Woodborough Woods CofE Foundation School

Science Curriculum Booklet

Containing the key substantive and disciplinary knowledge

Our School Vision

Woodborough Woods is a school with a Christian foundation, which seeks to express its Christian character by serving families in the local community and by providing a Christian ethos where children and their families can feel valued. There is an opportunity to experience the meaning of the Christian faith in the welcome that is offered to all and in the relationships of love and respect that characterise the shared life of the school. Designed to be sequential, this curriculum enables pupils to build knowledge and skills by making links with previous learning; this is shown in our progression documents. By fostering an enjoyment of learning, our children are given the opportunity to develop as independent, resilient pupils who are equipped with the ability to use their knowledge and skills to make wise choices as they take their place in the world.

The school's direction stems from its Vision Statement: 'Grow Together' following Jesus' example to 'Love your neighbour as you love yourself' (Matthew 22:37-39) because through love for one another, we can build a strong learning community ensuring that everyone has the opportunity to flourish. It recognises the importance of the community it serves and seeks to build relationships based on kindness and respect. It will strive to be a place where Christian priorities and values inform every subject in the curriculum and are reflected in the day to day life of the school.

We believe that the children are the centre of all our work here and we strive to ensure our school is one with a happy and caring environment. We take pride in promoting the highest standards of conduct and achievement allowing children the security and confidence to reach their full potential.

As a Church of England Voluntary Aided school, our aim is to provide this secure environment, firmly rooted in Christian values. We believe that the education of children is a partnership, one between parents, teachers and governors all working together to provide the best interests for the children in our care.

Our vision

At Woodborough Woods, we are committed to ensuring that the provision and the teaching of science at our school equips children with scientific knowledge and skills as well as them being able to confidently and successfully undertake scientific activities and enquiry, both in the classroom and the world beyond. Our ultimate aim is to spark a child's natural interest and curiosity in the world around them.

Intent

Our curriculum has the following aims:

- to develop pupils' enjoyment and interest in science and an appreciation of its contribution to all aspects of everyday life
- to build on pupils' curiosity and sense of awe of the natural world
- to use a planned range of investigations and practical activities to give pupils a greater understanding of the concepts and knowledge of science
- to introduce pupils to the language and vocabulary of science
- to develop pupils' basic practical skills and their ability to make accurate and appropriate measurements
- to develop pupils' use of computing in their science studies.
- to extend the learning environment for our pupils via our environmental areas and the locality
- to promote a 'healthy lifestyle' in our pupils.

Features of effective science teaching and learning

At Woods Foundation, we believe these features demonstrate best practice in the teaching and learning of science. Whilst not every lesson may exhibit every feature, over the course of their learning in a science unit, all of the following features would be evident.

Pupils show independence and lead own learning by raising questions and thinking for themselves.
Pupils take initiative when carrying out own investigations, recording and evaluating investigations.
Opportunities for individual, paired and group work. All pupils have a role
Pupils show high levels of imagination, problem solving, understanding and knowledge using relevant scientific vocabulary.
Practical work involves skills from reading, writing, speaking and listening, and maths.
Pupils have a sense of passion, enthusiasm and commitment to learn more science and explore the world around them.
Builds on their prior knowledge, forges cross-curricular links and applies science learning to real-life experiences.
High expectations of all pupils operating as scientists so that pupils are fully engaged in written and practical work.
High expectations of all pupils using and applying their science skills and knowledge, and showing progression.
Demonstrate accurate subject knowledge; check pupils' understanding and show an ability to correct misconceptions, and extend higher attainers.
Plan and teach science using a range of methods including investigations, enquiries, practical work, fieldwork, research, using a range of resources, evaluation and discussion.

Working scientifically

At Woods Foundation, we are keen that working scientifically runs as a thread throughout children's learning. As a result, whilst children navigate all areas of their science units in both Key Stage 1 and 2, they should have opportunities to revisit, apply and gain new skills linked to working scientifically. These are organised into themes and their key concepts and skills are broken down progressively. As children progress in terms of their procedural and declarative knowledge they have regular opportunity to develop the key features of scientific thinking.

Science Long-Term Plan

Class	Half-Terms					
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
1	Materials		Seasonal Changes	Plants		Animals including Humans
2	Materials		Plants		Living Things inc. Habitats	Animals including Humans
3	Light		Rocks	Plants	Forces	Animals including Humans
4	Materials		Sound	Electricity	Living Things inc. Habitats	Animals including Humans
5	Materials	Forces	Earth and Space		Living Things inc. Habitats	Animals including Humans
6	Light		Evolution and Inheritance	Electricity	Living Things inc. Habitats	Animals including Humans

Progression in Knowledge

	R	1	2	3	4	5	6
Animals including humans	**To know how to talk about members of their immediate family and community.** Name and describe people who are familiar to them. **Recognise some environments that are different to the one they live in.**	**To know how to identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.** To know how to identify and name a variety of common animals that are carnivores, herbivores and omnivores. **To know how to describe and compare the structure of a variety of common animals (including pets)** To know how to identify, name and draw and label the basic parts of the human body and say which part is associated with each sense.	To know **that animals, including humans, have offspring that grow into adults.** To know the basic needs of animals, including humans, for survival (water, food and air). **To know the importance for humans of exercise, eating the right amount of types of food and hygiene.**	To know **that animals, including humans need the right amount of nutrition and they cannot make their own food - they get nutrition from what they eat.** To know humans and some animals have skeletons and muscles for support, protection and movement.	**To know the basic parts of the digestive system in humans.** To know the different types of teeth in humans and their simple functions. **To know how to construct and interpret a variety of food chains, identifying producers, predators and prey.**	**To know the changes that happens to humans as they develop to old age.**	**To know the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.** To know the impact of diet, exercise, drugs and lifestyle on the way their bodies function. **To know the ways in which nutrients and water are transported within animals, including humans**.
Living things and their habitats	Draw information from a simple map. **Explore the natural world around them.** Describe what they see, hear and feel whilst outside. **Recognise some environments that are different to**		To know the difference between things that were living, dead and never alive. **To know how different habitats provide for the needs of different plants and animals.** To know the names of plants and animals in their habitats		To know that living things can be grouped in a variety of ways. **To know how to use classification systems to help name living things in their local and wider environment.** To know that environments can change and this poses a danger to living things.	To know differences in life cycles of a mammal, amphibian, insect and a bird. **To know the process of reproduction in some animals and some plants.**	To know living things are classified into broad groups based on observable characteristics including microorganisms, plants and animals. To know that plants and animals can be classified based on specific characteristics.

	the one they live in.		including microhabitats. **To know how a simple food chain works.** To know a food chain tells us how animals obtain their food.				
Plants		To know how to identify and name common garden plants (including deciduous and evergreen trees). Identify and describe the basic structure of flowering plants and trees.	To know how seeds and bulbs grow into plants. **To know that plants need water light and a suitable temperature to stay healthy.**	To know the functions of different parts of plants: root/stem, leaves, and flowers. **To know the requirements of plants vary from plant to plant.** **To know how water is transported within plants.** To know the meanings of pollination, seed formation and seed dispersal.			
Electricity					To know some common appliances that run on electricity. **To know how to construct a simple series electrical circuit.** **To know the components that are used to make a simple series circuit.** **To know whether or not a lamp will light up in a series circuit and to give reasons.** To know how a switch opens and closes a circuit. **To know some common conductors and insulators and know that metal is a good conductor.**		To know that brightness of a bulb or volume of a buzzer increases with the number and voltage of cells used in a circuit. **To know reasons for variations in how components function including the brightness of bulbs and the loudness of buzzers and position of on/off switches.** To know how to use symbols when representing a simple circuit in a diagram.

