

**Science Progression of Skills at Leavening Community Primary**

Programmes of study	
EYFS	<p><b>Weather and seasons:</b></p> <ul style="list-style-type: none"> <li>• Observe and talk about changes in the weather.</li> <li>• Begin to know the names of the four seasons.</li> </ul> <p><b>Plants:</b></p> <p><b>Children begin to:</b></p> <ul style="list-style-type: none"> <li>• identify and name a variety of common wild and garden plants.</li> <li>• identify and describe the basic structure of a variety of common flowering plants, including trees – leaf, stem, flower, root</li> </ul> <p><b>Animals including Humans:</b></p> <ul style="list-style-type: none"> <li>• Identify and name a variety of common animals</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><b>Living Things and Their Habitats:</b></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: begin to understand that living things live in different habitats and some simple reasons for this.</li> <li>• explore and compare the differences between things that are living, dead, and things that have never been alive</li> </ul> <p><b>Everyday Materials:</b></p> <p><b>Children begin to:</b></p> <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>
Year 1	<p><b>Weather and seasons:</b></p> <ul style="list-style-type: none"> <li>• to know the names of the seasons and common weather patterns associated with each season.</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> <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><b>Everyday Materials:</b></p> <ul style="list-style-type: none"> <li>• distinguish between an object and the material from which it is made</li> </ul>

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	<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>Plants:</b></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><b>Living things and their habitats:</b></p> <p>Children begin to:</p> <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>
Year 2	<p><b>Weather and seasons:</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><b>Animals including humans:</b></p> <ul style="list-style-type: none"> <li>• Know that animals, including humans, have offspring which grow into adults</li> <li>• Know the basic stages in a life cycle for animals, including humans.</li> <li>• Find out 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> <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 shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</li> </ul> <p><b>Plants:</b></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> <p><b>Living things and their habitats:</b></p> <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> </ul>

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	<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>
Year 3 and 4	<p><b>Earth and Space:</b></p> <ul style="list-style-type: none"> <li>• describe the movement of the Earth and other planets relative to the sun in the solar system.</li> <li>• Describe the movement of the moon relative to the Earth.</li> <li>• Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> <li>• Become familiar with the history of space travel.</li> </ul> <p><b>Animals including Humans:</b></p> <ul style="list-style-type: none"> <li>• identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat</li> <li>• identify that humans and some other animals have skeletons and muscles for support, protection and movement.</li> <li>• describe the simple functions of the basic parts of the digestive system in humans</li> <li>• identify the different types of teeth in humans and their simple functions</li> <li>• construct and interpret a variety of food chains, identifying producers, predators and prey</li> </ul> <p><b>States of Matter:</b></p> <ul style="list-style-type: none"> <li>• compare and group materials together, according to whether they are solids, liquids or gases</li> <li>• observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)</li> <li>• identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> </ul> <p><b>Living Things and Their Habitats:</b></p> <ul style="list-style-type: none"> <li>• recognise that living things can be grouped in a variety of ways</li> <li>• explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li>• recognise that environments can change and that this can sometimes pose dangers to living things</li> </ul> <p><b>Evolution and inheritance:</b> Children begin to:</p> <ul style="list-style-type: none"> <li>• Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</li> <li>• Explore how fossils are formed.</li> <li>• Describe (Y3 in simple terms) how fossils are formed when things that have lived are trapped within rock.</li> <li>• Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</li> </ul>

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- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

**Properties and Changes in Materials:**

Children will:

- compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency,
- know that some materials will dissolve in liquid to form a solution.
- use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.
- give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.

**Forces and Magnets:**

- To know that forces are either a push or a pull
- compare how things move on different surfaces
- notice that some forces need contact between 2 objects, but magnetic forces can act at a distance
- observe how magnets attract or repel each other and attract some materials and not others
- compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
- describe magnets as having 2 poles
- predict whether 2 magnets will attract or repel each other, depending on which poles are facing

**Plants:**

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

**Light:**

- Recognise that they need light to see things and that dark is the absence of light.
- Notice that light is reflected from surfaces
- Recognise that light from the sun can be dangerous and that there are ways to protect their eyes
- Recognise that shadows are formed when the light from a light source is blocked by a solid object
- Find patterns in the way that the size of shadows change.

