

All Hallows C of E Primary School Science Curriculum



The good thing about science is that it's true
whether or not you believe in it - Neil deGrasse Tyson

All children have a statutory entitlement to access to the Programmes of Study for Science as set out in the National Curriculum.
Science is taught as a discrete subject.

The national curriculum for science aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Intent

EYFS

In Foundation, children will explore the natural world around them, making observations and drawing pictures of animals and plants. They will learn about similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. They will learn about some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Key stage 1

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly constructed world around them. They should be encouraged to be curious and ask questions about what they notice.

Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Lower key stage 2 – years 3-4

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions.

Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

Upper key stage 2 – years 5-6

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates.

Pupils should read, spell and pronounce scientific vocabulary correctly

Cognition and Learning		Communication and Interaction	
<u>Subject Challenges for SEND</u>	<u>Provision for SEND</u>	<u>Subject Challenges for SEND</u>	<u>Provision for SEND</u>
<p>Age appropriate content for all children in the science lessons</p> <p>Gaps in knowledge and understanding in science due to (Covid19)</p> <p>Accessing learning due to poor literacy skills</p> <p>Children may struggle to remember information/facts/previous learning in science</p>	<p>Using personal stories to understand different contexts</p> <p>1:1 sessions where needed</p> <p>Use of books/stories</p> <p>Ensure previous years science learning objectives are covered</p> <p>Key words displayed and knowledge organisers used</p> <p>Use of shorter/less complex sentences in resources given</p> <p>Writing frames where possible</p> <p>Lots of retrieval opportunities and reinforcement in science lessons</p> <p>Clear differentiation</p> <p>Apply new vocab into lots of different contexts – pre-teaching vocab</p> <p>Physical warm ups to recall previous learning</p>	<p>Children may struggle to communicate and express opinions in science</p> <p>Language difficulties may make children unable to access their science learning</p>	<p>Visual cues</p> <p>Visual words/ phrases</p> <p>Minimise background noise</p> <p>Child to face the teacher to support lip reading</p> <p>Write new vocabulary down</p> <p>Dual coding within knowledge organisers and displays</p> <p>Lots of reinforcement</p> <p>Lots of repetition</p> <p>Scaffold observational skills through careful questioning</p> <p>Use of simple instructions</p> <p>Step by step instructions</p> <p>Careful and appropriate modelling to support understanding</p> <p>Visual aids and dual coding</p> <p>Videos of examples and practice</p>

Physical and sensory		Social Emotional and Mental Health	
<u>Subject Challenges for SEND</u>	<u>Provision for SEND</u>	<u>Subject Challenges for SEND</u>	<u>Provision for SEND</u>
<p>Children with visual impairment may find it difficult to see images shown during the science lessons.</p> <p>Recording information may be difficult from a scientific investigation.</p> <p>Children with fine motor difficulties may find it difficult to use specific Science equipment</p> <p>Children who might not be able to touch or handle equipment</p>	<p>Ensure images are enlarged and accessible</p> <p>Ensure children are close to whiteboard/ sources</p> <p>Provide additional ways to record e.g. video, drawings, verbal explanation</p> <p>EYFS tools that may be larger to use e.g. tweezers</p> <p>Working in groups to support</p> <p>Pencil grips and tripod pencil</p> <p>Use of ICT to support access</p> <p>Addressing individual needs on a school trip to ensure full access e.g. breaks for walking, etc</p>	<p>Children may become frustrated/withdrawn/ aggressive when work is challenging</p> <p>Children’s mental health and wellbeing may impact on their ability to access their learning</p>	<p>Ensure instructions are clear</p> <p>Children provided with a role which may not involve active participation</p> <p>Use of ICT to support access</p> <p>Providing appropriate resources so that children can access the lesson e.g. fiddle toys</p> <p>Providing a safe space for the children within the lesson if needed- breakout spaces</p> <p>Teach with empathy and understanding</p> <p>Ensure children have opportunities to have sensory breaks, etc, from their work</p> <p>Consider cognitive overload and children’s ability to manage this</p> <p>Ensuring that parents are aware of curriculum and can support in science.</p>

Challenging and Extending Children to Achieve Greater Depth

Ways to 'go deeper' when aiming for greater depth.

Is the child you are considering to be at greater depth able to show they can do these things?

- Work independently.
- Evaluate conclusions when working scientifically and explore a concept with a greater degree of independence.
- Apply what they have learned in one area of a subject to other areas.
- Answer 'what if?' questions with insightful and thoughtful ideas where they make links between prior and current learning in a familiar relatable context and justify why they think this with accuracy.
- Apply their knowledge consistently, confidently and fluently.
- Be able to explain what they have been doing to others, including teaching other children what they have learned.
- Independently use and apply correctly spelled vocabulary accurately in context to predict or explain scientific ideas conclusions or evaluations.
- Form a relationship with their learning. It has human significance so it is relevant to the future decisions and the active contribution children can make to the world.
- REMEMBER, greater depth is NOT about remembering facts – greater depth is about encouraging deeper thinking, testing hypotheses and predictions.

