



Science Policy

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At Old Hall Primary School, we are committed to ensuring that all of our children have access to a high quality, broad and balanced curriculum. We have therefore designed our curriculum with our children at the very heart of it. The learning within all subjects is based upon the expectations of either the Early Years Foundation Stage Statutory Framework or the National Curriculum. Our Old Hall curriculum promotes learning, personal growth and development for all of our children and embraces our core school values of being ready, respectful and safe. It includes not only the formal requirements of the Early Years Foundation Stage Statutory Framework and the National Curriculum, but also the enrichment opportunities and the range of extra-curricular activities that the school organises in order to enrich the experiences of our children here at Old Hall. We aim to teach children how to grow into positive, responsible individuals, who can work with and co-operate with others whilst developing and deepening their knowledge and skills, so that they are enabled to achieve their full potential as rounded citizens who uphold all British Values.

We have striven to make purposeful links across the curriculum to enable our children to deepen their understanding of a topic and/or subject, and to enable them to apply their knowledge across the whole curriculum as they learn to know more and remember more. At Old Hall, our children are therefore encouraged to apply their skills in a variety of ways and in a range of different contexts.

This enquiry-based approach to learning has been designed to enable all of our children to engage purposefully in their lessons with a clear direction and focus and a commitment that our children are deepening their learning at every opportunity.

English forms the basis of our topics, and our texts have been carefully selected to promote the development of vocabulary and knowledge with strong PSHE links, as well as to foster a love of learning. To support the acquisition of vocabulary and knowledge, we have combined learning opportunities in the classroom with those that can take place outside, which may include educational visits, Forest School and learning outside the classroom activities. These support the commitment that we have here at Old Hall to promote, develop and embed cultural capital across the curriculum as a whole.

Whilst our curriculum here at Old Hall is very much designed to meet the needs of all of our children, we also recognise that some children may need some additional support to access it, and this is factored into our planning and the delivery of lessons. Our curriculum is highly inclusive and all groups of children are supported to access all areas successfully, this includes those children who have a special educational need and/or disability or who are deemed to be disadvantaged or vulnerable in any way.

We also recognise the valuable contributions that parents and carers can make in terms of the education of their children and embrace this by sharing the intended learning for our Old Hall children through half termly newsletters, parent's evenings and the school website. The input of our parents and carers is also welcomed by our Early Years team, who use Tapestry as an online tool to share the children's development and achievements between home and school and use this in their assessments against the Early Years Foundation Stage Statutory Framework.

Below summarises the key information linked to the teaching of science at Old Hall.

We believe that through science children will...

- Increasing children's personal experiences and developing an understanding of the world around them.
- Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
- Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.
- Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Science in the Early Years Foundation Stage (EYFS)

- Science will be taught through games and play in the key area of Understanding the world around them. This involves helping children make sense of their physical world and their community. Opportunities will be provided through the academic year to increase the frequency and range of children's personal experiences and increase their knowledge and sense of world around them. At Old Hall this can range from meeting people of different professions such as fireman, dentists and nurses. They will also visit libraries, parks, and museums.
- Children will explore the natural world around them this will be led by frequent opportunities for outdoor play and exploration. A lot of the children's learning in science will be hands on experiences. Having ample opportunities to touch, smell and hear the natural world. The children will observe the natural world and the plants and animals in it.
- Children will observe and interact with natural processes such as ice melting, sound vibrating, light travelling through transparent materials, objects casting a shadow, a magnet attracting another object and floating on water.
- Children will observe the changing seasons and how this affects the weather. In addition, how this affects animal's behaviour.

Science in Key Stage One (KS1)

Continuing on from EYFS, by exploring the world around them in Years 1 and 2 the children will be taught a variety of scientific skills. It will be encouraged that the children do this through play and exploration of their topics they will look more closely at the natural and humanly constructed world around them. They are encouraged to be curious and ask questions about what they notice. They are helped to develop their ideas of scientific understanding through the use of different scientific enquiries to answer their own questions. This includes observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests and finding things out using secondary resources for information. They will begin to use simple scientific language to talk about what they have found and communicate their ideas to a range of audiences in a variety of ways. Most of the learning of science in KS1 is done with hands on practical experiences.