Forces	Explore the natural world around them. Describe what they see, feel and hear when outside.			**To know that objects move differently on different types of surfaces.** To know that some forces need contact between two objects but magnetic forces act at a distance. **To know that magnets attract or repel each other and attract some materials but not others.** To 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. **To know that magnets have two poles.**		To know unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. **To know the effects of air resistance, water resistance and friction, that act between moving surfaces.** To know some mechanisms, including levers, pulleys and gears allow a smaller force to have a greater effect.	
Materials	Explore the natural world around them. **Describe what they see, hear and see whilst outside.**	**To know how to distinguish between and object and the material from which it is made.** To know how to identify and name a variety of everyday materials: wood, metal, plastic, glass, brick, rock, paper and cardboard. **To know how to describe the simple physical properties**	To know that certain materials are better suited to making certain objects- for example a wooden spoon is better for stirring with. To know that the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.		To know that materials can be grouped together, according to whether they are solids, liquids or gases **To know that some materials change state when they are heated or cooled, and to know the temperature at which this happens in degrees Celsius (⊠C)** To know the part played by evaporation	To know how to group together everyday materials on the basis of properties (including their hardness, solubility, transparency, conductivity: electrical and thermal and response to magnets. **To know that some materials will dissolve to form a solution and describe how to recover a substance from a solution.**	

		of a variety of everyday materials. To know how to compare and group together a variety of everyday material on the basis of their simple physical properties.			and condensation in the water cycle. To know that the rate of evaporation is associated with temperature	To know that some solids, liquids and gases can be separated e.g. by sieving, filtering or evaporating. **To know how to giive reasons based on evidence from comparative fair tests, for the particular uses of everyday materials, including metals, wood and plastic.** To know that dissolving, mixing and changes of state are reversible changes. **To know that some changes result in the forming of new materials and this is usually not reversible (burning, acid and bicarbonate of soda).**	
Light	Describe what they hear, see and feel when outside.			**To know that we need light to see things and dark is the absence of light.** **To know that light is reflected from surfaces.** To know light from the sun can be dangerous and that there are ways to protect our eyes. **To know shadows are formed when the light from a light source is blocked by an opaque object.** To know that there are patterns in the			To know that light appears to travel in straight lines. **To know that because light travels in straight lines to objects are seen because they give out or reflect light into the eye.** To know that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. **To know how to explain that shadows have the same shape**

				way that the size of shadows change.			**as the object that casts them.**
Evolution and Inheritance							To know that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. **To know living things produce offspring of the same kind, but offspring vary and are not identical to their parents.** To know how animal and plants are adapted to suit their environment in different ways and that adaptation might lead to evolution.
Sound	Describe what they hear, see and feel when outside.				**To know that sounds are made by vibrations.** To know that vibrations from sounds travel though a medium to the ear. **To know the relationship between the volume of a sound and the strength of vibrations that produced it.** To know the relationship between the pitch of a sound and features of the object that produced it. **To know sound gets fainter as the distance from the sound source increases**		

Earth and Space	Explore the natural world around them. **Describe what they see, hear and see whilst outside.**					To know the movement of the Earth and other planets relative to the sun in the solar system. **To know how the movement of the moon relates to the Earth.** To know that the sun, Earth and Moon are approximately spherical bodies. **To know the Earth's rotation explains day and night and the apparent movement of the sun across the sky.**	
Seasonal Changes	Explore the natural world around them. **Describe what they see, hear and see whilst outside.** Understand the effect of changing seasons on the natural world around them.	To know different changes across the four seasons. **To know what weather is associated with the seasons and how day length varies.**					
Rocks and soils				**To know how to compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.** To know to use simple terms to describe how fossils are formed when things that have lived are trapped within rock.			

				To know that soils are made from rocks and organic matter.			

Progression in Skills

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Questioning and enquiry planning.	Ask simple questions about the world around us. Begin to recognise that they can be answered in different ways	Ask questions about the world around us. Recognise that they can be answered in different ways.	Ask some relevant questions and use different types of scientific enquiries to answer them. Begin to explore everyday phenomena and the relationships between living things and familiar environments. Begin to develop their ideas about functions, relationships and interactions. Begin to raise their own questions about the world around them. Begin to make some decisions about which types of enquiry will be the best way of answering questions	Ask relevant questions and use different types of scientific enquiries to answer them. Explore everyday phenomena and the relationships between living things and familiar environments. Begin to develop their ideas about functions, relationships and interactions. Raise their own questions about the world around them. Make some decisions about which types of enquiry will be the best way of answering questions.	Begin to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Begin to explore and talk about ideas, ask their own questions about scientific phenomena, analyse functions, relationships and interactions more systematically. Begin to recognise some more abstract ideas and begin to recognise how these ideas help them to understand how the world operates. Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Explore and talk about ideas, ask their own questions about scientific phenomena, analyse functions, relationships and interactions more systematically. Recognise more abstract ideas and recognise how these ideas help them to understand how the world operates. Recognise scientific ideas change and scientific ideas change and develop over time. Select the most appropriate ways to answer science questions using

					Begin to select the most appropriate ways to answer science questions using different types of scientific enquiry Explore and talk about ideas, ask their own questions about scientific phenomena, analyse functions, relationships and interactions more systematically. Begin to recognise more abstract ideas and begin to recognise how these ideas help them to understand how the world operates. Begin to recognise that scientific ideas and knowledge change over time.	different types of scientific enquiry. Select the most appropriate ways to answer science questions using different types of scientific enquiry.
Observing and measuring **Pattern seeking**	Begin to observe closely, using simple equipment.	Observe closely, using simple equipment.	Begin to make systematic and careful observations and, where appropriate,	Make systematic and careful observations and, where appropriate, take accurate	Begin to take measurements, using a range of scientific equipment, with	Take measurements, using a range of scientific equipment, with

	Use simple observations and ideas to suggest answers to questions. To observe simple changes over time and, with guidance, begin to notice patterns and relationships. To say what I am looking for and what I am measuring.	Use observations and ideas to suggest answers to questions. To observe changes over time and, with guidance, begin to notice patterns and relationships. To say what I am looking for and what I am measuring.	take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them.	measurements using standard units, using a range of equipment, including thermometers and data loggers. Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them.	increasing accuracy and precision, taking repeat readings where appropriate. Begin to identify patterns that might be found in the natural environment. Begin to make their own decisions about what observations to make, what measurements to use and how long to make them for and whether to repeat them. Choose the most appropriate equipment and explain how to use it accurately. Begin to interpret data and find patterns. Select equipment on my own. Can make a set of observations and say what the interval and range	increasing accuracy and precision, taking repeat readings where appropriate. Identify patterns that might be found in the natural environment. Make their own decisions about what observations to make, what measurements to use and how long to make them for and whether to repeat them. Choose the most appropriate equipment and explain how to use it accurately. Can interpret data and find patterns. Select equipment on my own. Can make a set of observations and say what the interval and range are. Accurate and precise measurements - N, g, kg, mm, cm, mins,

					are. Begin to take accurate and precise measurements - N, g, kg, mm, cm, mins, seconds, cm⊠V, km/h, m per sec, m/sec Graphs - pie, line	seconds, cm⊠V, km/h, m per sec, m/sec Graphs - pie, line, bar.
	To know how to use simple equipment safely. Use simple measurements and equipment with support (eg hand lenses and egg timers) Begin to progress from non-standard units, reading cm, m, cl, l, ⊠C	To know how to use simple equipment safely. Use simple measurements and equipment with increasing independence (eg hand lenses and egg timers) Begin to progress from nonstandard units, reading mm, cm, m, ml, l, ⊠C	Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used. Learn to use some new equipment appropriately (eg data loggers). Begin to see a pattern in my results. Begin to choose from a selection of equipment. Begin to observe and measure accurately using standard units including time in minutes and seconds.	Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used. Learn to use new equipment appropriately (eg data loggers). Can see a pattern in my results. Can choose from a selection of equipment. Can observe and measure accurately using standard units including time in minutes and seconds.		
Investigating	Perform simple tests with support.	Perform simple tests.	Set up some practical enquiries	Set up some more complex practical enquiries and	Begin to use test results to make predictions to set	Use test results to make predictions to set up further

