identify that animals, including humans, need the right types & amounts of nutrition, & that they cannot make their own food: they get nutrition from what they eat identify that human & some other animals have skeletons & muscles for support, protection & movement	describe the simple functions of the basic parts of the digestive system in humans identify the different types of teeth in humans & their simple functions construct & interpret a variety of food chains, identifying producers, predators & prey	describe the changes as humans develop to old age	identify & name the main parts of the human circulatory system, & describe the functions of the heart, blood vessels & blood recognise the impact of diet, exercise, drugs & lifestyle on the way their bodies function describe the ways in which nutrients & water are transported within animals, including humans

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Progression in Substantive Knowledge

		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
			associated with each sense					
BIOLOGY 	Key Vocab: Animals including humans  		names of common animals fish, amphibians, reptiles, birds, mammals common animals which eat other animal, carnivores common animals which eat plants, herbivores common animals which eat animals & plants, omnivores wild animals, pets, body, head, neck, arms, elbows, legs, knees, face, ears, eyes, eyebrows, eye lashes, nose, hair, mouth, teeth, tongue, feet, toes, fingers, nails, ankle, calf, thigh, hips, waist, trunk, chest, shoulders, back, hands, wrist, tail, wing, claw, fin, scales, feathers, fur, beak senses, hear/hearing, see/seeing, smell/smelling, taste/tasting	offspring (reproduction), life cycles, babies, young, grow, change (develop), adults, older/younger, baby/toddler/child/teenager, basic needs, water, food air, breathing, survival, exercise, food types, fruit, vegetable, bread, rice, potato, pasta, milk & dairy, high in fat/sugar, meat, fish, egg, beans, hygiene, clean, wash, healthy, medicine, drugs	nutrition, nutrients, food types, fruit, vegetable, bread, rice, potato, pasta, milk & dairy foods, high in fat/sugar/meat, fish, egg, beans, carbohydrates, proteins, vitamins & minerals, fat, dietary fibre, water, balanced diet, skeleton, muscles support, protection, movement, skull, ribs, spine/vertebrae, joints, sockets, bones, tendons	digestive system, nutrition, nutrients, mouth, teeth, canines, incisor, molar, pre-molar, saliva, tongue, rip, tear, chew, grind, cut, oesophagus (gullet), stomach, small intestine, large intestine, rectum, anus, carnivore, herbivore, omnivore, producer, consumer, predator, prey, food chain	Human, development, baby, toddler, child, teenage, adult, puberty, gestation, length, mass, grows, growing, reproduction (reproduce) life cycle,	circulatory system, heart, blood, blood vessels, pumps, oxygen, carbon dioxide, lungs respiratory system, nutrients, water, diet, exercise, drugs, lifestyle

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Progression in Substantive Knowledge								
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
			rough/smooth, describing textures bright/dim, describing light sources loud/quiet, describing sounds high/low, describing sounds repeating/continuous sound describing sounds					

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Progression in Substantive Knowledge								
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
BIOLOGY 	Living things and their habitats			explore & compare the differences between things that are living, dead, & things that have never been alive identify that most living things live in habitats to which they are suited & describe how different habitats provide for the basic needs of different kinds of animals & plants, & how they depend on each other identify & name a variety of plants & animals in their habitats, including micro-habitats		recognise that living things can be grouped in a variety of ways explore & use classification keys to help group, identify & name a variety of living things in their local & wider environment recognise that environments can change & that this can sometimes pose dangers to living things	describe the differences in the life cycles of a mammal, an amphibian, an insect & a bird describe the life processes and reproduction in some plants & animals	describe how living things are classified into broad groups according to common observable characteristics & based on similarities & differences, including micro-organisms, plants & animals give reasons for classifying plants & animals based on specific characteristics

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Progression in Substantive Knowledge								
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
				describe how animals obtain their food from plants & other animals, using the idea of a simple food chain, & identify & name different sources of food.				

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Progression in Substantive Knowledge								
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
BIOLOGY 	Key Vocab: Living things and their habitats 			living, dead, never been alive, life processes, move, grow, feed, have offspring/young/babies reproduce, name local habitats, pond, woodland, meadow, seashore, woodland, ocean, rainforest, name micro-habitats, under log, on stony path, under bushes, condition), damp/wet/dry, dark/light, hot/warm/cool/cold, use comparatives e.g. hotter, suited/suitable, basic needs, depend, food, food chain,		classification keys, environment, fish, amphibians, reptiles, birds, mammals, vertebrates, name some vertebrates, invertebrate, name some invertebrates, human impact, name positive & negative human impacts	life cycle, reproduction, sexual, asexual, mammal, amphibian, insect, bird, fish, reptile, eggs, live young	organism, micro-organism, fungus, mushrooms, classification keys, environment, fish, amphibians, reptiles, birds, mammals, vertebrates, invertebrates, arachnid, mollusc, insect, crustacean