Science in Lower Key Stage Two (LKS2)

Developing their exploration from KS1, the focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They also draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

Science in Upper Key Stage Two (UKS2)

After beginning to broaden their understanding in LKS2, the principle focus in UKS2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They also begin to recognise that scientific ideas change and develop over time. They select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

Topics and Progression

For a detailed overview of the progression of topics and knowledge in Science for Old Hall see Appendix A at the bottom of this policy. For a detailed overview of the progression of working scientifically see Appendix B. For a progression in Scientific vocabulary see Appendix C.

Assessment in Science

At Old Hall, summative judgements are made on a termly basis for all foundation subjects. These are then inputted onto the school's tracking system and are used by staff, subject Co-ordinators, leaders and Governors to monitor progress against school improvement targets and objectives. This also captures the overall picture of standards and progress in each subject across the school.

Formative assessment takes place within every lesson in line with the school's feedback and marking policy and guidance and Assessment For Learning (AFL).

Enrichment Opportunities in Science

- At Old Hall we believe science to be an important part of our children's education and offer lots of opportunities to develop a love and understanding of this subject. As part of this all our children watch TWIG reporter. This is a short 5-minute news video aimed at children to inform them of science news that may not meet the headlines.
- The school has an outdoor garden and pond where they can study animals' habitats and plant life.
- Classes are encouraged to visit museums to enhance their understanding of their topics.
- The children will have more opportunities to look at different areas of science (off planned curriculum) as part of British Science week March 7th -16th 2025.

The role of the Subject Co-Ordinator

The subject Co-Ordinator is responsible for improving the standards of teaching and learning in science through:

- monitoring and evaluating science
- evaluating pupil progress in partnership with senior leaders in science
- ensuring that curriculum coverage in science is as per intended plans
- ensuring that planning for science is appropriate and sequential and in line with the school's progression documents
- ensuring that feedback and marking in science is in line with whole school policy and guidance
- ensuring that the science learning environment is of a high quality
- taking the lead in policy development

- auditing and supporting colleagues in their CPD
- purchasing and organising resources
- keeping up to date with recent developments in science

This policy will be reviewed and updated on an annual basis.

Appendix A Science – Plants

National Curriculum statements in red are from other linked topics.



Reception	Year 1	Year 2
• Draw information from a simple map. (Reception – Living things and their habitats) • Explore the natural world around them. (Reception – Living things and their habitats) • Describe what they see, hear and feel whilst outside. (Reception – Living things and their habitats) • Recognise some environments that are different to the one in which they live. (Reception – Living things and their habitats) • Understand the effect of changing seasons on the natural world around them. (Reception – Seasonal changes)	• 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.	• 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. • Identify and name a variety of plants and animals in their habitats, including microhabitats. (Y2 - Living things and their habitats)

Subject Progression Overview – KS2

Science – Plants

National Curriculum statements in red are from other linked topics



Year 3	Year 4	Year 5	Year 6
- 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	- 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) - 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. (Y5 - Living things and their habitats)	- 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. (Y6 - Living things and their habitats) - Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)

Science – Living Things & their Habitats

National Curriculum statements in red are from other linked topics.



Reception	Year 1	Year 2
• 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 the one in which they live	• 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 change)	• 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 microhabitats. • 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. • Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals including humans)

Science - Living Things & their Habitats

National Curriculum statements in red are from other linked topics



Year 3	Year 4	Year 5	Year 6
Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 – Plants)	- 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. - Construct and interpret a variety of food chains, identifying producers, predators and prey. (Y4 - Animals, including humans)	- 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.	- Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. - Give reasons for classifying plants and animals based on specific characteristics. - Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. (Y6 - Evolution and inheritance) - Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. (Y6 - Evolution and inheritance)

Science – Animals including Humans

National Curriculum statements in red are from other linked topics.



