

## Heelands School

### Science Progression Map

#### Intent

At Heelands School it is our intention to develop in all young people a lifelong curiosity and interest in the sciences. When planning science, we intend that pupils have the opportunity, wherever possible, to learn through varied systematic investigations, encouraging them to ask and answer scientific questions about the world around them. As children progress through the year groups, they build on their skills in working scientifically, as well as on their scientific knowledge, as they develop greater independence in planning and carrying out fair and comparative tests to answer a range of scientific questions. Our scheme of work ensures that children have a varied, progressive and well-mapped-out science curriculum that provides the opportunity for progression across the full breadth of the science national curriculum for KS1.

#### Implementation

The acquisition of key scientific knowledge is an integral part of our science lessons. Linked knowledge organisers enable children to learn and retain the important, useful and powerful vocabulary and knowledge contained within each unit. The progression of skills for working scientifically are developed through the year groups and scientific enquiry skills are of key importance within lessons. The progression of these skills is set out in the Science Progression Map. Each lesson has a clear focus. Scientific knowledge and enquiry skills are developed with increasing depth and challenge as children move through the year groups. They complete investigations and hands-on activities while gaining the scientific knowledge for each unit. Interwoven into the teaching sequence are key assessment questions, identified in green on lesson plans. These allow teachers to assess children's levels of understanding at various points in the lesson. They also enable opportunities to recap concepts where necessary. The sequence of lessons helps to embed scientific knowledge and skills, with each lesson building on previous learning. There is also the opportunity to regularly review and evaluate children's understanding. Activities are effectively differentiated so that all children have an appropriate level of support and challenge.

#### Impact

Progress is measured through a child's ability to know more, remember more and explain more. This can be measured in different ways in our units. The use of key questions ensures opportunities are built into the lesson for ongoing assessment. Attainment and progress can be measured across the school using our assessment spreadsheets. The impact of using the full range of resources included in the science unit will also be seen across the school with an increase in the profile of science. The learning environment across the school will be more consistent with science technical vocabulary displayed, spoken and used by all learners. Whole-school and parental engagement will be improved through the use of science-specific home learning tasks and shared use of knowledge organisers. Children who feel confident in their science knowledge and enquiry skills will be excited about science, show that they are actively curious to learn more and will see the relevance of what they learn in science lessons to real-life situations and also the importance of science in the real world.

## Curriculum Expectations and Skills Progression in Foundation Stage and KS1

Strand	Foundation Stage	Year 1	Year 2
Plants	<p><b>The Natural World ELG</b> Children at the expected level of development will:</p> <ul style="list-style-type: none"> <li>Explore the natural world around them, making observations and drawing pictures of animals and plants;</li> <li>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;</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</li> <li>identify and describe the basic structure of a variety of common flowering plants, including trees.</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>observe and describe how seeds and bulbs grow into mature plants</li> <li>find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> </ul>
	<ul style="list-style-type: none"> <li>Explore the natural world around them. Describe what they see, hear and feel outside.</li> </ul>	<ul style="list-style-type: none"> <li>Know flowering plants have different parts – roots, stems, leaves, flowers, fruit,</li> <li>Plants are grouped into common wild and garden plants, deciduous and evergreen trees.</li> </ul>	<ul style="list-style-type: none"> <li>To know that some things are living, some are dead and some have never been alive Plants need water, light and warmth</li> <li>Seeds and bulbs grow into plants</li> </ul>
Vocab		<p>common trees, blossom, Petals, trunk stem root, wild plants evergreen, garden plants branches, root deciduous, vegetables, fruit evergreen plant, leaf, root, bulb leaves, bud, flowers seed</p>	<p>water grow reproduction light healthy suitable temperature germination</p>
Animals including Humans	<p><b>The Natural World ELG</b> Children at the expected level of development will:</p> <ul style="list-style-type: none"> <li>Explore the natural world around them, making observations and drawing pictures of animals and plants;</li> </ul> <p><b>Managing Self ELG</b> Children at the expected level of development will:</p> <p>- Manage their own basic hygiene and personal needs, including dressing, going to the toilet, and understanding the importance of healthy food choices.</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</li> <li>identify and name a variety of common animals that are carnivores, herbivores and omnivores</li> <li>describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</li> <li>identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>notice that animals, including humans, have offspring which grow into adults</li> <li>find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</li> <li>describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</li> </ul>
	<ul style="list-style-type: none"> <li>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</li> <li>Describe what is needed</li> <li>Name and talk about members of their immediate and extended family. to stay healthy and clean</li> </ul>	<ul style="list-style-type: none"> <li>Different animals need different types of food Animals, including humans, have different body parts ... and these have special functions to help them survive (Including senses)</li> </ul>	<ul style="list-style-type: none"> <li>Animals need water, food and air</li> <li>To stay healthy animals, need exercise, a balanced diet and hygiene</li> </ul>