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Progression in Substantive Knowledge								
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
				sources of food, shelter				
BIOLOGY 	Evolution & inheritance				Year 6 recognise that living things have changed over time & 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 & are not identical to their parents identify how animals & plants are adapted to suit their environment in different ways & that adaptation may lead to evolution			
	Key Vocab: Evolution & inheritance				evolution, suited/suitable, environment, suited, adapted/adaptation, offspring reproduction, characteristics, vary/variation, inherit/inheritance, fossil			

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Progression in Substantive Knowledge								
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
CHEMISTRY 	Materials & Their Properties 	Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about the differences between materials and changes they notice.	distinguish between an object & material from which it is made identify & name a variety of everyday materials, including wood, plastic, glass, metal, water & rock describe the simple physical properties of a variety of everyday materials compare & group together a variety of everyday materials on the basis of their simple physical properties	identify & compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper & cardboard for particular uses find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting & stretching.		compare & group materials together, according to whether they are solids, liquids or gases observe that some materials change state when they are heated or cooled, & measure or research the temperature at which this happens in degrees Celsius identify the part played by evaporation & condensation in the water cycle & associate the rate of evaporation with temperature	compare & group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical & thermal), & response to magnets know that some materials will dissolve in liquid to form a solution, & describe how to recover a substance from a solution use knowledge of solids, liquids & gases to decide how mixtures might	

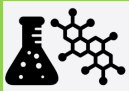
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Progression in Substantive Knowledge								
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
							be separated, including through filtering, sieving & evaporating give reasons, based on evidence from comparative & fair tests, for the particular uses of everyday materials, including metals, wood & plastic demonstrate that dissolving, mixing & changes of state are reversible changes explain that some changes result in the formation of new materials, & that this kind of change is not usually reversible, including	

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Progression in Substantive Knowledge								
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
							changes associated with burning & the action of acid on bicarbonate of soda	

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Progression in Substantive Knowledge								
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
CHEMISTRY 	Key Vocab: Materials & Their Properties 		object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabrics, elastic, foil, card/cardboard, rubber, wool, clay, (properties), hard, soft, stretchy, stiff, bendy/floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see through, not see through natural/manufactured/manmade/synthetic – if being used	suitable/unsuitable, suitability, use/useful, purpose, object, material, property, characteristics, wood, plastic, glass, metal, rock, brick, paper, fabrics, elastic, foil, cardboard, rubber, wool, clay, hard, soft, stretchy, rigid, flexible, waterproof, absorbent, strong/weak, rough, smooth, reflective, non-reflective, transparent, opaque, translucent, shape, changed, push/pushing, pull/pulling, twist/twisting, squah/squahing, bend/bending, stretch/stretching, pinch/pinching, poke/poking, roll/rolling, squeeze, squeezing,		states of matter, solid, liquid, gas, powder, grain/granular, crystals, change state, ice/water/steam, water vapour, heated/heating, given energy, cooled/cooling, temperature, degrees celsius, melt, freeze, solidify, melting point, molten, boil, boiling point, evaporate/evaporation, condense/condensation, water cycle, precipitation, transpiration	hard, soft, stretchy, rigid, flexible, waterproof, absorbent, natural/manufactured/manmade/synthetic, strong/weak, rough, smooth, reflective, non-reflective, transparent, opaque, translucent, solubility, electrical conductivity, thermal conductivity, melting, dissolve, solution, insoluble, solute, solvent, particle, mix/mixture, filtering, sieving, evaporating, condensing, reversible changes, new materials, not usually reversible, burning, gas given off, rusting,	

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Progression in Substantive Knowledge								
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
				natural/manufactured/manmade/synthetic – if being used				

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Progression in Substantive Knowledge

		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
CHEMISTRY 	Rocks 				compare & group together different kinds of rocks on the basis of their appearance & 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 & organic matter			
CHEMISTRY 	Key Vocab: Rocks 				rock, stone, pebble, boulder, soil, fossils, grains, crystals, hard/soft, texture, absorb water, porous, let water through permeable/impermeable, marble, chalk, granite, sandstone, slate, sandy soil, clay soil, chalky soil, peat,			

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Progression in Substantive Knowledge

		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
PHYSICS 	Earth & space / Seasons 	Explore the natural world around them. Describe what they see, hear and feel whilst outside. Recognise some environments that are different from the one in which they live. Understand the effect of changing seasons on the natural world around them.	observe changes across the four seasons observe & describe weather associated with the seasons & how day length varies				describe the movement of the Earth, & other planets, relative to the Sun in the solar system describe the movement of the Moon relative to the Earth describe the Sun, Earth & Moon as approximate spherical bodies use the idea of the Earth's rotation to explain day & night & the apparent movement of the sun across the sky	