**Rocks:**

- Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
- Describe in simple terms how fossils are formed when things that have lived are trapped within rock (link to evolution and inheritance topic)

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	<ul style="list-style-type: none"> <li>• Recognise that soils are made from rocks and organic matter.</li> </ul> <p><b>Sound:</b></p> <ul style="list-style-type: none"> <li>• identify how sounds are made, associating some of them with something vibrating</li> <li>• recognise that vibrations from sounds travel through a medium to the ear</li> <li>• find patterns between the pitch of a sound and features of the object that produced it</li> <li>• find patterns between the volume of a sound and the strength of the vibrations that produced it</li> <li>• recognise that sounds get fainter as the distance from the sound source increases</li> </ul> <p><b>Electricity:</b></p> <ul style="list-style-type: none"> <li>• identify common appliances that run on electricity</li> <li>• construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</li> <li>• identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery</li> <li>• recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li> <li>• recognise some common conductors and insulators, and associate metals with being good conductors.</li> </ul>
Year 5 and 6	<p><b>Earth and Space:</b></p> <ul style="list-style-type: none"> <li>• describe the movement of the Earth and other planets relative to the sun in the solar system.</li> <li>• Describe the movement of the moon relative to the Earth. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> <li>• Describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>• Understand the seasons and the Earth's tilt, day length at different times of year, in different hemispheres.</li> </ul> <p><b>Animals including Humans:</b></p> <ul style="list-style-type: none"> <li>• describe the changes as humans develop to old age</li> <li>• identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</li> <li>• recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> <li>• describe the ways in which nutrients and water are transported within animals, including humans.</li> </ul> <p><b>Living Things and their habitats:</b></p> <ul style="list-style-type: none"> <li>• describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</li> <li>• describe the life process of reproduction in some plants and animals</li> <li>• 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</li> <li>• give reasons for classifying plants and animals based on specific characteristics.</li> </ul> <p><b>States of Matter:</b> Understand the properties of the different states of matter (solid, liquid and gas) in terms of the particle model.</p>

**Evolution and Inheritance:**

Children can: ·

- Explore how fossils are formed, building on previous knowledge by discussing and explaining to younger pupils. ·
- 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 and explain in detail how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

**Properties and Changes in Materials:**

Building on their knowledge from LKS2 (Non-bold), children will (in bold):

- compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, **conductivity (electrical and thermal), and response to magnets.**
- know that some materials will dissolve in liquid to form a solution, **and describe how to recover a substance from a solution**
- use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and **evaporating**
- give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
- demonstrate that dissolving, mixing and changes of state are reversible changes
- **explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.**

**Plants:**

- describe the life process of reproduction in some plants, including sexual and asexual.
- Know the names of the reproductive parts of the plant.

**Forces:**

- explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
- identify the effects of air resistance, water resistance and friction, that act between moving surfaces
- recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect

**Light:**

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

**Rocks:**

- Build on knowledge from LKS2 and explain how different rock types are formed.
- Attempt to identify different rocks according to their type.

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	<p><b>Sound:</b> Children will develop and deeper, secure knowledge of the objectives in Year 3 and 4 by:</p> <ul style="list-style-type: none"> <li>• Leading and explaining tasks and activities to younger pupils, encouraging them to talk about their understanding and ask questions.</li> <li>• Posing questions to the younger pupils, supported by the teacher.</li> <li>• Pupils will become confident in the use of data loggers and analysing data produced. They will support and teach the younger pupils how to use data loggers.</li> </ul> <p><b>Electricity:</b></p> <ul style="list-style-type: none"> <li>• associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>• 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</li> <li>• use recognised symbols when representing a simple circuit in a diagram.</li> </ul>
<b>Scientific Enquiry and Working Scientifically</b>	
EYFS	<p><b>Scientific Enquiry:</b> They should begin to use simple scientific language to talk about what they have found out and begin to communicate their ideas in different ways.</p> <p><b>Working Scientifically:</b></p> <ul style="list-style-type: none"> <li>• asking simple questions</li> <li>• making observations with increasing focus</li> <li>• beginning to perform simple tests</li> <li>• beginning to identify and classify with increasing accuracy</li> <li>• beginning to use their observations and ideas to suggest answers to questions</li> </ul>
Years 1 and 2	<p><b>Scientific enquiry:</b> Children should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including <b>observing changes over a period of time, noticing patterns, grouping and classifying</b> things, carrying out simple <b>comparative tests</b>, and <b>finding things out using secondary sources of information</b>. 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.</p> <p><b>Working Scientifically:</b> 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:</p> <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>

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<p>Years 3 and 4</p>	<p><b>Scientific Enquiry:</b> Science teaching in lower key stage 2 should 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 <b>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</b>. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.</p> <p><b>Working Scientifically:</b> During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> <li>• asking relevant questions and using different types of scientific enquiries to answer them</li> <li>• setting up simple practical enquiries, comparative and fair tests</li> <li>• making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>• gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> <li>• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>• using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>• identifying differences, similarities or changes related to simple scientific ideas and processes</li> <li>• using straightforward scientific evidence to answer questions or to support their findings.</li> </ul>
<p>Years 5 and 6</p>	<p><b>Scientific Enquiry:</b> 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 <b>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</b>. 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.</p> <p><b>Working Scientifically:</b> During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p>

## Science Progression of Skills End of Year Expectations

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|  | <ul style="list-style-type: none"><li>• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li><li>• taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li><li>• recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li><li>• using test results to make predictions to set up further comparative and fair tests</li><li>• reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</li><li>• identifying scientific evidence that has been used to support or refute ideas or arguments</li></ul> |
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