	To begin to discuss my ideas about how to find things out. To begin to say what happened in my investigation.	To discuss my ideas about how to find things out. To say what happened in my investigation	and comparative and fair tests. Begin to recognise when a simple fair test is necessary and help to decide how to set it up. Begin to think of more than one variable factor	comparative and fair tests. Recognise when a simple fair test is necessary and help to decide how to set it up. Can think of more than one variable factor.	up further comparative and fair tests. Begin to recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why. Begin to suggest improvements to my method and give reasons. Begin to decide when it is appropriate to do a fair test.	comparative and fair tests. Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why. Suggest improvements to my method and give reasons. Decide when it is appropriate to do a fair test.
Recording and reporting findings	Gather and record data with some adult support, to help in answering questions. Begin to record simple data. Begin to record and communicate their findings in a range of ways. Can show my results in a simple table that my	Gather and record data to help in answering questions. Record simple data. Record and communicate their findings in a range of ways. Can show my results in a table that my teacher has provided.	Gather, record, and begin to classify and present data in a variety of ways to help in answering questions. Begin to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. Begin to report on findings from	Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. Report on findings from enquiries, including oral and written	Begin to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs. Begin to report and present findings from enquiries. Begin to decide how to record data from a choice of familiar approaches.	Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs. Report and present findings from enquiries. Decide how to record data from a choice of familiar approaches.

	teacher has provided		enquiries, including oral and written explanations, displays or presentations of results and conclusions. Begin to use notes, simple tables and standard units and help to decide how to record and analyse their data. Begin to record results in tables and bar charts	explanations, displays or presentations of results and conclusions. Use notes, simple tables and standard units and help to decide how to record and analyse their data. Can record results in tables and bar charts.	Begin to choose how best to present data.	Can choose how best to present data.
Identifying, grouping and classifying.	Identify and classify with some support. To begin to observe and identify, compare and describe. To begin to use simple features to compare objects, materials and living things and, with help, decide how to sort and group them.	Identify and classify. Observe and identify, compare and describe. Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them.	Begin to identify differences, similarities or changes related to simple scientific ideas and processes. Begin to talk about criteria for grouping, sorting and classifying and use simple keys. Begin to compare and group according to behaviour or properties, based on testing	Identify differences, similarities or changes related to simple scientific ideas and processes. Talk about criteria for grouping, sorting and classifying and use simple keys. Compare and group according to behaviour or properties, based on testing.	Begin to use and develop keys and other information records to identify, classify and describe living things and materials.	Use and develop keys and other information records to identify, classify and describe living things and materials.
Research	To begin to use simple secondary	Use simple secondary sources	Begin to recognise when and how	Begin to recognise when and how	Begin to recognise which secondary	Recognise which secondary sources

	sources to find answers. To begin to find information to help me from books and computers with help.	to find answers. Can find information to help me from books and computers with help.	secondary sources might help to answer questions that cannot be answered through practical investigations.	secondary sources might help to answer questions that cannot be answered through practical investigations	sources will be most useful to research their ideas.	will be most useful to research their ideas.
Conclusions	Begin to talk about what they have found out and how they found it out. To begin to say what happened in my investigation. To begin to say whether I was surprised at the results or not. To begin to say what I would change about my investigation.	Talk about what they have found out and how they found it out. To say what happened in my investigation. To say whether I was surprised at the results or not. To say what I would change about my investigation.	I am beginning to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Begin to use straightforward scientific evidence to answer questions or to support their findings with help, am beginning to look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions.	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Use straightforward scientific evidence to answer questions or to support their findings. With help, look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions. With support, identify new questions arising from the data, make new predictions and find ways of	Begin to report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. Begin to identify scientific evidence that has been used to support or refute ideas or arguments. Begin to draw conclusions based on their data and observations, use evidence to justify their ideas, use scientific knowledge and understanding to explain their findings.	Identify scientific evidence that has been used to support or refute ideas or arguments. Draw conclusions based on their data and observations, use evidence to justify their ideas, use scientific knowledge and understanding to explain their findings. Use test results to make predictions to set up further comparatives and fair tests. Look for different causal relationships in their data and identify evidence that refutes or supports their ideas. Use their results to identify when

				improving what they have already done. Can see a pattern in my results. Can say what I found out, linking cause and effect. Can say how I could make it better. Can answer questions from what I have found out.	Begin to use test results to make predictions to set up further comparatives and fair tests. Begin to look for different causal relationships in their data and identify evidence that refutes or supports their ideas. Use their results to identify when further tests and observations are needed. Begin to separate opinion from fact. Begin to draw conclusions and identify scientific evidence. Can use simple models. Know which evidence proves a scientific point. Begin to use test results to make predictions to set up further comparative and fair tests.	further tests and observations are needed. Separate opinion from fact. Can draw conclusions and identify scientific evidence. Can use simple models. Know which evidence proves a scientific point. Use test results to make predictions to set up further comparative and fair tests.

Vocabulary	Use some simple scientific language . Begin to use some science words. Use comparative language with support.	Use simple scientific language and some science words. Use comparative language - bigger, faster etc	Begin to use some scientific language to talk and, later, write about what they have found out. Begin to use relevant scientific language. Begin to use comparative and superlative language	Use some scientific language to talk and, later, write about what they have found out. Use relevant scientific language. Use comparative and superlative language.	Am beginning to read, spell and pronounce scientific vocabulary correctly. scientific language and illustrations. discuss, communicate and justify scientific ideas. Am beginning to confidently use a range of scientific vocabulary. Am beginning to use conventions such as trend, rogue result, support prediction and -er word generalisation. Am beginning to use scientific ideas when describing simple processes Am beginning to use the correct science vocabulary.	Read, spell and pronounce scientific vocabulary correctly. Use relevant scientific language and read, spell and pronounce scientific vocabulary correctly. Use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas. Can confidently use a range of scientific vocabulary. Can use conventions such as trend, rogue result, support prediction and -er word generalisation. Can use scientific ideas when describing simple processes. Can use the correct science vocabulary

Our science overview by year group

Science Overview

Year 1	Scientific Units: Materials
Prior Learning:	
National Curriculum Aims: Distinguish between and object and the material from which it is made. Identify and name a variety of everyday materials: wood, metal, plastic, glass, brick, rock, paper and cardboard. Describe the simple physical properties of a variety of everyday materials. Compare and group together a variety of everyday material on the basis of their simple physical properties.	
Learning overview:	
Sticky Knowledge	**Scientific Skills:**
All objects are made of one or more material. Some objects can be made from different materials e.g. plastic, metal or wooden spoons. Materials can be described by their properties e.g. shiny, stretchy, rough. Some materials (e.g. plastic) can be in different forms with different properties. *Unit to include an investigation that covers the SS e.g. which material is the most waterproof, strongest etc.	To use simple features to compare objects and material and with help, decide how to sort them. Perform simple tests with support. To begin to discuss my ideas about how I can find things out. To begin to say what happened during my investigation. Gather and record simple data with adult support. To begin to say whether I was surprised by the results or not. To begin to discuss my ideas about how to find things out. To begin to say what I would change about an investigation. Can show my results in a simple table that the teacher has provided. Use simple scientific language.
Vocabulary	
Object, **material**, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card, rubber, wool, clay, hard, soft, **stretchy**, **stiff**, **bendy**, **floppy**, **waterproof**, **absorbent**, breaks/tears, rough, smooth, shiny, **dull**, **see-through**, **not see-through**, **manufactured**, **natural**	
Progression document statements	
To know how to distinguish between and object and the material from which it is made. To know how to identify and name a variety of everyday materials: wood, metal, plastic, glass, brick, rock, paper and cardboard. **To know how to describe the simple physical properties of a variety of everyday materials.** To know how to compare and group together a variety of everyday material on the basis of their simple physical properties.	