Things to consider when teaching with greater depth in mind:

- Teach to the top and have high expectations for all children.
- Teaching children how to reflect, explain, justify and question are key to lesson design. Children must be able to explain how they know they are right. They may need guiding to get there with careful questioning, but they must always be using correct scientific vocabulary.
- Children should be encouraged to apply learning in different ways around a similar topic. Where do we see this in the real world? Who do you know uses this type of science?
- Have opportunities to collaborate. When children are in groups they have opportunities to generate endless lines of enquiry. They are able to question each other effectively and challenge ideas.
- Plan to give children an opportunity to show their learning in a variety of ways.

Implementation

AT1 – Working scientifically – these MUST be taught alongside the other units of learning

	Unit of work
R	<p>A unique child</p> <p>Finding out and exploring</p> <ul style="list-style-type: none">• Showing curiosity about objects, events and people• Using senses to explore the world around them• Engaging in open-ended activity <p>Active learning</p> <ul style="list-style-type: none">• Being proud of how they accomplished something – not just the end result <p>Thinking Creatively and Critically</p> <ul style="list-style-type: none">• Thinking of ideas that are new and meaningful to the child• Playing with possibilities (what if? what else?)• Visualising and imagining options• Finding new ways to do things <p>Making links (building theories)</p> <ul style="list-style-type: none">• Making links and noticing patterns in their experience• Making predictions• Testing their ideas• Developing ideas of grouping, sequences, cause and effect <p>Working with ideas (critical thinking)</p> <ul style="list-style-type: none">• Planning, making decisions about how to approach a task, solve a problem and reach a goal• Checking how well their activities are going• Flexibly changing strategy as needed• Reviewing how well the approach worked

Unit of work

Year 1

Scientific Attitudes

- I know how to ask simple questions
- I know how to talk about what they have found out using simple scientific language
- I know how to read and spell Y1 scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge

Planning

- I know how to ask simple scientific questions

Observing and measuring during practical activities

- I know how to ask simple questions
- I know how to talk about what they have found out using simple scientific language
- I know how to read and spell Y1 scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge
- I know how to ask simple scientific questions
- I know how to use simple equipment safely with appropriate support
- I know how to gather and record data (with appropriate support) to help in answering questions
- I know how to identify and classify findings with appropriate support
- I know how to perform simple tests with appropriate support

Analysis

- I know how to use their observations and ideas to suggest answers to questions
- I know how to explain what they have found

Measurements

- I know how to use standard units appropriate for Year 1

Year 2

Scientific Attitudes

- I know how to ask simple questions about what they notice and recognise that they can be answered in different ways
- I know how to communicate their ideas in a variety of ways using to others using simple scientific vocabulary
- I know how to read and spell Y2 scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge

Planning

- I know how to ask simple questions about what they notice and recognise that they can be answered in different ways

Unit of work

Observing and measuring during practical activities

- I know how to use simple equipment safely with reduced support
- I know how to gather and record data (with reduced support) to help in answering questions
- I know how to identify and classify findings with reduced support
- I know how to perform simple tests with reduced support

Analysis

- I know how to use their observations and ideas to suggest answers to questions and what they could do next
- I know how to explain what they have found and how they found it

Measurements

- I know how to use standard units appropriate for Year 2
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Year 3

Scientific Attitudes

- I know how to draw simple conclusions and use some scientific language to talk about what they have found out
- I know how to decide which types of scientific enquiry are likely to be the best ways of answering questions through conversations with others
- I know how to read and spell Y3 scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge

Planning

- I know how to ask relevant questions and decide with others which different types of scientific enquiries could be used to answer them
- I know how to set up simple practical enquiries, comparative and fair tests with others

Observing and measuring during practical activities

- I know how to make systematic and careful observations and, where appropriate, take measurements (with support), using standard units, a range of equipment safely, including thermometers
- I know how to gather, record and classify data in a variety of ways to help in answering questions

Analysis

- I know how to report on findings from enquiries, including oral and written

Unit of work

- explanations
- I know how to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions with the support of others
- I know how to use straightforward scientific evidence to answer questions or to support their findings
- I know how to record findings using simple scientific language, drawings, labelled diagrams and tables
- I know how to identify differences, similarities or changes related to simple scientific ideas and processes

Evaluating

- I know how to use results to suggest improvements and raise further questions with the support of others

Measurements

- I know how to use standard units appropriate for Year 3

Year 4 Scientific Attitudes

- I know how to draw simple conclusions and use some scientific language to write about what they have found out
- I know how to decide independently which types of scientific enquiry are likely to be the best ways of answering questions
- I know how to read and spell Y4 scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge

Planning

- I know how to ask relevant questions and decide independently which different types of scientific enquiries could be used to answer them
- I know how to set up simple practical enquiries, comparative and fair tests independently

Observing and measuring during practical activities

- I know how to make systematic and careful observations and, where appropriate, take measurements, using standard units, a range of equipment safely, including thermometers and data loggers
- I know how to gather, record and classify and present data in a variety of ways to help in answering questions

Analysis

- I know how to report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- I know how to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise

Unit of work

- further questions independently
- I know how to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables

Evaluating

- I know how to use results to suggest improvements and raise further questions independently

Measurements

- I know how to use standard units appropriate for Year 4

Year 5 Scientific Attitudes

- I know how to answer scientific questions using different types of scientific enquiry
- I know how to read, spell and pronounce Y5 scientific vocabulary correctly

Planning

- I know how to plan different types of scientific enquiries to answer questions, including recognising variables

Observing and measuring during practical activities

- I know how to take measurements, using a range of scientific equipment safely, with increasing accuracy and precision, taking repeat readings where appropriate
- I know how to record data and results of increasing complexity using scientific diagrams and labels, scatter graphs, bar graphs

Analysis

- I know how to report and present findings from enquiries, including conclusions and causal relationships, in oral and written forms such as displays and other presentations
- I know how to present data using a variety of scatter graphs and line graphs
- I know how to support or refute ideas or arguments using scientific evidence

Evaluating

- I know how to use test results to make predictions to set up further comparative and fair tests
- I know how to discuss the degree of trust in results

Measurements

- I know how to use standard units appropriate for Year 5

Unit of work

Year 6

Scientific Attitudes

- I know how to answer scientific questions using different types of scientific enquiry in the most appropriate ways
- I know how to read, spell and pronounce Y6 scientific vocabulary correctly

Planning

- I know how to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

Observing and measuring during practical activities

- I know how to take measurements, using a range of scientific equipment safely, with accuracy and precision, taking repeat readings where appropriate
- I know how to record data and results of increasing complexity using classification keys, tables, line graphs

Analysis

- I know how to report and present findings from enquiries, including conclusions and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- I know how to present data using a variety of graphs

Measurements

- I know how to use standard units appropriate for Year 6

	Autumn		Spring		Summer	
	Knowledge	Vocabulary	Knowledge	Vocabulary	Knowledge	Vocabulary
R	<p>Know what senses are and how they use them.</p> <p>Know the season Autumn and what changes they can observe.</p> <p>Know the changes between Autumn and Winter.</p>	<p>body, face, eyes, ears, nose, mouth, hands, feet, hair</p> <p>senses, smell, taste, touch</p> <p>season, autumn,</p>	<p>Know how materials are used and how they can change.</p>	<p>material, change</p>	<p>Know the basic life cycle of a plant and an animal.</p> <p>Know the features of Summer and how seasons change.</p> <p>Know what a habitat is and how animals survive in different ones.</p>	<p>lifecycle, growth habitat, living, non-living</p>
	Skills		Skills		Skills	
	<p>Makes simple observations about animals and plants.</p> <p>Draws animals or plants based on what they have observed.</p> <p>Compares animals or plants and records observations through drawing.</p> <p>Talks about features of the current season.</p> <p>Describe simple changes linked to the seasons.</p>		<p>Makes observations about changes in animals or plants.</p> <p>Compares animals or plants and records observations through drawing.</p> <p>Describe changes in plants and animals over time.</p> <p>Describes simple changes in materials.</p>		<p>Independently explores the natural world and records observations.</p> <p>Explores the natural world, making observations and drawing pictures of animals and plants.</p> <p>Links changes to seasons or processes in the natural world.</p> <p>Understands some important processes and changes in the natural world, including seasons and changing states of matter.</p>	
Year 1	<p>Animals including humans</p> <p>Know how to classify a range of animals by</p>	<p>amphibians, fish, reptiles, mammals, birds (+ 1 example of</p>	<p>Use of Everyday materials</p>	<p>Wood, plastic, glass, paper, metal, rock, hard, soft, rough,</p>	<p>Plants</p> <p>Know and name a variety of common</p>	<p>deciduous, evergreen, tree, leaf, flower (blossom), petals, fruit, bulb,</p>