Reception	Year 1	Year 2
• 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 in which they live.	• 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.	• 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. • 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. (Y2 - Living things and their habitats)

Subject Progression Overview – KS2

Science – Animals including Humans

National Curriculum statements in red are from other linked topics



Year 3	Year 4	Year 5	Year 6
- 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.	- 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.	- Describe the changes as humans develop to old age. - 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)	- 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. - 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. (Y6 - Living things and their habitats) - Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)

Science – Evolution and Inheritance

National Curriculum statements in red are from other linked topics.



Reception	Year 1	Year 2
Recognise some environments that are different to the one in which they live. (Reception – Living things and their habitats)		- 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)

Science – Evolution and Inheritance

National Curriculum statements in red are from other linked topics



Year 3	Year 4	Year 5	Year 6
- Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) - Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)	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)	- 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.

Science – Seasonal changes

National Curriculum statements in red are from other linked topics.



Reception	Year 1	Year 2
• Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Understand the effect of changing seasons on the natural world around them.	• Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.	

Subject Progression Overview – KS2

Science – Seasonal changes

National Curriculum statements in red are from other linked topics



Year 3	Year 4	Year 5	Year 6
Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light)		Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky. (Y5 - Earth and space)	

Science – Materials

National Curriculum statements in red are from other linked topics.



Reception	Year 1	Year 2
• Explore the natural world around them. • Describe what they see, hear and feel whilst outside	• Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. • Describe the simple physical properties of a variety of everyday materials. • Compare and group together a variety of everyday materials on the basis of their simple physical properties	• 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.

Science - Materials

National Curriculum statements in red are from other linked topics



Year 3	Year 4	Year 5	Year 6
• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. (Y3 - Rocks) • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) • 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. • 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. • Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 - Electricity)	• 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	

Science – Rocks

National Curriculum statements in red are from other linked topics.



Reception	Year 1	Year 2
• Explore the natural world around them. (Reception – Living things and their habitats) • Describe what they see, hear and feel whilst outside. (Reception – Living things and their habitats)	• 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)

Subject Progression Overview – KS2

Science - Rocks

National Curriculum statements in red are from other linked topics



Year 3	Year 4	Year 5	Year 6
• 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.			• Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. (Y6 - Evolution and inheritance)

Subject Progression Overview – EYFS & KS1

Science – Light

National Curriculum statements in red are from other linked topics.



Reception	Year 1	Year 2
Describe what they see, hear and feel whilst outside.	- 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)	

Subject Progression Overview – KS2

Science - Light

National Curriculum statements in red are from other linked topics



Year 3	Year 4	Year 5	Year 6
• 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.		• 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)	• 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.

Subject Progression Overview – EYFS & KS1

Science – Forces and Magnets

National Curriculum statements in red are from other linked topics.



Reception	Year 1	Year 2
• Explore the natural world around them. • Describe what they see, hear and feel whilst outside.		• 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)

Science - Forces and Magnets

National Curriculum statements in red are from other linked topics



Year 3	Year 4	Year 5	Year 6
• 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.		• 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.	

Subject Progression Overview – EYFS & KS1

Science – Sound

National Curriculum statements in red are from other linked topics.



Reception	Year 1	Year 2
Describe what they see, hear and feel whilst outside	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)	

Subject Progression Overview – KS2

Science - Sound

National Curriculum statements in red are from other linked topics



Year 3	Year 4	Year 5	Year 6
	• Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds travel through a medium to the ear. • Find patterns between the pitch of a sound and features of the object that produced it. • Find patterns between the volume of a sound and the strength of the vibrations that produced it. • Recognise that sounds get fainter as the distance from the sound source increases.		

Science - Electricity

National Curriculum statements in red are from other linked topics



Year 3	Year 4	Year 5	Year 6
	- 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		- 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

Subject Progression Overview – EYFS & KS1

Science – Earth and Space

National Curriculum statements in red are from other linked topics.



