



Science

Science

Mersey Park Primary School



Be Nice



Work Hard



Never Give Up

Science at Mersey Park Primary School

What we teach

At Mersey Park, we endeavour to provide all children with a purposeful, progressive, language rich science curriculum, which is developed through the aims and objectives of the National Curriculum for Science for Key Stage 1 and 2 and the Statutory Framework for the Early Years Foundation Stage. We make sure that our curriculum is engaging and inclusive of all, encouraging children to be inquisitive throughout their time at the school and beyond.

We follow Science Bug as a curriculum start point for our lessons and adapt this to take into account the children's needs, abilities and interests. We have identified that our children benefit from hands on learning, exposure to a wide range of vocabulary and opportunities for discussion and interaction so we endeavour to keep this at the heart of the development of knowledge within our Science Curriculum.

We ensure all learners, including vulnerable and disadvantaged pupils, develop their scientific knowledge and understanding through providing children with a wealth of high quality, hands on enquiries and by seeking out every opportunity to use our local environment to enhance the curriculum. We have carefully mapped out the Working Scientifically skills to ensure they are built-on and developed throughout children's time at the school so that they can apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts confidently and continue to ask questions and be inquisitive about their surroundings.

Our pupils know about a range of scientists, who have shaped the world we live in today and their contributions to our modern day lives. Through this, we aim to develop a curiosity and interest in the nature, process and methods of science and as a result create learners who are equipped with the skills and knowledge to help them understand how science can affect our lives today and in the future.

End points are taken from the National Curriculum aims and the Early Learning Goals and are looked at every half term, with some objectives discussed and revisited every lesson.

How we teach it

Starting in the Foundation Stage, our children are given many opportunities to investigate, through first hand exploration. We aim to develop lively, enquiring minds. Topics are carefully planned in sequence to ensure new learning builds upon prior knowledge and experiences.

We design our Science topics to help develop an understanding of the world that we live in and aims to stimulate a child's curiosity to find out how and why things happen in the way they do. We encourage methods of enquiry and investigation to inspire creative thought. Children learn to ask scientific questions and are encouraged to engage in questioning and discussion about science-based issues which affect their lives, the society in which they live and the world as a whole. Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all children are capable of achieving high standards in science.

Each topic starts with the children completing their 'What do I know?' bubble. This is an opportunity for the children to think about what they already know about a topic and activate any prior knowledge. This also allows the teacher to assess pupils' starting knowledge and adapt their teaching as necessary. This is then reviewed and updated with gained knowledge at the end of each unit. Quizzes are used at the start of every lesson to revise prior learning, reinforce key knowledge and concepts and correct misunderstandings. This regular revision of key knowledge allows pupils time to embed this

into their long-term memory. Key facts are also revised every science lesson through the use of our carefully created Knowledge Organisers that contain key vocabulary, sticky knowledge and information about significant individuals from that scientific field.

Use of knowledge boxes in each class filled with key questions support repetition and help to embed important knowledge from previous topics. The teaching of key subject specific vocabulary is a high priority across the school. Vocabulary is carefully selected to ensure progression and repetition to endeavor to embed this in to long term memory. It is revisited each lesson and using our 'we know', 'we've heard of' and 'we don't know yet' vocabulary displays the children have an opportunity to revise, secure and develop their subject specific vocabulary knowledge. Vocabulary is modelled throughout the topic to build confidence and children are encouraged to speak like scientists.

Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching and hands on experiences. This is developed through the years, in keeping with the topics. We use precise questioning in class to test conceptual knowledge and skills, and assess children regularly to identify those children with gaps in learning.

Assessment, linked to Key Learning is used regularly to gauge knowledge retention and understanding. Where there is a particular concern over knowledge retention key questions are added to the knowledge box to be revisited regularly. Each unit ends with a summative assessment to inform whether each child is working at the expected level. Class teachers record assessment outcomes using our tracking grid and the subject leader analyses gaps in knowledge and skills. Actions are identified and followed up. Class teachers record assessment outcomes using our tracking grid and the subject leader analyses gaps in knowledge and skills. Actions are identified and followed up.

Teachers find opportunities to develop children's knowledge of their surroundings by accessing outdoor learning and workshops with experts. Mersey Park children also get the possibility of learning about careers in science through our close links with Liverpool University Science department, who collaborate with us on our annual Science Week. Activities centre on STEM (science, technology, engineering and mathematics) in order to promote future careers in this field.

Teachers are provided with regular opportunities to enhance their subject knowledge, share good practice and collaborate on planning. As well as this, teachers are encouraged to share expertise, team teach lessons where appropriate and make use of expert demonstrations, including online.