	Autumn		Spring		Summer	
	Knowledge	Vocabulary	Knowledge	Vocabulary	Knowledge	Vocabulary
	amphibian, reptile, mammal, fish and birds Know and classify animals by what they eat (carnivore, herbivore and omnivore) Know how to sort by living and non-living things Know the name of parts of the human body that can be seen	each) herbivore, omnivore, carnivore head, nose, ear, neck, shoulder, arm, elbow, wrist, hand, back, chest, hip, leg, knee, ankle, foot wing, beak, tail, fin sight, smell, touch, taste, hearing	Know the name of the materials an object is made from Know about the properties of everyday materials	smooth, shiny, dull, bendy, stiff	wild and garden plants Know and name the petals, stem, leaves and root of a plant Know and name the roots, trunk, branches and leaves of a tree	seed, roots, stem, trunk, branches
Year 1	Seasonal changes autumn and winter Know and name the seasons and know about the type of weather in each season and how day length varies	Season, spring, summer, autumn, winter, month, year, day night, sun, moon, light, dark	Seasonal changes spring and summer Know and name the seasons and know about the type of weather in each season and how day length varies	Season, spring, summer, autumn, winter, month, year, day night, sun, moon, light, dark		
Year 2	Animals including humans Know the basic stages in a life cycle for animals, (Including humans) Know why exercise, a balanced diet and	survival, water, air, food reproduce, adult, baby, offspring, kitten, calf, puppy food chain, prey, predator, camouflage, protection exercise, hygiene, balanced diet	Use of everyday materials Know how materials can be changed by squashing, bending, twisting and stretching	Brick, fabric, elastic, foil, property, solid, waterproof, absorbent, opaque, transparent, squash, bend, flexible, twist, stretch, push, pull, roll, slide, bounce	Plants Know and explain how seeds and bulbs grow into plants Know what plants need in order to grow and stay healthy (water, light	growth, germinate, light, temperature reproduce, lifecycle

	Autumn		Spring		Summer	
	Knowledge	Vocabulary	Knowledge	Vocabulary	Knowledge	Vocabulary
	good hygiene are important for humans				& suitable temperature)	
Year 2			Living things and their habitats Know how to classify things by living, dead or never lived Know how a specific habitat provides for the basic needs of things living there (plants and animals) Match living things to their habitat Name some different sources of food for animals Know about and explain a simple food chain	Living, dead, habitat, microhabitat, woodland, meadow, hedgerow, pond		
Year 3	Light Know that dark is the absence of light Know that light is needed in order to see and is reflected from a surface Know and demonstrate how a shadow is formed and explain how a shadow changes shape Know about the	Light source, mirror, reflect, reflective, reflection, shadow, blocked, transparent, translucent, opaque.	Animals Including Humans Know about the importance of a nutritious, balanced diet Know how nutrients, water and oxygen are transported within animals and humans	skeleton, skull, bones, muscles, movement, support, protection, nutrition	Plants Know how water is transported within plants Know the plant life cycle, especially the importance of flowers	air, water, transportation, nutrients, soil, reproduction, seed formation, seed dispersal, pollination

	Autumn		Spring		Summer	
	Knowledge	Vocabulary	Knowledge	Vocabulary	Knowledge	Vocabulary
	danger of direct sunlight and describe how to keep protected		Know about the skeletal and muscular system of a human			
Year 3	Rocks and soils Know how to compare and group rocks based on their appearance and physical properties, giving reasons Know how soil is made and how fossils are formed Know about and explain the difference between sedimentary, metamorphic and igneous rock	Soils, organic matter, fossil, crystal, sandstone, granite, marble, pumice, absorbent, crumble, sedimentary, layer, sediment, igneous, magma, lava, gas bubbles (tiny holes/spaces) metamorphic, change, squeeze, pressure	Forces and magnets Know about and describe how objects move on different surfaces Know how a simple pulley works and use to on to lift an object Know how some forces require contact and some do not, giving examples Know about and explain how magnets attract and repel	Force, contact, surface, magnetic, attract, repel, poles		
Year 4	Sound Know how sound is made, associating some sounds with the object vibrating Know how sound travels from a source to our ears Know the correlation between pitch and the object producing a sound Know the correlation between the volume	Vibration, wave, volume, pitch, tone, insulation	Animals Including humans Know how to identify and name the parts of the human digestive system Know the functions of the organs in the human digestive system Identify and know the different types of human teeth	mouth, tongue, teeth, oesophagus, stomach, small intestine, large intestine, nutrients, absorb, canine, incisor, molar producer, consumer, apex predator	Electricity Know how to identify and name appliances that require electricity to function Construct a series circuit Identify and name the components in a series circuit (including cells, wires, bulbs,	

	Autumn		Spring		Summer	
	Knowledge	Vocabulary	Knowledge	Vocabulary	Knowledge	Vocabulary
	of a sound and the strength of the vibrations that produced it Know what happens to a sound as it travels away from its source		Know the functions of different human teeth Use and construct food chains to identify producers, predators and prey		switches and buzzers) Predict and test whether a lamp will light within a circuit Know the function of a switch Know the difference between a conductor and an insulator; giving examples of each	
Year 4	States of matter Know the temperature at which materials change state Know about and explore how some materials can change state Know the part played by evaporation and condensation in the water cycle	Solid, liquid, gas, evaporation, condensation, particle, temperature, freezing, heating	Living things and their habitats Know that living things can be grouped in a variety of ways Know how to use classification keys to group, identify and name living things in my locality and the wider environment Know how changes to an environment could endanger living things	vertebrates, invertebrates (+ 1 example of each) environment, habitat, classification key		
Year 5	Earth and space Know about and explain the movement of the Earth and other	Earth, sun, moon, solar system, axis of rotation, day, night, star	Forces Know what gravity is and its impact on our lives Identify and know the effect of air	Air resistance, water resistance, friction, gravity	Animals including humans Know how to create a timeline to indicate	Womb, foetus, embryo, gestation, baby, toddler, teenager elderly, growth,