Reception	Year 1	Year 2
• Explore the natural world around them. • Describe what they see, hear and feel whilst outside	• 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)	

Subject Progression Overview – KS2

Science – Earth and Space

National Curriculum statements in red are from other linked topics



Year 3	Year 4	Year 5	Year 6
		- 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.	

Appendix B

Science – Working Scientifically



Years 1 & 2	Years 3 & 4	Years 5 & 6
Asking questions and recognising that they can be answered in different ways		
Asking simple questions and recognising that they can be answered in different ways - While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions. - The children answer questions developed with the teacher often through a scenario. - The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different ways in which questions can be answered.	Asking relevant questions and using different types of scientific enquiries to answer them - The children consider their prior knowledge when asking questions. They independently use a range of question stems. Where appropriate, they answer these questions. - The children answer questions posed by the teacher. - Given a range of resources, the children decide for themselves how to gather evidence to answer the question. They recognise when secondary sources can be used to answer questions that cannot be answered through practical work. They identify the type of enquiry that they have chosen to answer their question.	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary - Children independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their developed understanding following an enquiry. - Given a wide range of resources the children decide for themselves how to gather evidence to answer a scientific question. They choose a type of enquiry to carry out and justify their choice. They recognise how secondary sources can be used to answer questions that cannot be answered through practical work.

Making observations and taking measurements		
Observing closely, using simple equipment - Children explore the world around them. They make careful observations to support identification, comparison and noticing change. They use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make their observations. - They begin to take measurements, initially by comparisons, then using non-standard units.	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers - The children make systematic and careful observations. - They use a range of equipment for measuring length, time, temperature and capacity. They use standard units for their measurements.	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate - The children select measuring equipment to give the most precise results e.g. ruler, tape measure or trundle wheel, force meter with a suitable scale. - During an enquiry, they make decisions e.g. whether they need to: take repeat readings (fair testing); increase the sample size (pattern seeking); adjust the observation period and frequency (observing over time); or check further secondary sources (researching); in order to get accurate data (closer to the true value).
Engaging in practical enquiry to answer questions		
Performing simple tests - The children use practical resources provided to gather evidence to answer questions generated by themselves or the teacher. They carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time. Identifying and classifying - Children use their observations and testing to compare objects, materials and living things. They sort and group these things, identifying their own criteria for sorting.	Setting up simple practical enquiries, comparative and fair tests - The children select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher. - They follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking.	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary The children select from a range of practical resources to gather evidence to answer their questions. They carry out fair tests, recognising and controlling variables. They decide what observations or measurements to make over time and for how long. They look for patterns and relationships using a suitable sample.

They use simple secondary sources (such as identification sheets) to name living things. They describe the characteristics they used to identify a living thing.		
Recording and presenting evidence		
Gathering and recording data to help in answering questions - The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. - They record their measurements e.g. using prepared tables, pictograms, tally charts and block graphs. - They classify using simple prepared tables and sorting rings.	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables - The children sometimes decide how to record and present evidence. They record their observation e.g. using photographs, videos, pictures, labelled diagrams or writing. They record their measurements e.g. using tables, tally charts and bar charts (given templates, if required, to which they can add headings). They record classifications e.g. using tables, Venn diagrams, Carroll diagrams. - Children are supported to present the same data in different ways in order to help with answering the question.	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs - The children decide how to record and present evidence. They record observations e.g. using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. They record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs. They record classifications e.g. using tables, Venn diagrams, Carroll diagrams and classification keys. - Children present the same data in different ways in order to help with answering the question.
Answering questions and concluding		
Using their observations and ideas to suggest answers to questions Children use their experiences of the world around them to suggest appropriate answers to questions. They are supported to relate these to their evidence e.g. observations they have made, measurements they have taken or information they have gained from	Using straightforward scientific evidence to answer questions or to support their findings. Children answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources. The answers are consistent with the evidence.	Identifying scientific evidence that has been used to support or refute ideas or arguments Children answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources. When doing this, they discuss whether other evidence e.g. from other groups, secondary sources and