Year 1	Scientific Units: Seasonal Changes
Prior Learning:	
National Curriculum Aims: Observe changes across the four seasons. · Observe and describe weather associated with the seasons and how day length varies.	
Learning overview:	
Sticky Knowledge	**Scientific Skills:**
In the UK, the day length is longest at mid-summer (about 16 hours) and gets shorter each day until mid-winter (about 8 hours) before getting longer again. The weather also changes with the seasons. In the UK, it is usually colder and rainier in winter, and hotter and dryer in the summer. The change in weather causes many other changes. Some examples are: numbers of minibeasts found outside; seed and plant growth;	Ask simple questions about the world around us and begin to recognise that questions can be answered in different ways. Use simple observations to suggest answers to questions. To observe simple changes over time and with guidance.

leaves on trees; and type of clothes worn by people. *This unit could include comparing minibeasts during two different seasons for example and collecting rain during two different seasons.	Begin to use non-standard units - degrees to talk about temperature and ml to talk about rain. Begin to communicate their findings in a range of ways. To say what I am looking for and what I am measuring. Begin to observe closely using simple equipment such as hand lenses with support and to know how to do this safely. Use simple scientific language. Use comparative language with support.
Vocabulary	
weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length	
Progression document statements	
To know different changes across the four seasons. **To know what weather is associated with the seasons and how day length varies.**	
Year 1	**Scientific Units: Plants**
Prior Learning:	
National Curriculum Aims: Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants, including trees.	
Learning overview:	
Sticky Knowledge	**Scientific Skills:**
Growing locally, there will be a vast array of plants which all have specific names. These can be identified by looking at the key characteristics of the plant. Plants have common parts, but they vary between the different types of plants. Some trees keep their leaves all year while other trees drop their leaves during autumn and grow them again during spring	Identify and classify with some support. To begin to observe and identify, compare and describe. Begin to talk about what they have found out and how they found it out. Use simple scientific language.
Vocabulary	
Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Names of trees in the local area Names of garden and wild flowering plants in the local area	
Progression document statements	
To know how to identify and name common garden plants (including deciduous and evergreen trees). To know how to identify and describe the basic structure of flowering plants and trees.	
Year 1	**Scientific Units: Animals inc. humans**
Prior Learning:	
National Curriculum Aims: Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).	

Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	
Learning overview:	
Sticky Knowledge	**Scientific Skills:**
Animals vary in many ways having different structures e.g. wings, tails, ears etc. Animals also have different skin coverings e.g. scales, feathers, hair. These key features can be used to identify them. Animals eat certain things - some eat other animals, some eat plants, some eat both plants and animals. Humans have five senses - sight, touch, taste, hearing and smelling. These senses are linked to particular parts of the body	To begin to use simple secondary sources to find answers. To begin to find information to help me from, books and computers with help. To begin to use simple features to compare living things, with help, and decide how to sort and group them.
Vocabulary	
head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group, parts of the body including those within the school's RSE policy, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ear, tongue	
Progression document statements	
To know how to identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. To know how to identify and name a variety of common animals that are carnivores, herbivores and omnivores. **To know how to describe and compare the structure of a variety of common animals (including pets)** To know how to identify, name and draw and label the basic parts of the human body and say which part is associated with each sense.	

Science Overview

Year 2 — Scientific Units: Materials

Prior Learning:

Distinguish between an object and the material from which it is made. (Y1 - Everyday materials)

Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials)

Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials)

Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials)

National Curriculum Aims:

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.

Learning overview:

Sticky Knowledge	Scientific Skills:
All objects are made of one or more materials that are chosen specifically because they have suitable properties for the task. For example, a water bottle is made of plastic because it is transparent allowing you to see the drink inside and waterproof so that it holds the water. Objects made of some materials can be changed in shape by bending, stretching, squashing and twisting. For example, clay can be shaped by squashing, stretching, rolling, pressing etc. This can be a property of the material or depend on how the material has been processed e.g. thickness.	Use simple features to compare objects and materials and decide how to group them. To use simple scientific language and some science words. To perform simple tests.
Vocabulary	

Names of materials - wood, metal, plastic, glass, brick, rock, paper, cardboard Properties of materials - as for Year 1 plus opaque, transparent and translucent, reflective, nonreflective, flexible, rigid Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching

Progression document statements

To know that certain materials are better suited to making certain objects- for example a wooden spoon is better for stirring with.

To know that the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Year 2 — Scientific Units: Plants

Prior Learning:

Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants)

Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants)

National Curriculum Aims:

Observe and describe how seeds and bulbs grow into mature plants.

Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy

Learning overview:

Sticky Knowledge	Scientific Skills:

Plants may grow from either seeds or bulbs. These then germinate and grow into seedlings which then continue to grow into mature plants. Mature plants may have flowers which then develop into seeds, berries, fruits etc. Seeds and bulbs need to be planted outside at particular times of year and they will germinate and grow at different rates. Some plants are better suited to growing in full sun and some grow better in partial or full shade. Plants also need different amounts of water and space to grow well and stay healthy.	Observe and identify, compare and describe. Talk about what they have found out and how they found it out. To say what happened in my investigation. To say whether I was surprised by the results or not. To say what I would change about my investigation. Record simple data and communicate findings in a range of ways. Can show my results in a table with support. To use simple scientific language and some science words. To use simple equipment safely. To use simple measurements - mm and cm. To say what I am looking for and what I am measuring. To observe changes over time and to begin to notice relationships and patterns.
Vocabulary	
light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling	
Progression document statements	
To know how seeds and bulbs grow into plants. **To know that plants need water light and a suitable temperature to stay healthy.**	
Year 2	**Scientific Units: Living things inc. habitats.**
Prior Learning: Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants) Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants) Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans) Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals including humans) Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 - Animals, including humans) Observe changes across the four seasons. (Y1 - Seasonal changes)	
National Curriculum Aims: Explore and compare the differences between things that are living, dead, and things that have never been alive. Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. Identify and name a variety of plants and animals in their habitats, including micro-habitats.	

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	
Learning overview:	
Sticky Knowledge	**Scientific Skills:**
All objects are either living, dead or have never been alive. Living things are plants (including seeds) and animals. Dead things include dead animals and plants and parts of plants and animals that are no longer attached e.g. leaves and twigs, shells, fur, hair and feathers. Objects made of rock, metal and plastic have never been alive. Animals and plants live in a habitat to which they are suited. The habitat provides the basic needs of the animals and plants - shelter, food and water. Within a habitat there are different micro-habitats e.g. in a woodland - in the leaf litter, on the bark of trees, on the leaves. The way that animals obtain their food from plants and other animals can be shown in a food chain.	To discuss my ideas about how to find things out. Use simple secondary sources to find out answers. Can find information to help me from books and computers with help. To use simple scientific language and some science words. To ask questions about the world around us. Use observations and ideas to suggest questions and answers.
Vocabulary	
living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, names of local habitats (e.g. pond, woodland etc.), names of micro-habitats (e.g. under logs, in bushes etc.), conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold, names of living things in the habitats and microhabitats studied	
Progression document statements	
To know the difference between things that were living, dead and never alive. **To know how different habitats provide for the needs of different plants and animals.** To know the names of plants and animals in their habitats including microhabitats. **To know how a simple food chain works.** To know a food chain tells us how animals obtain their food.	
Year 2	**Scientific Units: Animals inc. humans**
Prior Learning: Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals, including humans) Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans)	
National Curriculum Aims: Notice that animals, including humans, have offspring which grow into adults. Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	
Learning overview:	
Sticky Knowledge	**Scientific Skills:**
Animals, including humans, have offspring which grow into adults. In humans and some animals, these offspring will be young, such as babies or kittens, that grow into adults. In other animals, such as chickens or insects, there may be eggs laid that hatch to young or other stages which then grow to adults.	To use simple scientific language and some science words. To observe changes over time and to begin to notice relationships and patterns.