	Autumn		Spring		Summer	
	Knowledge	Vocabulary	Knowledge	Vocabulary	Knowledge	Vocabulary
	planets relative to the Sun Know about and explain the movement of the Moon relative to the Earth Know and demonstrate how night and day are created Describe the Sun, Earth and Moon (using the term spherical)		and water resistance Identify and know the effect of friction Explain how levers, pulleys and gears allow a smaller force to have a greater effect		stages of growth in humans	development, puberty, asexual/sexual reproduction
Year 5	Properties and changes of materials Know how to compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets Know and explain how a material dissolves to form a solution Know and show how to recover a substance from a solution	Hardness, transparency, conductivity, (electrical, thermal) solubility, solution, dissolve, filter, evaporate, sieve, reversible, irreversible	Living things and their Habitats Know the life cycle of different living things e.g. mammal, amphibian, insect and bird Know the differences between different life cycles Know the process of reproduction in plants Know the process of reproduction in animals	life process, reproduction, offspring,		

	Autumn		Spring		Summer	
	Knowledge	Vocabulary	Knowledge	Vocabulary	Knowledge	Vocabulary
	<p>Know and demonstrate how some materials can be separated (e.g. through filtering, sieving and evaporating)</p> <p>Know and demonstrate that some changes are reversible and some are not</p> <p>Know how some changes result in the formation of a new material and that this is usually irreversible</p>					
Year 6	<p>Animals including humans</p> <p>Know how to identify and name the main parts of the human circulatory system</p> <p>Know the function of the heart, blood vessels and blood</p> <p>Know the impact of diet, exercise, drugs and lifestyle on health</p> <p>Know the ways in which nutrients and water are transported in animals, including humans</p>	<p>function, circulatory system, heart, valve, blood vessel, vein, artery transport, oxygenated, deoxygenated lifestyle, drug</p>	<p>Light</p> <p>Know how light travels</p> <p>Know and demonstrate how we see objects</p> <p>Know why shadows have the same shape as the object that casts them</p> <p>Know how simple optical instruments work e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.</p>	<p>Light source, reflection, shadow, rainbows, periscope, mirror</p>	<p>Evolution and inheritance</p> <p>Know how the Earth and living things have changed over time</p> <p>Know how fossils can be used to find out about the past</p> <p>Know about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents)</p>	<p>Adaptation, evolution, characteristic, reproduction, genetics, survival</p>

	Autumn		Spring		Summer	
	Knowledge	Vocabulary	Knowledge	Vocabulary	Knowledge	Vocabulary
					Know how animals and plants are adapted to suit their environment Link adaptation over time to evolution Know about evolution and can explain what it is	
Year 6	Electricity Know how to compare and give reasons for why components work and do not work in a circuit Draw circuit diagrams using correct symbols Know how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer	Circuit – series, brightness, loudness,	Living things and their habitats Know how to classify living things into broad groups according to observable characteristics and based on similarities and differences Know how living things have been classified Give reasons for classifying plants and animals in a specific way	characteristic, classification, organism, micro-organism		

Impact

Foundation	Development Matters	The Natural World	Managing Self	Listening, Attention and Understanding	
	<p>Learn new vocabulary</p> <p>Ask questions to find out more and to check what has been said to them.</p> <p>Articulate their ideas and thoughts in well- formed sentences</p> <p>Describe events in some detail</p> <p>Use talk to work out problems and organise thinking and activities.</p> <p>Explain how things work and why they might happen.</p> <p>Use new vocabulary in different contexts.</p> <p>Know and talk about different factors that support overall health and wellbeing such as: regular physical activity, healthy eating, toothbrushing, sensible amounts of</p>	<p>Explore the natural world around them, making observations and drawing pictures of animals and plants</p> <p>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.</p> <p>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</p>	<p>Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.</p>	<p>Make comments about what they have heard and make comments to clarify their understanding</p>	