secondary sources.		their scientific understanding, supports or refutes their answer. • They talk about how their scientific ideas change due to new evidence that they have gathered. • They talk about how new discoveries change scientific understanding.
Using their observations and ideas to suggest answers to questions • The children recognise 'biggest and smallest', 'best and worst' etc. from their data.	Identifying differences, similarities or changes related to simple scientific ideas and processes • Children interpret their data to generate simple comparative statements based on their evidence. They begin to identify naturally occurring patterns and causal relationships. • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • They draw conclusions based on their evidence and current subject knowledge.	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • In their conclusions, children: identify causal relationships and patterns in the natural world from their evidence; identify results that do not fit the overall pattern; and explain their findings using their subject knowledge.
Evaluating and raising further questions and predictions		
	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • Children use their evidence to suggest values	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • They evaluate, for example, the choice of method used, the control of variables, the precision and accuracy of measurements and the credibility of secondary sources used. • They identify any limitations that reduce the trust they have in their data.

	for different items tested using the same method e.g. the distance travelled by a car on an additional surface. Following a scientific experience, the children ask further questions which can be answered by extending the same enquiry.	Using test results to make predictions to set up further comparative and fair tests Children use the scientific knowledge gained from enquiry work to make predictions they can investigate using comparative and fair tests.
Communicating their findings		
	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions They communicate their findings to an audience both orally and in writing, using appropriate scientific vocabulary.	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations They communicate their findings to an audience using relevant scientific language and illustrations

Appendix C Science – Vocabulary

Vocabulary in red is to show progression from previous year groups



Reception			
Materials	Living things and their habitats	Animals including humans	Seasonal changes
object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through	plant, tree, bush, flower, vegetable, herb, weed, animal, names of plants and animals they see, name of a contrasting environment (e.g. beach, forest)	names of animals, live, on land, in water, jungle, desert, North Pole, South Pole, sea, hot, cold, wet, dry, snow, ice, hair (e.g. black, brown, dark, light, blonde, ginger, grey, white, long, short, straight, curly), eyes (e.g. blue, brown, green, grey), skin (e.g. black, brown, white), big/tall, small/short, bigger/smaller, baby, toddler, child, adult, old person, old, young, brother, sister, mother, father, aunt, uncle, grandmother, grandfather, cousin, friend, family, boy, girl, man, woman	spring, summer, autumn, winter, seasons, sunny, cloudy, hot, warm, cold, shower, raining, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, windy, rainbow, animals, young, plants, flowers
	Earth and Space		
	Sun, Moon, Earth, star, planet, sky, day, night, space, round, bounce, float		
Sound	Light	Forces	Working Scientifically
sound, noise, listen, hear, music, voices, bird song, traffic, sirens, thunder, high, low, loud, quiet, soft, volume, crackle, thunder, hum, buzz, roar	Sun, sunny, light, shadow, shady, clouds, torch, see-through, not see-through, source, light source	float, sink, up, down, top, bottom, surface, move, roll, drop, fly, turn, spin, fall, fast, slow, faster, slower, fastest, slowest, further, furthest, wind, air, water, blow, bounce	look closely, observe, watch, touch, feel, smell, listen, same, different, compare, ask questions, record, sort, group

Year 1				
Working Scientifically	Plants	Animals including humans	Materials	Seasonal changes
observe, changes, patterns, grouping, sorting, compare, same, different, identify (name), measure, data, record results, drawing, picture, table, tally chart, present, pictogram, block chart, Venn diagram, ask questions, test, investigate, explore, equipment, resources, magnifying glass, hand lens, ruler, tape measure, metre stick, pipette, syringe, spoon, teaspoon, answer questions, interpret results, scientific enquiry, pattern seeking, comparative testing, observing over time, classifying, researching using secondary sources	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	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 human body including those within the school's RSE policy, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ears, tongue	object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through (YR) object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through	spring, summer, autumn, winter, seasons, sunny, cloudy, hot, warm, cold, shower, raining, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, windy, rainbow, animals, young, plants, flowers (YR) 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