SMSC through Science

We use scientific evidence and investigations to support children's spiritual understanding. This is achieved by exploring our relationship with the world, looking for meaning in natural and physical phenomena, and reflecting on our experiences so that they may inform our perspective on life. In doing so, we hope that all learners develop a sense of awe and wonder at the complexities of the natural world.

We encourage children to consider the moral decisions which underpin many aspects of modern day Science. e.g threats to our natural world through 'Living Things and our Habitats'.

Children work collaboratively, share ideas and take responsibility for their own and others' learning. In lesson time, children are also encouraged to consider both the positive and negative impact scientific discoveries can have on society such as the development of single use plastic.

Children learn to appreciate how Science permeates modern day culture and recognise that scientific advancements occur all over the world, from people of all backgrounds and cultures. Through conducting research, we challenge beliefs that progress comes largely from the UK or America and celebrate developments that take place in many different cultures.

Impact

The successful approach at Mersey Park results in a fun, engaging, high-quality science education, that provides children with the foundations and knowledge for understanding the world.

Our engagement with the local environment ensures that children learn through varied and first hand experiences of the world around them. Frequent, continuous and progressive learning outside the classroom is embedded throughout the science curriculum. Through various workshops, trips and interactions with experts, children have the knowledge that science has changed our lives and that it is vital to the world's future prosperity. Children learn the possibilities for careers in science, as a result of our community links and connection with national agencies ensuring that children have access to positive role models within the field of science from the immediate and wider local community. Children at Mersey Park overwhelmingly enjoy science and this results in motivated learners with sound scientific understanding.

By the end of KS2, we aim for our mini scientists to have developed inquisitive minds, critical thinking skills and a thirst for knowledge. They should have problem solving skills to a variety of situations with increasing proficiency, including in unfamiliar contexts and to model real-life scenarios. They should have a passion for the conservation of our local area and feel confident in using scientific knowledge and vocabulary to discuss significant scientific issues, which affect our lives today and in the future.

Science Subject Overview

| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
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| F1 | <p>Living Things and their Habitats/Seasonal Changes To explore the natural environment in outdoor area. Use equipment e.g. magnifying glasses to encourage the children to investigate and become inquisitive about the world around them.</p> <p>Plants Plant bulbs in the outdoor area and care for the plants in the classroom.</p> <p>Animals including Humans Learn where eggs come from</p> <p>Materials Explore different materials to protect eggs from breaking</p> | | <p>Seasonal Changes Explore the seasonal changes of Winter Explore, frost, ice and snow through hands on experience</p> <p>Plants Observe changes in the natural world during Spring – buds, shoots, spring flowers</p> <p>Living Things and their Habitats Learn about the habitats of spiders Learn about different animals and their habitats</p> | | <p>Living Things and their Habitats First-hand experience of life cycles - tadpoles and caterpillars Learn about the importance of respecting and caring for all living things Look at bugs that live in the outdoor area, observing them closely using a magnifying glass</p> <p>Materials Explore the qualities of different materials when making a house for Stick Man</p> | |
| F2 | <p>Animals including Humans: To make observations of animals and plants and explain why some things occur, and talk about changes</p> <p>Plants Harvest time about where and how different crops grow and how they are harvested and transported. Plant bulbs and observe them changing</p> | <p>Materials: To know about similarities and differences in relation to places, objects, materials and living things</p> | <p>Seasonal Changes: To talk about the features of their own immediate environment and how environments might vary from one another Explore the seasonal changes of Winter Explore, frost, ice and snow through hands on experience</p> | <p>Plants: To know about similarities and differences in relation to places, objects, materials and living things To make observations of animals and plants and explain why some things occur, and talk about changes. Observe changes in the natural world during Spring – buds, shoots, spring flowers</p> | <p>Living Things and their Habitats: To know about similarities and differences in relation to places, objects, materials and living things</p> <p>Seasonal Changes: Learn about sun safety and activities that can be enjoyed depending on the season and weather.</p> | <p>Living Things and their Habitats: To make observations of animals and plants and explain why some things occur, and talk about changes Plant fruit and vegetables, care for them and observe how they grow Continue to care for our plants and observe how they are changing.</p> |
| Year 1 | <p>Seasonal Changes: To know the four seasons and describe how the weather can be different</p> <p>Animals including humans: To name different parts of the body including those used for our five senses To name and describe some common animals</p> | | <p>Seasonal Changes: To describe how trees and plants change through the four seasons</p> <p>Materials: To name and describe a variety of everyday properties To group materials based on simple properties</p> | | <p>Seasonal Changes: To recognise how day length varies</p> <p>Plants: To name and describe the features of some common plants and trees To name and describe the different parts of flowers and trees</p> | |
| Year 2 | <p>Materials: To explain how objects can be changed by squashing, bending, twisting and stretching. To describe the properties and suitability of everyday materials</p> | | <p>Animals including humans: To explain what humans and animals need to survive and the importance of looking after our bodies To explain that animals, including humans, have babies which grow into adults</p> | <p>Living Things and their Habitats: To know the differences between living, dead and never lived To name animals and describe their adaptations in relation to their habitats, including diet and food chains</p> | | <p>Plants: To know what plants need to grow and stay healthy</p> |