The young of some animals do not look like their parents e.g. tadpoles. All animals, including humans, have the basic needs of feeding, drinking and breathing that must be satisfied in order to survive. To grow into healthy adults, we need the right amounts and types of food and exercise. Good hygiene is also important in preventing infections and illnesses	
Vocabulary	
offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/hen, kitten/cat, caterpillar/butterfly), survive, survival, water food, air, exercise, heartbeat, breathing, hygiene, germs, disease, food types (e.g. meat, fish, vegetables, bread, rice, pasta, dairy)	
Progression document statements	
To know **that animals, including humans, have offspring that grow into adults.** To know the basic needs of animals, including humans, for survival (water, food and air). **To know the importance for humans of exercise, eating the right amount of types of food and hygiene.**	

Science Overview

Year 3 — Scientific Units: Light

Prior Learning:
Explore how things work. (Nursery - Light)

Talk about the differences in materials and changes they notice. (Nursery - Light)

Describe what they see, hear and feel whilst outside. (Reception - Light)

Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans)

Describe the simple physical properties of a variety of everyday materials. (Y1 - Materials)

National Curriculum Aims:
Recognise that they need light in order to see things, and that dark is the absence of light. · Notice that light is reflected from surfaces.
Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. · Recognise that shadows are formed when the light from a light source is blocked by an opaque object. Find patterns in the way that the size of shadows change.

Learning overview:

Sticky Knowledge	Scientific Skills:
We see objects because our eyes can sense light. Dark is the absence of light. Some objects, for example, the sun, light bulbs and candles are sources of light. Objects are easier to see if there is more light. Some surfaces reflect light. Objects are easier to see when there is less light if they are reflective. The light from the sun can damage our eyes and therefore we should not look directly at the sun and can protect our eyes by wearing sunglasses or sunhats in bright light. Shadows are formed on a surface when an opaque or translucent object is between a light source and the surface and blocks some of the light. The size of the shadow depends on the position of the source, object and surface.	Ask relevant questions and use scientific enquiry to answer them. Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them e.g. length of shadow and time of day. Begin to use some scientific language to talk and write about what they have found out.
Vocabulary	
light, light source, Sun, sunlight, dangerous, shadow, reflect	

Progression document statements

To know that we need light to see things and dark is the absence of light.
To know that light is reflected from surfaces.
To know light from the sun can be dangerous and that there are ways to protect our eyes.
To know shadows are formed when the light from a light source is blocked by an opaque object.
To know that there are patterns in the way that the size of shadows change.

Year 3 — Scientific Units: Rocks

Prior Learning:
Distinguish between an object and the material from which it is made. (Y1 - Everyday materials)

Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials)

Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials)
Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials)

Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials)

National Curriculum Aims:
Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.
Describe in simple terms how fossils are formed when things that have lived are trapped within rock.
Recognise that soils are made from rocks and organic matter.

Learning overview:

Sticky Knowledge	Scientific Skills:
Rock is a naturally occurring material. There are different types of rock e.g. sandstone, limestone, slate etc. which have different properties. Rocks can be hard or soft. They have different sizes of grain or crystal. They may absorb water. Rocks can be different shapes and sizes (stones, pebbles, boulders). Soils are made up of pieces of ground down rock which may be mixed with plant and animal material (organic matter). The type of rock, size of rock pieces and the amount of organic matter affect the property of the soil. Some rocks contain fossils. Fossils were formed millions of years ago. When plants and animals died, they fell to the seabed. They became covered and squashed by other material. Over time the dissolving animal and plant matter is replaced by minerals from the wate	Begin to talk about criteria for grouping, sorting and classifying and use simple keys. Begin to compare and group according to properties based on testing. Begin to recognise when and how secondary sources might help to answer questions that cannot be answered through practical investigations (for example fossil formation).
Vocabulary	
rock, stone, pebble, boulder, grain, crystals, layers, texture, absorb water, fossil, bone, flesh, minerals, marble, chalk, granite, sandstone, slate, soil, types of soil (e.g. peaty, sandy, chalk, clay)	

Progression document statements

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

Year 3 — Scientific Units: Plants

Prior Learning:
Observe and describe how seeds and bulbs grow into mature plants. (Y2 - Plants)

Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. (Y2 - Plants)

National Curriculum Aims:
Identify and describe the functions of different parts of flowering plants: roots; stem/trunk; leaves; and flowers.
Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. Investigate the way in which water is transported within plants.
Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

Learning overview:

Sticky Knowledge	Scientific Skills:
Many plants, but not all, have roots, stems/trunks, leaves and flowers/blossom. The roots absorb water and nutrients from the soil and anchor the plant in place. The stem transports water and nutrients/minerals around the plant and holds the leaves and flowers up in the air to enhance photosynthesis, pollination and seed dispersal. The	Set up some simple practical enquiries. Begin to use scientific language, drawings and labelled diagrams. I am beginning to say what I found out linking cause and effect.

leaves use sunlight and water to produce the plant's food. Some plants produce flowers which enable the plant to reproduce. Pollen, which is produced by the male part of the flower, is transferred to the female part of other flowers (pollination). This forms seeds, sometimes contained in berries or fruits which are then dispersed in different ways. Different plants require different conditions for germination and growth.	
Vocabulary	
photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil, absorb, transport	
Progression document statements	
To know the functions of different parts of plants: root/stem, leaves, and flowers. **To know the requirements of plants vary from plant to plant.** **To know how water is transported within plants.** To know the meanings of pollination, seed formation and seed dispersal.	
Year 3	**Scientific Units: Forces**
Prior Learning: Explore how things work. (Nursery - Forces) Explore and talk about different forces they can feel. (Nursery - Forces) Talk about the differences between materials and changes they notice. (Nursery - Forces) Explore the natural world around them. (Reception - Forces) Describe what they see, hear and feel whilst outside. (Reception - Forces) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)	
National Curriculum Aims: Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Observe how magnets attract or repel each other and attract some materials and not others. Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet and identify some magnetic materials. Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing.	
Learning overview:	
Sticky Knowledge	**Scientific Skills:**
A force is a push or a pull. When an object moves on a surface, the texture of the surface and the object affect how it moves. A magnet attracts magnetic material. Iron and nickel and other materials containing these, e.g. stainless steel, are magnetic. The strongest parts of a magnet are the poles. Magnets have two poles - a north pole and a south pole. If two like poles, e.g. two north poles, are brought together they will push away from each other - repel. If two unlike poles, e.g. a north and south, are brought together they will pull together - attract The magnet does not need to touch the object that it attracts.	Begin to make some decisions about which types of enquiry will be the best way to answer questions. Begin to make careful and systematic observations and accurate measurements using standard units. Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that should be used. Begin to see a pattern in my results. Begin to choose from a selection of equipment. Begin to observe and measure accurately using standard units. Set up a fair test and help to decide how to set it up. Begin to think of more than one variable factor.

	Use bar charts and tables to record results. I am beginning to use results to draw simple conclusions, make predictions, suggest improvements and raise further questions. I am beginning to use straightforward evidence to answer questions. With support, I am beginning to identify new questions arising from the data and find ways to improve what I have already done.
Vocabulary	
Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole	
Progression document statements	
To know that objects move differently on different types of surfaces. To know that some forces need contact between two objects but magnetic forces act at a distance. **To know that magnets attract or repel each other and attract some materials but not others.** To 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. **To know that magnets have two poles.**	
Year 3	**Scientific Units: Animals inc. humans**
Prior Learning: Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals, including humans) Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals, including humans) Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 - Animals, including humans) Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). (Y2 - Animals, including humans) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - Animals, including humans)	
National Curriculum Aims: Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food - they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	
Learning overview:	
Sticky Knowledge	**Scientific Skills:**
Animals, unlike plants which can make their own food, need to eat in order to get the nutrients they need. Food contains a range of different nutrients - carbohydrates (including sugars), protein, vitamins, minerals, fats, sugars, water - and fibre that are needed by the body to stay healthy. A piece of food will often provide a range of nutrients. Humans, and some other animals, have skeletons and muscles which help them move and provide protection and support.	Begin to explore the relationships between living things and familiar environments. Begin to raise own questions about the world around them. Begin to use comparative and superlative language. Begin to develop ideas about functions, relationships and interactions.
Vocabulary	
Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine	

Progression document statements
To know that animals, including humans need the right amount of nutrition and they cannot make their own food - they get nutrition from what they eat. To know humans and some animals have skeletons and muscles for support, protection and movement.