	screen time, having a good sleep routine.				
Year 1	<p>Working Scientifically</p> <p>Scientific Attitudes</p> <p>I know how to ask simple questions</p> <p>I know how to talk about what they have found out using simple scientific language</p> <p>I know how to read and spell Y1 scientific vocabulary at a level consistent with my increasing word reading and spelling knowledge</p> <p>Planning</p> <p>I know how to ask simple scientific questions</p> <p>Observing and measuring during practical activities</p> <p>I know how to use simple equipment safely with appropriate support</p> <p>I know how to gather and record data (with Appropriate support) to help in answering questions</p>	<p>Biology</p> <p>Seasonal Changes</p> <p>I know how to observe changes across the four seasons</p> <p>I know how to observe and describe weather associated with the seasons and how day length varies</p> <p>Plants</p> <p>I know how to identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>I know how to identify and describe the basic structure of a variety of common flowering plants, including trees</p> <p>Animals Including Humans</p> <p>I know how to identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>I know how to identify and name a variety of common animals that are carnivores, herbivores and omnivores</p>	<p>Chemistry</p> <p>Everyday Materials</p> <p>I know how to distinguish between an object and the material from which it is made</p> <p>I know how to identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock I know and can describe the simple physical properties of a variety of everyday materials</p> <p>I know how to compare and group together a variety of everyday materials on the basis of their simple physical properties</p>		

	<p>I know how to identify and classify findings with appropriate support</p> <p>I know how to perform simple tests with appropriate support</p> <p>Analysis</p> <p>I know how to use their observations and ideas to suggest answers to questions I know how to explain what they have found</p> <p>Measurements</p> <p>I know how to use standard units appropriate for Year 1</p>	<p>I know how to describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</p> <p>I know how to identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</p>			
Year 2	<p>Working Scientifically Scientific Attitudes</p> <p>I know how to ask simple questions about what they notice and recognise that they can be answered in different ways</p> <p>I know how to communicate their ideas in a variety of ways using to others using simple scientific vocabulary I know how to read and spell Y2 scientific vocabulary at a level consistent with their</p>	<p>Biology Plants</p> <p>I know how to observe and describe how seeds and bulbs grow into mature plants</p> <p>I know how to find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</p> <p>Animals Including Humans</p>	<p>Chemistry Everyday Materials</p> <p>I know how to identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</p>		

	<p>increasing word reading and spelling knowledge</p> <p>Planning</p> <p>I know how to ask simple questions about what they notice and recognise that they can be answered in different ways</p> <p>Observing and measuring during practical activities</p> <p>I know how to use simple equipment safely with reduced support</p> <p>I know how to gather and record data (with reduced support) to help in answering questions</p> <p>I know how to identify and classify findings with reduced support</p> <p>I know how to perform simple tests with reduced support</p> <p>Analysis</p> <p>I know how to use their observations and ideas to suggest answers to questions and what I could do next</p>	<p>I can notice and explain that animals, including humans, have offspring which grow into adults</p> <p>I know how to find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>I know how to describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p> <p>Living things and their habitats</p> <p>I know how to explore and compare the differences between things that are living, dead, and things that have never been alive</p> <p>I know and can explain that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p> <p>I know how to identify and name a variety of plants and</p>			
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	<p>I know how to explain what I have found and how</p> <p>Measurements</p> <p>I know how to use standard units appropriate for Year 2</p>	<p>animals in their habitats, including micro- habitats I know and can describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food</p>			
Year 3	<p>Working Scientifically</p> <p>Scientific Attitudes</p> <p>I know how to draw simple conclusions and use some scientific language to talk about what they have found out</p> <p>I know how to decide which types of scientific enquiry are likely to be the best ways of answering questions through conversations with others</p> <p>I know how to read and spell Y3 scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge</p> <p>Planning</p> <p>I know how to ask relevant questions and decide with others which different types</p>	<p>Biology</p> <p>Plants</p> <p>I know how to identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant</p> <p>I know how to investigate the way in which water is transported within plants</p> <p>I know how to explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</p> <p>Animals Including Humans</p>	<p>Physics</p> <p>Forces</p> <p>I know how to compare how things move on different surfaces</p> <p>I know that some forces need contact between two objects, but magnetic forces can act at a distance</p> <p>I know how to observe how magnets attract or repel each other and attract some materials and not others</p> <p>I know how to compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials</p> <p>I know how to describe magnets as having two poles</p>		