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| Year 3 | Animals including Humans: To explain why we need to food to keep us alive To name and locate key bones and muscles in the body | Forces and Magnets: To compare how things move on different surfaces To know that some forces need contact between two objects but magnetic forces can act at a distance To observe how magnets attract or repel each other and sort and name some magnetic and non-magnetic materials To know magnets have two poles and predict whether two magnets will attract or repel each other | Light: To describe some sources and simple properties of light including shadows and reflection To know that light from the sun can be dangerous and that there are ways to protect eyes | Plants: To know the job of each part of the flower and the life cycle of the plant To know what different plants need to live and grow | Rocks: To know how soil, rocks and fossils are formed and group rocks according to simple properties | |
| Year 4 | Animals including Humans: To explain the parts of the digestive system To know the different types of teeth To describe, using scientific vocabulary, a variety of food chains | Electricity: To construct, draw, label and make predictions about simple circuits To know some good conductors and insulators To talk about common appliances that run on electricity. | Living Things and their Habitats: To use classification keys to group living things To recognise and explain the feature different environments | | Sound: To recognise sound is made by vibrations, how it travels and describe how the size of the vibrations can affect pitch and volume | States of Matter: To recognise the three common states of matter and understand how some materials can be changed from one to another |
| Year 5 | Earth and Space: To describe the movement of Earth, Moon and Sun and their relationship to each other and other planets | Forces: To explain to effects of gravity, air resistance, water resistance and friction on objects To understand how we can use mechanisms, pulleys, gears and levers to allow a smaller force to have a greater effect | Properties and Changes of Materials: To explain how to combine or separate mixtures To understand how some changes are reversible and others are non-reversible To compare and group together everyday materials on the basis of their properties | | Animals including Humans: To describe how our bodies change as we age | Living Things and their Habitats: To describe the life cycles of different animal groups To describe how some animals and plants reproduce |
| Year 6 | Light: To explain how light travels and how we see objects To describe why we see shadows | Electricity: To explain the effect of the number of cells on lights and buzzers in a circuit To draw a diagram using recognised symbols to represent a simple circuit | Evolution and Inheritance: To explain that the kind of living things on Earth now are different to those millions of years ago and give examples of how they have adapted To explain how living things produce offspring which is similar but not identical | | Animals including Humans: To identify the different parts of the circulatory system To recognise the impact of healthy lifestyles on our body To describe how nutrients and water are transported around our body | Living Things and their Habitats: To classify plants and animals and give reasons for their choices based on characteristics |

Scientist/Significant Individuals Overview

| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| F1 and F2 | Animals including Humans: Vets Zoologists | Materials: | Seasonal Changes: Weather Presenters News Anchors | Plants: Gardeners- Charlie Dimmock | Living Things and their Habitats: Zoologists Wildlife Biologists | |
| Year 1 | Seasonal Changes: George James Symons Animals including humans: Linda Brown Buck Carl Hagenbeck George Mottershead Jane Goodall Rebecca Lee Crumpler | | Seasonal Changes: George James Symons Materials: Ole Kirk Christiansen | | Seasonal Changes: George James Symons Plants: George Washington Carver Janaki Ammal Edavalath Kakkat | |
| Year 2 | Materials: James Blyth John Dunlop Charles Macintosh John McAdam | | Animals including humans: Louis Pasteur Marie Maynard Daley Jane Goodall | Living Things and their Habitats: Rachel Carson Mirian Rothchild Charles Henry Turner Roger Arlina Young Joan Owens | | Plants: Tim Smit Nicholas Grimshaw Jane Colden George Washington Carver Percy Lavon Julian |
| Year 3 | Animals including Humans: Marie Curie Garrett Morgan | Forces and Magnets: Hans Christian Orsted Mary Somerville | Light: Maria Mitchell Christiaan Huygens Galileo | Plants: Sir Joseph Banks | | Rocks: Mary Anning Dr Lisa White Inge Lehmann |
| Year 4 | Animals including Humans: William Beaumont Lillian Lindsay Al Jahiz | Electricity: Thomas Edison Benjamin Franklin Michael Faraday | Living Things and their Habitats: Rachel Carson David Attenborough Carolus Linnaeus | | Sound: Marin Mersenne Robert Boyle | States of Matter: Bernard Palissy |
| Year 5 | Earth and Space: Neil Armstrong, Buzz Aldrin, Michael Collins. Tim Peak, Helen Sharman Galileo, Isaac Newton Katherine Johnson, Dorothy Vaughn, Mary Jackson | Forces: Galileo Isaac Newton | Properties and Changes of Materials: Stephanie Kwolek | | Animals including Humans: Alexander Fleming | Living Things and their Habitats: Jane Goodall David Attenborough Eva Crane George Washington Carver Arthur Kilpin Bulley |
| Year 6 | Light: Ibn al-Haytham Christiaan Huygens | Electricity: Benjamin Franklin Thomas Edison | Evolution and Inheritance: Charles Darwin | | Animals including Humans: Marie Maynard Daly Daniel Hale Williams | Living Things and their Habitats: Carl Linnaeus |