Science Overview

Year 4	Scientific Unit: Materials (states of matter)

Prior Learning:
Distinguish between an object and the material from which it is made. (Y1 - Everyday materials)

Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials)

Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials)

Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials)

Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials)

Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)

National Curriculum Aims:
Compare and group materials together, according to whether they are solids, liquids or gases.
Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C).
Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

Learning overview:

Sticky Knowledge	Scientific Skills:
A solid keeps its shape and has a fixed volume. A liquid has a fixed volume but changes in shape to fit the container. A liquid can be poured and keeps a level, horizontal surface. A gas fills all available space; it has no fixed shape or volume. Granular and powdery solids like sand can be confused with liquids because they can be poured. Melting is a state change from solid to liquid. Freezing is a state change from liquid to solid. The freezing point of water is 0oC. Boiling is a change of state from liquid to gas that happens when a liquid is heated to a specific temperature and bubbles of the gas can be seen in the liquid. Water boils when it is heated to 100oC. Evaporation is the same state change as boiling (liquid to gas), but it happens slowly at lower temperatures and only at the surface of the liquid. Evaporation happens more quickly if the temperature is higher, the liquid is spread out or it is windy. Condensation is the change back from a gas to a liquid caused by cooling. Water at the surface of seas, rivers etc. evaporates into water vapour (a gas). This rises, cools and condenses back into a liquid forming clouds. When too much water has condensed, the water droplets in the cloud get too heavy and fall back down as rain, snow, sleet	Ask relevant questions and use different types of scientific enquires to answer them. Take accurate measurements using standard units ml and use thermometers. Look for naturally occurring patterns and relationships and decide what data to collect to identify them. Make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used. Learn how to use new equipment appropriately e.g. data loggers. Can observe and measure accurately using standard units inc. time (minutes and seconds). Set up practical enquiries. To talk about comparative and fair tests - recognise when a simple test is fair and decide how to set it up. Can think of more than one variable factor. Record results in a bar charts and tables that I have drawn myself with some guidance.

etc. and drain back into rivers etc. This is known as precipitation. This is the water cycle	
Vocabulary	
solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle	
Progression document statements	
To know that materials can be grouped together, according to whether they are solids, liquids or gases **To know that some materials change state when they are heated or cooled, and to know the temperature at which this happens in degrees Celsius (⍰C)** To know the part played by evaporation and condensation in the water cycle. To know that the rate of evaporation is associated with temperature	

Year 4	**Scientific Unit: Sound**
Prior Learning: Explore how things work. (Nursery - Sound) Describe what they see, hear and feel whilst outside. (Reception - Sound) Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans)	
National Curriculum Aims: Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (⍰C). Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	
Learning overview:	
Sticky Knowledge	**Scientific Skills:**
A sound produces vibrations which travel through a medium from the source to our ears. Different mediums such as solids, liquids and gases can carry sound, but sound cannot travel through a vacuum (an area empty of matter). The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound. The loudness (volume) of the sound depends on the strength (size) of vibrations. Sounds decrease in volume as you move away from the source. A sound insulator is a material which blocks sound effectively. Pitch is the highness or lowness of a sound and is affected by features of objects producing the sounds.	Make some decisions about which types of enquiry will be the best way of answering questions. Make systematic and careful observations (e.g. what happens to sound the further away we get from the source of the sound). Learn to use new equipment appropriately- sound recorders. To see and explain a pattern in my results.
Vocabulary	
Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation	
Progression document statements	
To know that sounds are made by vibrations. To know that vibrations from sounds travel though a medium to the ear. **To know the relationship between the volume of a sound and the strength of vibrations that produced it.** To know the relationship between the pitch of a sound and features of the object that produced it. **To know sound gets fainter as the distance from the sound source increases**	

Year 4	**Scientific Unit: Electricity**
Prior Learning: Explore how things work. (Nursery - Electricity)	
National Curriculum Aims: Identify common appliances that run on electricity.	

Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.
Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.
Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.
Recognise some common conductors and insulators, and associate metals with being good conductors.

Learning overview:

Sticky Knowledge	Scientific Skills:
Many household devices and appliances run on electricity. Some plug in to the mains and others run on batteries. An electrical circuit consists of a cell or battery connected to a component using wires. If there is a break in the circuit, a loose connection or a short circuit, the component will not work. A switch can be added to the circuit to turn the component on and off. Metals are good conductors so they can be used as wires in a circuit. Non-metallic solids are insulators except for graphite (pencil lead). Water, if not completely pure, also conducts electricity	Use labelled diagrams that I have drawn myself. Report on findings from enquiries including oral and written explanations of results and conclusions.

Vocabulary

Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol

Progression document statements

To know some common appliances that run on electricity.
To know how to construct a simple series electrical circuit.
To know the components that are used to make a simple series circuit.
To know whether or not a lamp will light up in a series circuit and to give reasons.
To know how a switch opens and closes a circuit.
To know some common conductors and insulators and know that metal is a good conductor.

Year 4 — Scientific Unit: Living things inc. habitats

Prior Learning:
Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants)
Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants)
Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans)
Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 - Animals, including humans)
Identify and name a variety of plants and animals in their habitats, including microhabitats. (Y2 - Living things and their habitats)

National Curriculum Aims:
Recognise that living things can be grouped in a variety of ways.
Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.
Recognise that environments can change and that this can sometimes pose dangers to living things

Learning overview:

Sticky Knowledge	Scientific Skills:
Living things can be grouped (classified) in different ways according to their features. Classification keys can be used to identify and name living things.	Explore everyday phenomena and the relationship between living things and their environment. Raise their own questions about the world around them.

Living things live in a habitat which provides an environment to which they are suited (These environments may change naturally e.g. through flooding, fire, earthquakes etc. Humans also cause the environment to change. This can be in a good way (i.e. positive human impact, such as setting up nature reserves) or in a bad way (i.e. negative human impact, such as littering). Different living things can be found in a habitat at different times of the year.	Use a key that I have thought of myself to classify.
Vocabulary	
Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate	
Progression document statements	
To know that living things can be grouped in a variety of ways. **To know how to use classification systems to help name living things in their local and wider environment.** To know that environments can change and this poses a danger to living things.	
Year 4	**Scientific Unit: Animals inc. humans**
Prior Learning: Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals, including humans) Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). (Y2 - Animals, including humans) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - Animals, including humans). Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. (Y3 - Animals, including humans)	
National Curriculum Aims: Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey.	
Learning overview:	
Sticky Knowledge	**Scientific Skills:**
Digestion starts when the teeth start to break the food down. Saliva is added and the tongue rolls the food into a ball. The food is swallowed and passes down the oesophagus to the stomach. Here the food is broken down further by being churned around and other chemicals are added. The food passes into the small intestine. Here nutrients are removed from the food and leave the digestive system to be used elsewhere in the body. The rest of the food then passes into the large intestine. Here the water is removed for use elsewhere in the body. What is left is then stored in the rectum until it leaves the body through the anus when you go to the toilet. Humans have four types of teeth: incisors for cutting; canines for tearing; and molars and premolars for grinding (chewing).	Develop ideas about functions, relationships and interactions.
Vocabulary	

Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain
Progression document statements
To know the basic parts of the digestive system in humans. To know the different types of teeth in humans and their simple functions. **To know how to construct and interpret a variety of food chains, identifying producers, predators and prey.**

Science Overview

Year 5	Scientific Unit: Materials

Prior Learning:
Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials)

Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)

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. (Y3 - Forces and magnets)

Compare and group materials together, according to whether they are solids, liquids or gases. (Y4 - States of matter)

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). (Y4 - States of matter) ·

Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. (Y4 - States of matter)

National Curriculum Aims:
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.
Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.
Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.
Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.
Demonstrate that dissolving, mixing and changes of state are reversible changes.
Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.