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Progression in Substantive Knowledge								
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
PHYSICS 	Key Vocab: Earth & space / Seasons 	season, spring, summer, autumn, winter weather, hot/warm, cool/cold, sun/sunny, cloud/cloudy, wind/windy, rain/rainy, snow/snowing, hail/hailing, sleet, frost fog/mist, ice/icy, rainbow, thunder, lightning, storm, light/dark, day/night day length					Earth, planets, Sun, solar system, Moon, celestial body, sphere/spherical, rotate/rotation, spin, night & day, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, dwarf planet, orbit, revolve, geocentric model, heliocentric model, shadow clocks, sundials, astronomical clocks	

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Progression in Substantive Knowledge

		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
PHYSICS 	Light 				recognise that they need light in order to see things & that dark is the absence of light notice that light is reflected from surfaces recognise that light from the sun can be dangerous & that there are ways to protect their eyes recognise that shadows are formed when the light from a light source is blocked by a solid object find patterns in the way that the size of shadows change			recognise that light appears to travel in straight lines use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye explain that we see things because light travels from light sources to our eyes or from light sources to objects & then to our eyes use the idea that light travels in straight lines to explain why shadows have the same shape

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Progression in Substantive Knowledge								
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
								as the objects that cast them
PHYSICS 	Key Vocab : Light 				light, light source, names of light sources, dark/darkness, reflect, reflective, mirror, shadow, block, direct/direction, transparent, opaque, translucent			light, light source, names of light sources, dark/darkness, reflect, reflective, mirror, shadow, block, absorb, direct/direction, transparent, opaque, translucent

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Progression in Substantive Knowledge

		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
PHYSICS 	Sound 					identify how sounds are made, associating some of them with something vibrating recognise that vibrations from sounds travel through a medium to the ear find patterns between the pitch of a sound and the strength of the vibrations that produced it recognise that sounds get fainter as the distance from the sound increases		

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Progression in Substantive Knowledge

		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
PHYSICS 	Key Vocab: Sound 					(sound, sound source, noise, vibrate/vibration, travel, solid, liquid, gas, medium, pitch, tune, high, low, volume, loud, quiet, fainter, muffle, strength of vibrations, insulation, instrument, percussion, strings, brass, woodwind, tuned instrument)		

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Progression in Substantive Knowledge								
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
PHYSICS 	Forces & magnets 	Explore and talk about different forces they can feel.			compare how things move on different surfaces notice that some forces need contact between objects, but magnetic forces can act at a distance observe how magnets attract or repel each other & attract some materials & not others compare & group together a variety of everyday materials on the basis of whether that are attracted to a magnet, & identify some magnetic materials describe magnets as having two poles predict whether two magnets will attract or repel each other,		explain that unsupported objects fall towards the Earth because of the force of gravity acting between the earth & the falling object identify the effects of air resistance, water resistance & friction, that act between moving surfaces recognise that some mechanism, including levers, pulleys & gears, allow a smaller force to have a greater effect	

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Progression in Substantive Knowledge								
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
					depending on which poles are facing			
PHYSICS 	Key Vocab: Forces & magnets 				force, push/pushing, pull/pulling, contact force, non contact force, magnetic force, magnet strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, non magnetic material, poles, north pole, south pole		fall, Earth, gravity, air resistance, water resistance, friction, moving surfaces, mechanisms, levers, pulleys, gears, force, transfers	

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Progression in Substantive Knowledge								
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
PHYSICS 	Electricity 					identify common appliances that run on electricity construct a simple series electrical circuit, identifying & naming its basic parts, including cells, wires, bulbs, switches & buzzers identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery recognise that a switch opens & closes a circuit & associate this with whether or not a lamp lights in a simple series circuit		associate the brightness of a lamp or the volume of a buzzer with the number & voltage of cells used in the circuit compare & give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers & the on/off position of switches use recognised symbols when representing a simple circuit in a diagram

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Progression in Substantive Knowledge								
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
						recognise some common conductors & insulators, & associate metals with being good conductors		
PHYSICS 	Key Vocab: Electricity 					electricity, appliances/device, mains, plug, electrical circuit, series circuit, complete circuit, circuit diagram, circuit symbol, components, cell, battery, positive/negative, terminal, connect/connection, short circuit, wire, crocodile clip, bulb, bright/dim, switch, buzzer, motor, fast(er)/slow(er), conductor, insulator, metal/non metal		electricity, appliances/device, electrical circuit, series circuit, complete circuit, circuit diagram, circuit symbol, components, cell, battery, positive/negative, terminal, connect/connection, loose connection, short circuit, wire, crocodile clip, bulb, bright/dim, switch, buzzer, volume, motor, fast(er)/slow(er), conductor, insulator, metal/non metal, voltage, current, resistance

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