Science - Early Years

Development Matters

| Birth to Three | Three and Four Year Olds (Foundation 1) | Children in Foundation 2 |
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| <p>Repeat actions that have an effect. Explore materials with different properties. Explore natural materials, indoors and outside. Explore and respond to different natural phenomena in their setting and on trips. Make connections between the features of their family and other families. Notice differences between people.</p> | <p>Use all their senses in hands on exploration of natural materials Explore collections of natural materials with similar and/or different properties Talk about what they see, using a wide vocabulary Begin to make sense of their own life-story and family's history Show interest in different occupations Explore how things work Plant seeds and care for growing plants Understand the key features of the life cycle of a plant and of an animal Begin to understand the need to respect and care for the natural environment and all living things. Explore and talk about different forces they can feel Talk about the differences between materials and changes they notice.</p> | <p>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 we live. Understand the effect of changing seasons on the natural world around them.</p> |

Early Learning Goals

ELG – The Natural World

Explore the natural world around them, making observations and drawing pictures of animals and plants.

Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.

Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Science National Curriculum Subject Content

Purpose of Study and Aims

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

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

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

Key Stage 1

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.

'Working scientifically' is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

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

Science National Curriculum Subject Content

Lower Key Stage 2

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should 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 should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

‘Working scientifically’ is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

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

Upper Key Stage 2

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

‘Working and thinking scientifically’ is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

Pupils should read, spell and pronounce scientific vocabulary correctly.

Science Progression of Knowledge and Skills

| | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| Animals, including Humans | <p>The Natural World (ELG)</p> <ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter | <ul style="list-style-type: none"> Spot and name a variety of common animals. Spot and name a variety of common animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals. Name, draw and label the basic parts of the human body and say which part of the body is to do with each sense. | <ul style="list-style-type: none"> Explain that animals, including humans, have babies which grow into adults. Explain the needs of animals, including humans, for survival. Explain the importance of exercise, eating healthily and keeping clean. 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) | <ul style="list-style-type: none"> Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get nutrition from what they eat. Explain why humans and some other animals have skeletons and muscles. | <ul style="list-style-type: none"> Explain some parts of the digestive system in humans. Explain the different types of teeth in humans and what they do. Describe and explain a variety of food chains, naming producers, predators and prey. | <ul style="list-style-type: none"> Describe the changes as humans develop into 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) | <ul style="list-style-type: none"> 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 the body functions. 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 Progression of Knowledge and Skills

| | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| Electricity | | | | | <ul style="list-style-type: none"> • Talk about common appliances that run on electricity. • Construct and draw with labels a simple series electrical circuits which includes cells, wires, bulbs, switches and buzzers. • Predict if a lamp will light or not in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery, • Explain that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. • Show that some materials are conductors and some are insulators, and can explain that metals are good conductors. | | <ul style="list-style-type: none"> • Show that the brightness of a lamp or the volume of a buzzer depends on 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. • Draw a diagram using recognised symbols to represent a simple circuit. |

Science Progression of Knowledge and Skills

| | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---------------------------|------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Evolution and Inheritance | | | <ul style="list-style-type: none"> 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) | <ul style="list-style-type: none"> 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) | <ul style="list-style-type: none"> Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats) | <ul style="list-style-type: none"> Describe the life process of reproduction in some plants and animals. (Living things and their habitats - Y5) | <ul style="list-style-type: none"> 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 Progression of Knowledge and Skills

| | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| Forces | <p>The Natural World (ELG)</p> <ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter | | <ul style="list-style-type: none"> 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) | <ul style="list-style-type: none"> Compare how things move on different surfaces. See 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 some materials on the basis of whether or not 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. | | <ul style="list-style-type: none"> Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Demonstrate the effects of air resistance, water resistance and friction, that act between moving surfaces. Show that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. | |