Vocab		common animals, elbows, fish herbivores, legs amphibians plants, cow, hamster, knees reptiles birds omnivores, eras, mammals meat and plants, eyes pets hair carnivores head mouth meat, neck teeth killer whale, arms	adults exercise, hygiene, baby, toddler, child, teenager, adult, nutrition offspring, survival, spawn, tadpole, frog grow water, food, air lamb, sheep, reproduce, egg, caterpillar, pupa, butterfly
Everyday Materials		Pupils should be taught to: <ul style="list-style-type: none"> <li>distinguish between an object and the material from which it is made</li> <li>identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</li> <li>describe the simple physical properties of a variety of everyday materials</li> <li>compare and group together a variety of everyday materials on the basis of their simple physical properties.</li> </ul>	Pupils should be taught to: <ul style="list-style-type: none"> <li>identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> </ul>
	<ul style="list-style-type: none"> <li>Distinguish between an object and the material from which it is made.</li> <li>Identify and name some everyday materials.</li> <li>Name some familiar solids and liquids.</li> <li>Understand changing states in some matter i.e., water/ice</li> </ul>	<ul style="list-style-type: none"> <li>There are different materials and they are used to make different objects</li> <li>Different materials, including rocks, have different properties.</li> <li>Materials can be sorted into groups according to their observable properties</li> </ul>	<ul style="list-style-type: none"> <li>Different materials are suitable for different uses (Properties that can be observed)</li> <li>The shape of some solid materials can be changed by a contact force acting on them</li> </ul>
Vocab		wood, plastic, glass paper, metal, rock hard, soft, rough, smooth, shiny, dull, bendy, stiff.	brick, fabric, elastic, foil property, solid, waterproof, absorbent, opaque, transparent, squash, bend, flexible, twist, stretch push, pull, roll, slide, bounce
Living Things and their Habitats	<p><b>The Natural World ELG</b></p> <p>Children at the expected level of development will:</p> <ul style="list-style-type: none"> <li>Explore the natural world around them, making observations and drawing pictures of animals and plants;</li> <li>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;</li> <li>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</li> </ul>		Pupils should be taught to: <ul style="list-style-type: none"> <li>explore and compare the differences between things that are living, dead, and things that have never been alive</li> <li>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</li> <li>identify and name a variety of plants and animals in their habitats, including microhabitats</li> <li>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.</li> </ul>

	<ul style="list-style-type: none"> <li>Recognise changes in themselves as they grow. Learn the simple life cycles of butterflies and frogs.</li> <li>Identify and talk about a range of common animals. Talk about similarities between animals and plants and where some animals and plants are found. Talk about what animals eat</li> </ul>		<ul style="list-style-type: none"> <li>Animals and plants can be identified and grouped. This is linked to habitat Animals, including humans, reproduce offspring which grow into adults</li> <li>Different plants and animals live in different places to which they are suited-by giving them food and shelter</li> <li>Animals get their food from plants and other animals and in turn are consumed by other animals</li> </ul>
Vocab			living, dead, habitat, microhabitat, woodland, meadow, hedgerow, pond
Seasonal Changes	<b>The Natural World ELG</b> <ul style="list-style-type: none"> <li>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</li> </ul>	Pupils should be taught to: <ul style="list-style-type: none"> <li>observe changes across the four seasons</li> <li>observe and describe weather associated with the seasons and how day length varies.</li> </ul>	
	<ul style="list-style-type: none"> <li>Name the four seasons and describe the changes that take place.</li> <li>Observe and describe the weather associated with the seasons.</li> </ul>	<ul style="list-style-type: none"> <li>Temperature and day length changes over the year – this pattern is referred to as the seasons</li> </ul>	
Vocab		season, spring, summer, autumn, winter, month, year, day, night, sun, moon, light, dark, weather, snow, rain, wind, cold, hot, sunny	
Working Scientifically	<b>The Natural World ELG</b> Children at the expected level of development will: <ul style="list-style-type: none"> <li>Explore the natural world around them, making observations and drawing pictures of animals and plants.</li> </ul> <b>Speaking ELG</b> <ul style="list-style-type: none"> <li>Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction texts, personal experiences and work covered in class.</li> </ul>	During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: <ul style="list-style-type: none"> <li>asking simple questions and recognising that they can be answered in different ways</li> <li>observing closely, using simple equipment</li> <li>performing simple tests</li> <li>identifying and classifying</li> <li>using their observations and ideas to suggest answers to questions</li> <li>gathering and recording data to help in answering questions.</li> </ul>	