Year 2				
Working Scientifically	Plants	Animals including humans	Materials	Living things and their habitats
observe, changes, patterns, grouping, sorting, compare, same, different, identify (name), measure, data, record results, drawing, picture, table, tally chart, present, pictogram, block chart, Venn diagram, ask questions, test, investigate, explore, equipment, resources, magnifying glass, hand lens, ruler, tape measure, metre stick, pipette, syringe, spoon, teaspoon, answer questions, interpret results, scientific enquiry, pattern seeking, comparative testing, observing over time, classifying, researching using secondary sources	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 (Y1) light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling	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 human body including those within the school's RSE policy, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ears, tongue (Y1) offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/chicken, 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)	object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through (Y1) opaque, transparent, translucent, reflective, non-reflective, flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching	plant, tree, bush, flower, vegetable, herb, weed, animal, names of plants and animals they see, name of a contrasting environment (e.g. beach, forest) (YR) 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 micro-habitats studied

Year 3					
Working Scientifically	Plants	Animals including humans	Rocks	Light	Forces
practical work, fair testing, relationships, accurate, thermometer, data logger, stopwatch, timer, estimate, data, diagram, identification key, chart, bar chart, prediction, similarity, difference, evidence, information, findings, criteria, values, properties, characteristics, conclusion, explanation, reason, evaluate, improve	light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling (Y2) photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil, absorb, transport	nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine	rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorbs water, fossil, bone, flesh, minerals, marble, chalk, granite, sandstone, slate, types of soil (e.g. peaty, sandy, chalky, clay)	light, light source, dark, absence of light, surface, shadow, reflect, mirror, Sun, sunlight, dangerous	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

Year 4					
Working Scientifically	Materials	Animals including humans	Living things and their habitats	Sound	Electricity
practical work, fair testing, relationships, accurate, thermometer, data logger, stopwatch, timer, estimate, data, diagram, identification key, chart, bar chart, prediction, similarity, difference, evidence, information, findings, criteria, values, properties, characteristics, conclusion, explanation, reason, evaluate, improve	opaque, transparent, translucent, reflective, non-reflective, flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching (Y2) solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle	nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine (Y3) digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, incisor, canine, molar, premolar, herbivore, carnivore, omnivore, producer, predator, prey	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, (Y2) classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate	sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, quiet, loud, insulation	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

Year 5					
Working Scientifically	Materials	Animals including humans	Living things and their habitats	Forces	Earth and Space
variables, independent variable, dependent variable, control variable, evidence, justify, argument (science), causal relationship, accuracy, precision, scatter graphs, bar graphs, line graphs, force meter	solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle (Y4) thermal insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material	puberty, the vocabulary to describe sexual characteristics in line with the school's RSE policy	life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, cuttings	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 (Y3) gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears	Sun, Moon, Earth, planets (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, Solar System, rotate, star, orbit

Year 6					
Working Scientifically	Evolution and Inheritance	Animals including humans	Living things and their habitats	Light	Electricity
variables, independent variable, dependent variable, control variable, evidence, justify, argument (science), causal relationship, accuracy, precision, scatter graphs, bar graphs, line graphs, force meter	offspring, sexual reproduction, vary, characteristics, adapted, inherited, species, evolve, evolution	heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, cycle, circulatory system, diet, drugs, lifestyle	vertebrates, fish, amphibians, reptiles, birds, mammals, warm-blooded, cold-blooded, invertebrates, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers	light, light source, dark, absence of light, surface, shadow, reflect, mirror, Sun, sunlight, dangerous (Y3) straight lines, light rays	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 (Y4) circuit diagram, circuit symbol, voltage