Science Progression of Knowledge and Skills

| | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| Light | <p>The Natural World (ELG)</p> <ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter | <ul style="list-style-type: none"> 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) | | <ul style="list-style-type: none"> Explain that I need light in order to see things and that dark is the absence of light. Show that light is reflected from surfaces. Explain that light from the sun can be dangerous and that there are ways to protect eyes. Show how shadows are formed when the light from a light source is blocked by a solid objects. Show that there are patterns in the way that the size of shadows change. | | <ul style="list-style-type: none"> 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) | <ul style="list-style-type: none"> Show that light appears to travel in straight lines. Use the explanation that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. Demonstrate and 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. Demonstrate that light travels in straight lines to show why shadows have the same shape as the objects that cast them. |

Science Progression of Knowledge and Skills

| | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| Living Things and Their Habitats | <p>The Natural World (ELG)</p> <ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter | <ul style="list-style-type: none"> 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) | <ul style="list-style-type: none"> 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 Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals including humans) | <ul style="list-style-type: none"> Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants) | <ul style="list-style-type: none"> Show that living things can be grouped together in various ways Explore and use classification keys to help group, identify and name a variety of living things Explain that environments can change and that this sometimes means that living things are put in danger Construct and interpret a variety of food chains, identifying producers, predators and prey. (Y4 - Animals, including humans) | <ul style="list-style-type: none"> Describe the difference in the life cycles of a mammal, an amphibian, an insect and a bird Describe how some animals and plants reproduce | <ul style="list-style-type: none"> 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 Progression of Knowledge and Skills

| | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| Materials | <p>The Natural World (ELG)</p> <ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter | <ul style="list-style-type: none"> Tell the difference between an object and the material from which it is made. Name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. Describe some everyday materials. Make groups of material based on what they are like. | <ul style="list-style-type: none"> 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. | <ul style="list-style-type: none"> 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) | <ul style="list-style-type: none"> Group materials together, according to whether they are solids, liquids or gases, including tricky ones like gels, foams, mists and pastes. Demonstrate and explain 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). Correctly talk about the part played by evaporation and condensation in the water cycle, and can show a link between the rate of evaporation and temperature. | <ul style="list-style-type: none"> 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. Explain 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 by 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 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 Progression of Knowledge and Skills

| | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| Plants | <p>The Natural World (ELG)</p> <ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter | <ul style="list-style-type: none"> Name some common wild and garden plants, including deciduous and evergreen trees. Name and describe the basic structure of a variety of common flowering plants, including trees. | <ul style="list-style-type: none"> 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) | <ul style="list-style-type: none"> Explain what different parts of the flowering plants do. Explore the requirements of plants for life and growth 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, see formation and seed dispersal. | <ul style="list-style-type: none"> 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) | <ul style="list-style-type: none"> Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats) | <ul style="list-style-type: none"> 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 Progression of Knowledge and Skills

| | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| Rocks | <p>The Natural World (ELG)</p> <ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter | <ul style="list-style-type: none"> 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) | <ul style="list-style-type: none"> 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) | <ul style="list-style-type: none"> Examine and do practical experiments on various types of rocks in order to group them on the basis of their appearance and simple physical properties Describe simply how fossils are formed when things that have lived are trapped within rock. Explain that soils are made from rocks and organic matter. | | | <ul style="list-style-type: none"> 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) |

Science Progression of Knowledge and Skills

| | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| Seasonal Changes | <p>The Natural World (ELG)</p> <ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter | <ul style="list-style-type: none"> Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies. | | <ul style="list-style-type: none"> Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light) | | <ul style="list-style-type: none"> 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 Progression of Knowledge and Skills

| | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| Sound | <p>The Natural World (ELG)</p> <ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter | <ul style="list-style-type: none"> 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) | | | <ul style="list-style-type: none"> Explain how sounds are made, and show that some of them are linked to vibrations. Explain 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. Show that there is a pattern between the volume of a sound and the strength of the vibrations that produced it. Show that sounds get fainter as the distance from the sound source increases. | | |

Science Progression of Knowledge and Skills

| | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| Space | | <ul style="list-style-type: none"> • 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) | | | | <ul style="list-style-type: none"> • 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. • Explain day and night, and the apparent movement of the sun across the sky, using the idea of the Earth’s rotation. | |

Science

Progression in Working Scientifically Knowledge and Skills

This document shows how the working scientifically statements from the science National Curriculum for England are linked and built on across the three phases in Key Stage 1 and 2. To highlight the links, the working scientifically skills statements are grouped under the following broader skills definitions.

- Asking questions and recognising that they can be answered in different ways
- Making observations and taking measurements
- Engaging in practical enquiry to answer questions
- Recording and presenting evidence
- Answering questions and concluding
- Evaluating and raising further questions and predictions
- Communicating their findings.

The working scientifically statements from the science National Curriculum for England are presented in bold. The bullet points that follow each statement are additional guidance that clarifies the expectations.