Learning overview:

Sticky Knowledge	Scientific Skills:
Materials have different uses depending on their properties and state (liquid, solid, gas). Properties include hardness, transparency, electrical and thermal conductivity and attraction to magnets. Some materials will dissolve in a liquid and form a solution while others are insoluble and form sediment. Mixtures can be separated by filtering, sieving and evaporation. Some changes to materials such as dissolving, mixing and changes of state are reversible, but some changes such as burning wood, rusting and mixing vinegar with bicarbonate of soda result in the formation of new materials and these are not reversible.	Choose the most appropriate equipment to use and explain how to use this accurately. To develop keys to identify, classify and sort different materials. Begin to draw conclusions and identify scientific evidence. To discus and communicate a range of scientific ideas using relevant vocabulary. To begin to use scientific ideas when describing simple processes.
Vocabulary	
Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material	

Progression document statements

To know how to group together everyday materials on the basis of properties (including their hardness, solubility, transparency,
conductivity: electrical and thermal and response to magnets.
To know that some materials will dissolve to form a solution and describe how to recover a substance from a solution.
To know that some solids, liquids and gases can be separated e.g. by sieving, filtering or evaporating.
To know how to giive reasons based on evidence from comparative fair tests, for the particular uses of everyday materials, including metals, wood and plastic.

To know that dissolving, mixing and changes of state are reversible changes.
To know that some changes result in the forming of new materials and this is usually not reversible (burning, acid and bicarbonate of soda).

Year 5	Scientific Unit: Forces

Prior Learning:
Compare how things move on different surfaces. (Y3 - Forces and magnets)

Notice that some forces need contact between two objects, but magnetic forces can act at a distance. (Y3 - Forces and magnets)

Observe how magnets attract or repel each other and attract some materials and not others. (Y3 - Forces and magnets)

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. (Y3 - Forces and magnets)

Describe magnets as having two poles. (Y3 - Forces and magnets)

Predict whether two magnets will attract or repel each other, depending on which poles are facing. (Y3 - Forces and magnets)

National Curriculum Aims:
Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.
Identify the effects of air resistance, water resistance and friction that act between moving surfaces.
Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

Learning overview:

Sticky Knowledge	Scientific Skills:
A force causes an object to start moving, stop moving, speed up, slow down or change direction. Gravity is a force that acts at a distance. Everything is pulled to the Earth by gravity. This causes unsupported objects to fall. Air resistance, water resistance and friction are contact forces that act between moving surfaces. A mechanism is a device that allows a small force to be increased to a larger force. The pay back is that it requires a greater movement. The small force moves a long distance and the resulting large force moves a small distance. Pulleys, levers and gears are all mechanisms, also known as simple machines	Begin to plan different scientific enquiries and begin to recognise ways to control variables were necessary. Begin to take measurements using a range of scientific equipment. Measure with increasing accuracy and precision, taking repeat readings. Begin to make own decisions on what measurements to take and how often. Begin to interpret data and find patterns. To begin to say what the range is. To produce a line graph. To record results in a table I have designed myself. To Use measurements such as N. g, kg, mm, cm, mins m/sec Begin to use test results to make predictions to set up further comparative fair tests. Begin to suggest improvements to my method and give reasons. To begin to draw conclusions based on their data and observations. To use scientific knowledge and understanding to explain their findings.

	Begin to use test results to set up further comparative tests. To begin to look for different causal relationships in their data ad identify evidence that refutes and supports their idea. To begin to use words such as trend and anomaly when discussing my results.
Vocabulary	
Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears	
Progression document statements	
To know unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. **To know the effects of air resistance, water resistance and friction, that act between moving surfaces.** To know some mechanisms, including levers, pulleys and gears allow a smaller force to have a greater effect.	
Year 5	**Scientific Unit: Earth and Space**
Prior Learning: Explore the natural world around them. (Reception - Earth and space) Describe what they see, hear and feel whilst outside. (Reception - Earth and space) Observe changes across the four seasons. (Y1 - Seasonal changes) Observe and describe weather associated with the seasons and how day length varies. (Y1 - Seasonal changes)	
National Curriculum Aims: Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. Describe the movement of the Moon relative to the Earth. Describe the Sun, Earth and Moon as approximately spherical bodies. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.	
Learning overview:	
Sticky Knowledge	**Scientific Skills:**
The Sun is a star. It is at the centre of our solar system. There are 8 planets (can choose to name them, but not essential). These travel around the Sun in fixed orbits. Earth takes 365 days to complete its orbit around the Sun. The Earth rotates (spins) on its axis every 24 hours. As Earth rotates half faces the Sun (day) and half is facing away from the Sun (night). As the Earth rotates, the Sun appears to move across the sky. The Moon orbits the Earth. It takes about 28 days to complete its orbit. The Sun, Earth and Moon are approximately spherical.	Begin to explore and talk about ideas and ask their won questions about scientific phenomena. Begin to recognise more abstract ideas and begin to use these ideas to help them to understand how the world operates. Begin to recognise that scientific ideas change and develop over time. Begin to select own secondary sources that will help them to research their ideas and questions. To begin to report and present findings from enquiries including causal relationships and explanations using oral and written forms such as displays and presentations. Begin to identify scientific evidence that has been used to support or refute ideas and arguments. To begin to separate opinion and facts. To use simple models.

Vocabulary	
Sun, Moon, Earth, planets (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, Solar System, rotate, star, orbit	
Progression document statements	
To know the movement of the Earth and other planets relative to the sun in the solar system. **To know how the movement of the moon relates to the Earth.** To know that the sun, Earth and Moon are approximately spherical bodies. **To know the Earth's rotation explains day and night and the apparent movement of the sun across the sky.**	
Year 5	**Scientific Unit: Living things inc. habitats**
Prior Learning: Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans) Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)	
National Curriculum Aims: Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals.	
Learning overview:	
Sticky Knowledge	**Scientific Skills:**
As part of their life cycle, plants and animals reproduce. Most animals reproduce sexually. This involves two parents where the sperm from the male fertilises the female egg. Animals, including humans, have offspring which grow into adults. In humans and some animals, these offspring will be born live, such as babies or kittens, and then grow into adults. In other animals, such as chickens or snakes, there may be eggs laid that hatch to young which then grow to adults. Some young undergo a further change before becoming adults e.g. caterpillars to butterflies. This is called a metamorphosis. Plants reproduce both sexually and asexually. Bulbs, tubers, runners and plantlets are examples of asexual plant reproduction which involves only one parent. Gardeners may force plants to reproduce asexually by taking cuttings. Sexual reproduction occurs through pollination, usually involving wind or insects	Begin to identify patterns that might be found in their own natural environment. Begin to record data with increasing complexity using scientific diagrams, labels and classification keys. To know which evidence proves a scientific point. To read, spell and pronounce scientific vocabulary correctly.
Vocabulary	
life cycle, reproduce, sexual, fertilises, asexual, plantlets, runners, tubers	
Progression document statements	
To know differences in life cycles of a mammal, amphibian, insect and a bird. **To know the process of reproduction in some animals and some plants.**	
Year 5	**Scientific Unit: Animals inc. humans**
Prior Learning: Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans)	
National Curriculum Aims: Describe the changes as humans develop to old age.	
Learning overview:	

Sticky Knowledge	Scientific Skills:
When babies are young, they grow rapidly. They are very dependent on their parents. As they develop, they learn many skills. At puberty, a child's body changes and develops primary and secondary sexual characteristics. This enables the adult to reproduce.	To use scientific language and illustrations correctly.
Vocabulary	
Puberty - the vocabulary to describe sexual characteristics	
Progression document statements	
To know the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. To know the impact of diet, exercise, drugs and lifestyle on the way their bodies function. **To know the ways in which nutrients and water are transported within animals, including humans.**	

Science Overview

Year 6	Scientific Unit: Light

Prior Learning:
Recognise that they need light in order to see things and that dark is the absence of light. (Y3 - Light)

Notice that light is reflected from surfaces. (Y3 - Light)

Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light)

Recognise that shadows are formed when the light from a light source is blocked by an opaque object. (Y3 - Light)

Find patterns in the way that the size of shadows change. (Y3 - Light)

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. (Y5 - Properties and changes of materials)

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

Learning overview:

Sticky Knowledge	Scientific Skills:
Light appears to travel in straight lines, and we see objects when light from them goes into our eyes. The light may come directly from light sources, but for other objects some light must be reflected from the object into our eyes for the object to be seen. Objects that block light (are not fully transparent) will cause shadows. Because light travels in straight lines the shape of the shadow will be the same as the outline shape of the object.	Plan different types of scientific enquires to answer questions, including recognising and controlling variables where necessary. Explore and talk about ideas, ask questions about scientific phenomena. Recognise abstract ideas and how these ideas help them to understand the way the world operates. Select the most appropriate ways to answer science questions using different types of scientific enquiry. Take measurements using a range of scientific vocabulary with increasing precision and take repeat readings. Identify patterns that might be found in the natural environment. Make own observations about which measurements to take and how often to take the. Choose the most appropriate equipment and explain how to use it accurately. Can interpret data and find patterns. Can make a set of observations and say what the interval range is. Take accurate and precise measurements using degrees, mm, cm. Produce a line graph. Suggest improvements to my method and give reasons. Record results in a table I have designed myself.