	<p>of scientific enquiries could be used to answer them I know how to set up simple practical enquiries, comparative and fair tests with others</p> <p>Observing and measuring during practical activities</p> <p>I know how to make systematic and careful observations and, where appropriate, take measurements (with support), using standard units, a range of equipment safely, including thermometers</p> <p>I know how to gather, record and classify data in a variety of ways to help in answering questions</p> <p>Analysis</p> <p>I know how to report on findings from enquiries, including oral and written Explanations</p> <p>I know how to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise</p>	<p>I know how to identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat</p> <p>I know and can explain that humans and some other animals have skeletons and muscles for support, protection and movement</p> <p>Rocks</p> <p>I know how to compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>I know how to describe in simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>I know and can explain that soils are made from rocks and organic matter</p>	<p>I know how to predict whether two magnets will attract or repel each other, depending on which poles are facing</p> <p>Light</p> <p>I know and can explain that we need light in order to see things and that dark is the absence of light</p> <p>I know and can explain that light is reflected from surfaces</p> <p>I know and can explain that light from the sun can be dangerous and that there are ways to protect their eyes</p> <p>I know and can explain that shadows are formed when the light from a light source is blocked by an opaque object</p> <p>I know how to find patterns in the way that the size of shadows change</p>		
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	<p>further questions with the support of others</p> <p>I know how to use Straightforward scientific evidence to answer questions or to support their findings</p> <p>I know how to record findings using simple scientific language, drawings, labelled diagrams and tables</p> <p>I know how to identify differences, similarities or changes related to simple scientific ideas and processes</p> <p>Evaluating</p> <p>I know how to use results to suggest improvements and raise further questions with the support of others</p> <p>Measurements</p> <p>I know how to use standard units appropriate for Year 3</p>				
<p>Year 4</p>	<p>Working Scientifically Scientific Attitudes</p> <p>I know how to draw simple conclusions and use some scientific language to write about what they have found out</p>	<p>Biology Animals Including Humans</p> <p>I know that living things can be grouped in a variety of ways</p>	<p>Chemistry States of Matter</p> <p>I know how to compare and group materials together, according to whether they are solids, liquids or gases</p>	<p>Physics Electricity</p> <p>I know how to identify common appliances that run on electricity</p>	

	<p>I know how to decide independently which types of scientific enquiry are likely to be the best ways of answering questions</p> <p>I know how to read and spell Y4 scientific vocabulary correctly and with confidence, using my growing word reading and spelling knowledge</p> <p>Planning</p> <p>I know how to ask relevant questions and decide independently which different types of scientific enquiries could be used to answer them</p> <p>I know how to set up simple practical enquiries, comparative and fair tests independently</p> <p>Observing and measuring during practical activities</p> <p>I know how to make systematic and careful observations and, where appropriate, take measurements, using standard units, a range of equipment safely, including</p>	<p>I know how to explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>I know how to recognise that environments can change and that this can sometimes pose dangers to living things</p>	<p>I know how to observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)</p> <p>I know and can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p>	<p>I know how to construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>I know how to 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</p> <p>I know and can explain that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit I know and can identify some common conductors and insulators, and associate metals with being good conductors</p> <p>Sound</p> <p>I know how to identify how sounds are made, associating some of them with something vibrating</p> <p>I know and can explain that vibrations from sounds travel through a medium to the ear</p> <p>I know how to find the correlation between the</p>	
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	<p>thermometers and data loggers</p> <p>I know how to gather, record and classify and present data in a variety of ways to help in answering questions</p> <p>Analysis</p> <p>I know how to report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>I know how to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions independently</p> <p>I know how to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>Evaluating</p> <p>I know how to use results to suggest improvements and raise further questions Independently</p>			<p>pitch of a sound and features of the object that produced it I know how to find the correlation between the volume of a sound and the strength of the vibrations that produced it recognise that sounds get fainter as the distance from the sound source increases</p>	
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	<p>Measurements</p> <p>I know how to use standard units appropriate for Year 4</p>				
Year 5	<p>Working Scientifically</p> <p>Scientific Attitudes</p> <p>I know how to answer scientific questions using different types of scientific enquiry</p> <p>I know how to read, spell and pronounce Y5 scientific vocabulary correctly</p> <p>Planning</p> <p>I know how to plan different types of scientific enquiries to answer questions, including recognising variables</p> <p>Observing and measuring during practical activities</p> <p>I know how to take measurements, using a range of scientific equipment safely, with increasing accuracy and precision, taking repeat readings where appropriate</p> <p>I know how to record data and results of increasing complexity using scientific</p>	<p>Biology</p> <p>Animals Including Humans</p> <p>I know and can describe the changes as humans develop to old age</p> <p>Living things and their habitats</p> <p>I know how to describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird I know how to describe the life process of reproduction in some plants and animals</p>	<p>Chemistry</p> <p>Properties and changes of materials</p> <p>I know how to compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets I know and can explain that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>I know how to use my knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>I know how to give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic I know and can demonstrate that dissolving,</p>	<p>Physics</p> <p>Forces</p> <p>I know and can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>I know and can explain the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>I know and can explain that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect</p> <p>Earth and Space</p> <p>I know how to describe the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <p>I know how to describe the movement of the Moon relative to the Earth I know how to describe the Sun,</p>	