Working scientifically statements that feature in more than one of the broader skills definitions are shown in italics.

Science Progression of Knowledge and Skills

EYFS

- show curiosity and ask questions
- make observations using their senses and simple equipment
- make direct comparisons
- use equipment to measure
- record their observations by drawing, taking photographs, using sorting rings or boxes and, in Reception, on simple tick sheets
- use their observations to help them to answer their questions
- talk about what they are doing and have found out
- identify, sort and group.

| Year 1 and 2 | Year 3 and 4 | Year 5 and 6 |
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| Asking question and recognising that they can be answered in different ways | | |
| <p>Asking simple questions and recognising that they can be answered in different ways</p> <ul style="list-style-type: none"> • 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. | <p>Asking relevant questions and using different types of scientific enquiries to answer them</p> <ul style="list-style-type: none"> • 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. | <p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <ul style="list-style-type: none"> • 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. |

| Year 1 and 2 | Year 3 and 4 | Year 5 and 6 |
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| Making observations and taking measurements | | |
| <p>Observing closely, using simple equipment</p> <ul style="list-style-type: none"> • 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. | <p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <ul style="list-style-type: none"> • 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. | <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <ul style="list-style-type: none"> • 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). |

| Year 1 and 2 | Year 3 and 4 | Year 5 and 6 |
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| Engaging in practical enquiry to answer questions | | |
| <p>Performing simple tests</p> <ul style="list-style-type: none"> 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. <p>Identifying and classifying</p> <ul style="list-style-type: none"> 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. They use simple secondary sources (such as identification sheets) to name living things. They describe the characteristics they used to identify a living thing. | <p>Setting up simple practical enquiries, comparative and fair tests</p> <ul style="list-style-type: none"> 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. | <p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <ul style="list-style-type: none"> 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. |

| Year 1 and 2 | Year 3 and 4 | Year 5 and 6 |
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| Recording and presenting evidence | | |
| <p>Gathering and recording data to help in answering questions</p> <ul style="list-style-type: none"> 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. | <p>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</p> <ul style="list-style-type: none"> 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, and Carroll diagrams. Children are supported to present the same data in different ways in order to help with answering the question. | <p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <ul style="list-style-type: none"> 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. |

| Year 1 and 2 | Year 3 and 4 | Year 5 and 6 |
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| Answering questions and concluding | | |
| <p>Using their observations and ideas to suggest answers to questions</p> <ul style="list-style-type: none"> 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 secondary sources. <p>Using their observations and ideas to suggest answers to questions</p> <ul style="list-style-type: none"> The children recognise 'biggest and smallest', 'best and worst' etc. from their data. | <p>Using straightforward scientific evidence to answer questions or to support their findings</p> <ul style="list-style-type: none"> 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. <p>Identifying differences, similarities or changes related to simple scientific ideas and processes</p> <ul style="list-style-type: none"> Children interpret their data to generate simple comparative statements based on their evidence. They begin to identify naturally occurring patterns and causal relationships. <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <ul style="list-style-type: none"> They draw conclusions based on their evidence and current subject knowledge. | <p>Identifying scientific evidence that has been used to support or refute ideas or arguments</p> <ul style="list-style-type: none"> 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 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. <p>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</p> <ul style="list-style-type: none"> 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. |

| Year 1 and 2 | Year 3 and 4 | Year 5 and 6 |
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| Evaluating and raising further questions and predictions | | |
| | <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <ul style="list-style-type: none"> • They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry. <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <ul style="list-style-type: none"> • Children use their evidence to suggest values 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. | <p>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</p> <ul style="list-style-type: none"> • 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. <p>Using test results to make predictions to set up further comparative and fair tests</p> <ul style="list-style-type: none"> • Children use the scientific knowledge gained from enquiry work to make predictions they can investigate using comparative and fair tests. |

| Year 1 and 2 | Year 3 and 4 | Year 5 and 6 |
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| Communicating their findings | | |
| | <p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <ul style="list-style-type: none"> • They communicate their findings to an audience both orally and in writing, using appropriate scientific vocabulary. | <p>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</p> <ul style="list-style-type: none"> • They communicate their findings to an audience using relevant scientific language and illustrations. |