	Can confidently use a range of scientific vocabulary. Can identify trends and anomalies and provide reasoned justification for these. Can make reasoned predictions drawing on scientific knowledge.
Vocabulary	
As for Year 3 - Light, plus straight lines, light rays	
Progression document statements	
To know that light appears to travel in straight lines. **To know that because light travels in straight lines to objects are seen because they give out or reflect light into the eye.** To know that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. **To know how to explain that shadows have the same shape as the object that casts them.**	
Year 6	**Scientific Unit: Evolution and Inheritance**
Prior Learning: Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. (Y2 - Living things and their habitats) Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans) Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants) Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats) Describe the life process of reproduction in some plants and animals. (Living things and their habitats - Y5)	
National Curriculum Aims: Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution	
Learning overview:	
Sticky Knowledge	**Scientific Skills:**
All living things have offspring of the same kind, as features in the offspring are inherited from the parents. Due to sexual reproduction, the offspring are not identical to their parents and vary from each other. Plants and animals have characteristics that make them suited (adapted) to their environment. If the environment changes rapidly, some variations of a species may not suit the new environment and will die. If the environment changes slowly, animals and plants with variations that are best suited survive in greater numbers to reproduce and pass their characteristics on to	Recognise that scientific ideas change and scientific ideas change and develop over time. Recognise and select the most appropriate secondary sources to help to research own questions and ideas. Identify scientific evidence that has been used to support or refute ideas. Separate opinion and scientific fact. Use a simple model.

their young. Over time, these inherited characteristics become more dominant within the population. Over a very long period of time, these characteristics may be so different to how they were originally that a new species is created. This is evolution. Fossils give us evidence of what lived on the Earth millions of year ago and provide evidence to support the theory of evolution. More recently, scientists such as Darwin and Wallace observed how living things adapt to different environments to become distinct varieties with their own characteristics.	Know which evidence proves a scientific point. Read, spell, pronounce and use scientific vocabulary correctly.
Vocabulary	
offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils, evolve, evolution	
Progression document statements	
To know that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. **To know living things produce offspring of the same kind, but offspring vary and are not identical to their parents.** To know how animal and plants are adapted to suit their environment in different ways and that adaptation might lead to evolution.	

Year 6	**Scientific Unit: Electricity**
Prior Learning: Identify common appliances that run on electricity. (Y4 - Electricity) Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. (Y4 - Electricity) 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. (Y4 - Electricity) Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. (Y4 - Electricity) Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 - Electricity)	
National Curriculum Aims: Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. Use recognised symbols when representing a simple circuit in a diagram.	
Learning overview:	
Sticky Knowledge	**Scientific Skills:**
Adding more cells to a complete circuit will make a bulb brighter, a motor spin faster or a buzzer make a louder sound. If you use a battery with a higher voltage, the same thing happens. Adding more bulbs to a circuit will make each bulb less bright. Using more motors or buzzers, each motor will spin more slowly and each buzzer will be quieter. Turning a switch off (open) breaks a circuit so the circuit is not complete and electricity cannot flow. Any bulbs, motors or buzzers will then turn off as well. Know recognised circuit symbols to draw simple circuit diagrams.	Plan different types of scientific enquires to answer questions, including recognising and controlling variables where necessary. Use test results to make predictions to set up further tests and comparative tests. Select the most appropriate ways to answer science questions using different types of scientific enquiry. Report and present data from enquiries, including conclusions and causal relationships. Comment on reliability of results and suggest how this could be improved in oral and written forms.
Vocabulary	

Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage
Progression document statements
To know that brightness of a bulb or volume of a buzzer increases with the number and voltage of cells used in a circuit. **To know reasons for variations in how components function including the brightness of bulbs and the loudness of buzzers and position of on/off switches.** To know how to use symbols when representing a simple circuit in a diagram.

Year 6	**Scientific Unit: Living things inc. habitats**
Prior Learning: Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats) Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 - Living things and their habitats) Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats) Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)	
National Curriculum Aims: Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics.	
Learning overview:	
Sticky Knowledge	**Scientific Skills:**
.Living things can be formally grouped according to characteristics. Plants and animals are two main groups but there are other livings things that do not fit into these groups e.g. micro-organisms such as bacteria and yeast, and toadstools and mushrooms. Plants can make their own food whereas animals cannot. Animals can be divided into two main groups: those that have backbones (vertebrates); and those that do not (invertebrates). Vertebrates can be divided into five small groups: fish; amphibians; reptiles; birds; and mammals. Each group has common characteristics. Invertebrates can be divided into a number of groups, including insects, spiders, snails and worms. Plants can be divided broadly into two main groups: flowering plants; and non-flowering plants.	To use a pie chart to record results. To use and create a classification key I have designed myself. Identify, classify and identify living things, suggesting different ways to group them.
Vocabulary	
vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, warm-blooded, cold-blooded, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers	
Progression document statements	
To know living things are classified into broad groups based on observable characteristics including microorganisms, plants and animals. To know that plants and animals can be classified based on specific characteristics.	

Year 6	**Scientific Unit: Animals inc. humans**
Prior Learning:	

Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - Animals, including humans)

Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. (Y3 - Animals, including humans)

Describe the simple functions of the basic parts of the digestive system in humans. (Y4 - Animals, including humans)

Identify the different types of teeth in humans and their simple functions. (Y4 - Animals, including humans)

National Curriculum Aims:
Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.
Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.

Learning overview:

Sticky Knowledge	Scientific Skills:
The heart pumps blood in the blood vessels around to the lungs. Oxygen goes into the blood and carbon dioxide is removed. The blood goes back to the heart and is then pumped around the body. Nutrients, water and oxygen are transported in the blood to the muscles and other parts of the body where they are needed. As they are used, they produce carbon dioxide and other waste products. Carbon dioxide is carried by the blood back to the heart and then the cycle starts again as it is transported back to the lungs to be removed from the body. This is the human circulatory system. Diet, exercise, drugs and lifestyle have an impact on the way our bodies function. They can affect how well out heart and lungs work, how likely we are to suffer from conditions such as diabetes, how clearly we think, and generally how fit and well we feel. Some conditions are caused by deficiencies in our diet e.g. lack of vitamins	Analyse functions, relationships and interactions more systematically. Record information using increasingly more complex scientific diagrams and labels. Record information using a line graph. Can use simple models. Report and present findings from enquiries . Decide how to record data from a choice of familiar approaches, including thinking of own headings for line graphs etc. Draw conclusions based on own data and observations using scientific knowledge to explain in depth their findings. Independently set up comparatives and fair tests. Look for different causal relationships on data and identify evidence that refutes or supports their ideas. Use relevant illustrations to discuss, justify and communicate scientific ideas. Can use correct scientific vocabulary when describing scientific processes.
Vocabulary	
Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle	

Progression document statements

To know the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.
To know the impact of diet, exercise, drugs and lifestyle on the way their bodies function.
To know the ways in which nutrients and water are transported within animals, including humans.