	<p>diagrams and labels, scatter graphs, bar graphs</p> <p>Analysis</p> <p>I know how to report and present findings from enquiries, including conclusions and causal relationships, in oral and written forms such as displays and other presentations</p> <p>I know how to present data using a variety of scatter graphs and line graphs</p> <p>I know how to support or refute ideas or arguments using scientific evidence</p> <p>Evaluating</p> <p>I know how to use test results to make predictions to set up further comparative and fair tests</p> <p>I know how to discuss the degree of trust in results</p> <p>Measurements</p> <p>I know how to use standard units appropriate for Year 5</p>		<p>mixing and changes of state are reversible changes</p> <p>I know how to explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda</p>	<p>Earth and Moon as approximately spherical bodies</p> <p>I know how to use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</p>	
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<p>Year 6</p>	<p>Working Scientifically Scientific Attitudes</p> <p>I know how to answer scientific questions using different types of scientific enquiry in the most appropriate ways I know how to read, spell and pronounce Y6 scientific vocabulary correctly</p> <p>Planning</p> <p>I know how to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Observing and measuring during practical activities</p> <p>I know how to take measurements, using a range of scientific equipment safely, with accuracy and precision, taking repeat readings where appropriate I know how to record data and results of increasing complexity using classification keys, tables and line graphs</p>	<p>Biology Animals Including Humans</p> <p>I know how to identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood I know and can explain the impact of diet, exercise, drugs and lifestyle on the way their bodies function I know how to describe the ways in which nutrients and water are transported within animals, including humans</p> <p>Living things and their habitats</p> <p>I know how to describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro- organisms, plants and animals I know how to give reasons for classifying plants and animals based on specific characteristics</p> <p>Evolution and Inheritance</p> <p>I know and can explain that living things have changed</p>	<p>Physics Light</p> <p>I know and can explain that light appears to travel in straight lines I know how to 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</p> <p>I know and can explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes I know how to use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</p>		
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	<p>Analysis</p> <p>I know how to report and present findings from enquiries, including conclusions and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</p> <p>I know how to present data using a variety of graphs</p> <p>Evaluation</p> <p>I know how to use test results to make predictions to set up further comparative and fair tests</p> <p>I know how to discuss the degree of trust in results, and can begin to discuss improvements that could be made</p> <p>Measurements</p> <p>I know how to use standard units appropriate for Year 6</p>	<p>over time and that fossils provide information about living things that inhabited the Earth millions of years ago I know and can explain that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>I know how to identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</p>			
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Year 7	<p>Working Scientifically</p> <p>I know how to pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility</p> <p>I know and can explain that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review</p> <p>I know how to evaluate risks</p> <p>I know how to ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience</p> <p>I know how to make predictions using scientific knowledge and understanding</p>	<p>Biology</p> <p>Plants</p> <p>I know the equation for photosynthesis and using it to identify factors needed for plant growth</p> <p>Animals Including Humans</p> <p>I know the different parts of animal and plant cells</p> <p>I know the different kind of specialised cells, their functions and adaptations</p> <p>I know the differences between sexual and asexual reproduction</p> <p>I know how females get pregnant and the stages of embryo</p> <p>Living things and their habitats</p> <p>I know how to construct food chains and food webs to</p>	<p>Chemistry</p> <p>States of matter</p> <p>I know how the properties of solids, liquids and gases are determined by the particle model</p> <p>Properties and changes of materials</p> <p>I know how the properties of the different components of a mixture lead to different methods of separating them</p> <p>I know the difference between a chemical and physical change</p> <p>I know how to link knowledge of chemical and physical changes to reactions with acids and alkalis</p>	<p>Physics</p> <p>Forces</p> <p>I know the difference between balanced and unbalanced forces and how they influence the movement of an object</p> <p>Light</p> <p>I know how refraction of light can occur when light travels through different objects</p> <p>Electricity</p> <p>I know how to construct series and parallel circuits</p> <p>I know how to measure current and potential difference within a circuit</p> <p>Sound</p> <p>I know how to identify how sounds are made and can associate them with vibration</p>	

	<p>I know how to select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate</p> <p>I know how to use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety</p> <p>I know how to make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements</p> <p>I know how to apply mathematical concepts and calculate results</p> <p>I know how to present observations and data using appropriate methods, including tables and graphs</p> <p>I know how to interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions</p>	<p>investigate feeding relationships</p> <p>I know how to classify within vertebrate and invertebrate groups</p> <p>Evolution and inheritance</p> <p>I know the roles that genes and environments have on characteristics</p>		<p>I know that sounds travel through a medium such as air to the ear</p> <p>I know how to read the pattern of soundwaves</p>	
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	<p>I know how to present reasoned explanations, including explaining data in relation to predictions and hypotheses I know how to evaluate data, showing awareness of potential sources of random and systematic error</p> <p>I know how to identify further questions arising from their results</p> <p>I know how to understand and use SI units and IUPAC (International Union of Pure and Applied Chemistry) chemical nomenclature I know how to use and derive simple equations and carry out appropriate calculations</p> <p>I know how to undertake basic data analysis including simple statistical techniques</p>				
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