Mersey Park Vocabulary Progression

| | Foundation Stage | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| Working Scientifically | look closely, observe, watch, touch, feel, smell, listen, same, different, compare, ask questions, record, sort, group | questions, answers, equipment, gather, measure, record, results, sort, group, test, identify, classify, observe, compare, describe, similar/similarities, different/differences, beaker, investigate, fair test, conclusion, explore, prediction | observation over time, notice patterns, identify, classify, data, compare, investigate, observe, gather, measure, record, describe, pipette, syringe | enquiry, changes over time, notice patterns, secondary sources, comparative tests, fair tests, careful, accurate, identify, classify, observations, equipment, gather, measure, record, data, evidence, results, keys, bar charts, table, results, conclusions, predictions, support, thermometers | enquiry, increase, decrease, identify, classify, order, notice patterns, relationships, appearance, present results, data loggers | notice patterns, relationships, independent variable, dependent variable, controlled variable, accuracy, precision, degree of trust, classification keys, scatter graphs, line graphs, causal relationships, support, refute, data loggers | opinion, fact, enquiry |
| Animals, including Humans | names of animals, land, water, jungle, desert, North Pole, South Pole, sea, hot, cold, wet, dry, snow, ice, hair, eyes, skin, 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, egg, chick, bird, caterpillar, cocoon, chrysalis, butterfly, frog spawn, tadpole, froglet, frog, grow, change, die, names of animals and their young, fur, feathers, scales, tail, wings, beak, claws, paws, hooves, swim, walk, run, jump, fly, patterns, spots, stripes, grow, change, smell, taste, touch, feel, hear, see, blind, deaf | head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ears, tongue, hair, forehead, eyebrow, eyelash, eyelid, nostril, cheek, lips, chin, earlobe, neck, shoulder, upper arm, elbow, forearm, wrist, hand, thumb, waist, chest, thigh, hip, knee, calf, ankle, foot, toes, knuckle, sight, sound, feel, reptile, amphibian, mammal, insect, fish, bird, carnivore, herbivore, omnivore, habitat | offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies, survive, survival, water, food, air, exercise, heartbeat, breathing, hygiene, germs, disease, food types living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival (Y2 - Living things and their habitats) | nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine | digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, incisor, canine, molar, premolar, herbivore, carnivore, omnivore, producer, predator, prey | puberty, life cycle, foetus, baby, child, adolescent, adult, reproduce, sexual, sperm, fertilises, egg, live young (Y5 - Living things and their habitats) | heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, cycle, circulatory system, diet, drugs, lifestyle |

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| <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Living Things and Their Habitats</p> | <p>natural, plant, animal, leaves, seeds, conkers, acorns, twigs, bark, shells, feathers, pebbles, stones, same, different, pattern, plant, tree, bush, flower, vegetable, herb, weed, leaf, stem, branch, root, flower, petal, seed, berry, fruit, vegetable, bulb, hole, dig, water, weed, grow, shoot, die, dead, soil (Nursery - Plants)</p> | <p>names of garden and wild flowering plants in the local area (Y1 - Plants) 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 (Y1 - Animals, including humans) 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 (Y1 - Seasonal changes)</p> | <p>living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, names of local habitats, names of micro-habitats, conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold, names of living things in the habitats and micro-habitats studied light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling (Y2 - Plants) offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (Y2 - Animals, including humans)</p> | <p>photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal, air, nutrients, minerals, soil, absorb, transport (Y3 - Plants)</p> | <p>classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate herbivore, carnivore, omnivore, producer, predator, prey (Y4 - Animals, including humans)</p> | <p>life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, cuttings</p> | <p>vertebrates, fish, amphibians, reptiles, birds, mammals, warm-blooded, cold-blooded, invertebrates, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers</p> |
| <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Plants</p> | <p>plant, leaf, stem, branch, root, bark, flower, petal, seed, berry, fruit, vegetable, bulb, hole, dig, water, weed, grow, shoot, die, dead, soil tree, bush, herb, names of plants they see (Reception - Living things and their habitats)</p> | <p>leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, bulb, wild, sunlight, water, nutrition, vegetable, fruit, deciduous, evergreen, (names of trees in the local area, names of garden and wild flowering plants in the local area)</p> | <p>light, shade, sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling names of plants in local habitats and micro-habitats (Y2 - Living things and their habitats)</p> | <p>photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal, air, nutrients, minerals, soil, absorb, transport</p> | <p>classification, classification keys (Y4 - Living things and their habitats)</p> | <p>life cycle, reproduce, sexual, fertilises, asexual, plantlets, runners, tubers, cuttings (Y5 - Living things and their habitats)</p> | <p>flowering, non-flowering, mosses, ferns, conifers (Y6 - Living things and their habitats)</p> |