	<ul style="list-style-type: none"> <li>• Describe what they see, hear and feel whilst outside or in the classroom.</li> <li>• Ask questions to find out more and to check they understand what had been said to them.</li> <li>• Articulate their ideas, thoughts and intentions. (Communication and language)</li> </ul>	<ul style="list-style-type: none"> <li>• Ask simple questions.</li> <li>• Suggest simple ways of answering questions.</li> <li>• Use simple equipment to observe closely.</li> <li>• Performing simple tests.</li> <li>• Gather and record data.</li> <li>• Use his/her observations and ideas to suggest answers to questions</li> <li>• Identify and classify</li> <li>• Begin to notice and record similarities and differences</li> </ul>	<ul style="list-style-type: none"> <li>• Ask simple questions and know they can be answered in different ways</li> <li>• Observe closely using equipment – make observations over time</li> <li>• Perform simple comparative tests</li> <li>• Gather and record data to help in answering questions</li> <li>• Use his/her observations and ideas to suggest answers to questions noticing similarities, differences and patterns</li> <li>• Identify, group and classify</li> </ul>
<b>Vocab</b>	question, answer, observe, observing, equipment, identify, sort, group, compare, differences, similarities, describe, measurements, test, results, secondary		

## Science Long Term Plan

Foundation Stage					
Autumn 1 Ourselves	Autumn 2 Julia Donaldson and Festivals	Spring 1 Space (Science focus)	Spring 2 People Who Help Us (Science focus)	Summer 1 Traditional Tales	Summer 2 Minibeasts
<p>Exploring the Autumn season</p> <p>Exploring Science equipment in free learning (magnets, metal detectors, magnifying glasses)</p>	<p>Exploring sticks and where they come from  (stickman)</p> <p>Exploring Science equipment in free learning (magnets, metal detectors, magnifying glasses)</p>	<p>Learning about the planets in the solar system and where we live</p> <p>Focus on the seasons and what happens</p> <p>Exploring Science equipment in free learning (magnets, metal detectors, magnifying glasses)</p>	<p>Science week</p> <p>Link to doctors and how the body works. (science experiments)</p> <p>Exploring Science equipment in free learning (magnets, metal detectors, magnifying glasses)</p>	<p>Experiment with roots and turnips</p> <p>Exploring Science equipment in free learning (magnets, metal detectors, magnifying glasses)</p>	<p>Natural world contrast of environments.</p> <p>Exploring minibeasts and their habits</p> <p>Exploring Science equipment in free learning (magnets, metal detectors, magnifying glasses)</p>
Year 1					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p><b>Seasonal Change</b></p> <ul style="list-style-type: none"> <li>observe changes across the 4 seasons;</li> <li>observe and describe weather associated with the seasons and how day length varies.</li> </ul> <p>(Throughout whole year)</p>	<p><b>Plants</b></p> <p>identify and name a variety of common wild and garden plants, including deciduous and evergreen trees;</p>	<p><b>Plants</b></p> <ul style="list-style-type: none"> <li>identify and describe the basic structure of a variety of common flowering plants, including trees</li> </ul>	<p><b>Science week:</b></p> <p>identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</p>	<p><b>Everyday materials</b></p> <p>distinguish between an object and the material from which it is made;</p> <ul style="list-style-type: none"> <li>identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock;</li> <li>describe the simple physical properties of a variety of everyday materials;</li> <li>compare and group together a variety of everyday materials on the basis of their simple physical properties.</li> </ul>	<p><b>Animals including Humans</b></p> <ul style="list-style-type: none"> <li>identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals;</li> <li>identify and name a variety of common animals that are carnivores, herbivores and omnivores;</li> <li>describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets);</li> </ul>
Year 2					

<b>Autumn 1</b> <b>Pirates</b>	<b>Autumn 2</b> <b>Great Fire of London</b>	<b>Spring 1</b> <b>Space</b>	<b>Spring 2</b> <b>Roald Dahl</b>	<b>Summer 1</b> <b>Dinosaurs</b>	<b>Summer 2</b> <b>Knights and Castles</b>
<p><b>Uses of everyday materials</b></p> <ul style="list-style-type: none"> <li>• identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass,brick, rock, paper and cardboard for particular uses;</li> <li>• find out how the shape of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> </ul>	<p><b>Living Things and their Habitats</b></p> <p>explore and compare the differences between things that are living, dead, and things that have never been alive;</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• identify and name a variety of plants and animals in their habitats, including microhabitats;</li> <li>• 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.</li> </ul>	<p><b>Animals including Humans:</b></p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p><b>Science Week</b></p> <p>Focus on working scientifically within <b>Plants:</b></p> <p>find out and describe how plants need water light and a suitable temperature to grow and stay healthy.</p>	<p><b>Plants</b></p> <ul style="list-style-type: none"> <li>• observe and describe how seeds and bulbs grow into mature plants;</li> </ul>	<p><b>Animals including Humans</b></p> <p>find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>notice that animals, including humans, have offspring which grow into adults</p>