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| Seasonal Changes | <p>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</p> <p>grow, shoot, die, dead (Nursery - Plants)</p> <p>egg, chick, bird, caterpillar, cocoon, chrysalis, butterfly, frog spawn, tadpole, froglet, frog, grow, change, die, names of animals and their young (Nursery - Animals, excluding humans)</p> | <p>weather, sunny, rain, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, ice, rainbow, seasons, winter, summer, spring, autumn, sun, sunrise, sunset, year, month, cool, temperature, thermometer, rain gauge</p> | | | | | |
| Materials/ States of Matter | <p>mix, stir, cook, oven, microwave, change, burn, melt, hard, runny, set, freeze, freezer, cold, blended, hard, soft, bendy, stiff, wobbly, wood, plastic, paper, card, fabric, ice, water, frozen, icicle, snow, melt, wet, cold, slippery, smooth, big, bigger, biggest, smaller, smallest, smallest, hard, soft, bendy, rigid, wood, plastic, paper, card, metal, strong, weak, hot, apply heat, waterproof, soggy, not waterproof, best, change, change back</p> | <p>object, material, wood, plastic, glass, metal, water, brick, paper, fabric, elastic, foil, stone, rubber, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, rough, smooth, shiny, dull, transparent, opaque, thick, runny, sticky, lumpy, delicate</p> | <p>opaque, transparent, translucent, reflective, non-reflective, flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching</p> | <p>rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorbs water, fossil, bone, flesh, minerals, marble, chalk, granite, sandstone, slate, types of soil (Y3 - Rocks)</p> <p>magnetic force, magnet, attract, magnetic material, metal, iron, steel (Y3 - Forces and magnets)</p> | <p>solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle</p> <p>electrical conductor, electrical insulator, metal, non-metal (Y4 - Electricity)</p> | <p>thermal insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material</p> | |
| Rocks | <p>natural, shells, pebbles, stones</p> | <p>object, material, rock, brick, clay, hard, soft, waterproof, absorbent, rough, smooth, shiny, dull, see-through, not see-through (Y1 - Everyday materials)</p> | <p>opaque, transparent, translucent, reflective, non-reflective (Y2 - Uses of everyday materials)</p> | <p>rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorbs water, fossil, bone, flesh, minerals, marble, chalk, granite, sandstone, slate, types of soil</p> | | | <p>evolution</p> |

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| Light | light, torch, bulb, lamp, spotlight, shiny, bright, brighter, brightest, sun, shine, glow, mirror, sunny, shadow, shady, clouds, see-through, not see-through, source, light source | sun, sunny, light, shadow, shady, clouds, torch, see-through, not see-through, source, light source | senses, see, eyes (Y1 - Animals, including humans) shiny, dull, see-through, not see-through (Y1 - Materials) | opaque, transparent, translucent, reflective, non-reflective (Y2 - Uses of everyday materials) | light, light source, dark, absence of light, surface, shadow, reflect, mirror, sun, sunlight, dangerous | | straight lines, light rays |
| Sound | sound, noise, loud, quiet, high, low, music, bang, blow, pluck, soft, hard, fast, slow, names of instruments, listen, hear, music, voices, bird song, traffic, sirens, thunder, volume, crackle, hum, buzz, roar | senses, hear, ear (Y1 - Animals, including humans) | | | sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, quiet, loud, insulation | | |
| Forces/ Magnets | object, float, sink, water, bottom, push, pull, magnet, spring, squash, bend, twist, stretch, smooth, rough, fast, slow, float, sink, up, down, top, bottom, surface, move, roll, drop, fly, turn, spin, fall, faster, slower, fastest, slowest, further, furthest, wind, air, water, blow, bounce | | flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching (Y2 - Uses of everyday materials) | 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 | | force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears | |
| Electricity | battery, plug, socket, electricity, wire, sound, light, move | | | | 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 | | circuit diagram, circuit symbol, voltage |

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| Earth and Space | Sun, Moon, Earth, star, planet, sky, day, night, space, round, bounce, float | | | light, light source, Sun, sunlight, dangerous (Y3 - Light) | | Sun, Moon, Earth, planets (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, Solar System, rotate, star, orbit | |
| Evolution and Inheritance | natural, plant, animal, leaves, seeds, conkers, acorns, twigs, bark, shells, feathers, pebbles, stones, same, different, pattern (Nursery - Living things and their habitats) plant, tree, bush, flower, vegetable, herb, weed, animal, names of plants and animals they see, name of a contrasting environment (e.g. beach, forest) (Reception - Living things and their habitats) | leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud (Y1 - Plants) | light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling (Y2 - Plants) living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold (Y2 - Living things and their habitats) | photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (e.g. wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil (Y3 - Plants) soil, fossil, bone, flesh, minerals (Y3 - Rocks) | environment, habitat, human impact, positive, negative, migrate, hibernate (Y4 - Living things and their habitats) herbivore, carnivore, omnivore, producer, predator, prey (Y4 - Animals, including humans) | life cycle, reproduce, sexual, fertilises, asexual, plantlets, runners, tubers, cuttings (Y5 - Living things and their habitats) | offspring, sexual reproduction, vary, characteristics, adapted, inherited, species, evolve, evolution |