






Progression map of skills: Whole School.




**Science: Working Scientifically- STATUTORY REQUIREMENTS**

EYFS

**Understanding the World Educational program:**

Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.

	KEY STAGE ONE	LOWER KEY STAGE TWO	UPPER KEY STAGE TWO
<b>RESEARCH</b> 	Asking simple questions, recognising they can be answered in different ways.	Using straightforward scientific evidence to answer questions or support findings.  Use secondary sources of information to answer scientific questions.	Using a range of scientific evidence to answer questions or support findings.  Use secondary sources of information to answer scientific questions.
<b>OBSERVATION OVER TIME</b> 	Observing closely using simple equipment over a period of time	Making systematic, careful observations over a period of time.  Taking accurate measurements on a range of equipment such as thermometers and data loggers.	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision over a period of time.  Understanding the need to take repeat readings when appropriate.
<b>COMPARATIVE/FAIR TESTING.</b> 	Performing simple tests. Changing one variable to see its effect on another, whilst keeping all others the same.	Setting up simple practical enquiries, which are comparative and include an element of fair testing.	Using test results to make predictions to set up further comparative and fair tests.  Identifying variables to consider.

<p><b>IDENTIFYING, GROUPING AND CLASSIFYING.</b></p> 	<p>Identify and classify a range of things.</p> <p>Making observations to name, sort and organise items.</p>	<p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</p> <p>Making observations to name, sort and organise items.</p>	<p>Recording data and results of increasingly complex ways such as: scientific diagrams (with labels), classification keys, tables, scatter graphs, bar and line graphs.</p> <p>Making observations to name, sort and organise items.</p>
<p><b>PATTERN- SEEKING</b></p> 	<p>Identifying patterns from pre-collected data.</p>	<p>Identifying patterns from a mixture of pre-collected data and data collected through enquiry.</p> <p>Looking for relationships in enquiries where variables are more difficult to control.</p> <p>Begin to identify direct relationships and causal relationships.</p>	<p>Identifying patterns from a range of data and sources.</p> <p>Looking for relationships in enquiries where variables are more difficult to control.</p> <p>Articulate the difference between direct relationships and causal relationships.</p>
<p><b>PROBLEM SOLVING</b></p> 	<p>Using observations and ideas to suggest answers to questions.</p> <p>Use knowledge from the world around to suggest answers to problems.</p>	<p>Using results to draw simple conclusions, make predictions, suggest improvements and raise further questions.</p> <p>Identifying differences, similarities or changes related to scientific ideas and processes.</p> <p>Begin to apply prior scientific knowledge to find answers to problems.</p>	<p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p> <p>Applying prior scientific knowledge to find answers to problems.</p>
<p><b>RECORDING</b></p>	<p>Gathering and recording data to help in answering questions.</p>	<p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.</p> <p>Report on findings from enquiries, oral and written explanations, displays or presentations of results and conclusions.</p>	<p>Reporting and presenting findings from enquiries; including conclusions, causal relationships and explanations in oral and written forms such as displays and under presentations.</p>

## Science: Vocabulary Map

EYFS	KEY STAGE ONE	LOWER KEY STAGE TWO	UPPER KEY STAGE TWO
<ul style="list-style-type: none"> <li>• Science</li> <li>• Experiment</li> <li>• Test</li> <li>• Fair</li> <li>• Find out</li> <li>• Explain</li> <li>• Reason</li> <li>• Why</li> <li>• Record</li> <li>• Senses</li> <li>• Spring</li> <li>• Summer</li> <li>• Autumn</li> <li>• Winter</li> </ul>	<p><b>Year 1</b></p> <p><b>Animals including humans:</b></p> <p>Fish, reptiles, mammals, birds, amphibians (+examples of each), herbivore, omnivore, carnivore, leg, arm, elbow, head, ear, nose, back, wings, beak.</p> <p><b>Plants:</b></p> <p>Deciduous, evergreen, leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem.</p> <p><b>Everyday Materials:</b></p> <p>Wood, plastic, glass, paper, water, metal, rock, hard, soft, bendy, rough, smooth.</p> <p><b>Seasonal changes:</b></p> <p>Summer, spring, autumn, winter, sun, day, moon, night, light, dark.</p> <p><b>Year 2</b></p> <p><b>Animals including humans:</b></p> <p>Survival, water, air, food, adult, baby, offspring, kitten, calf, puppy, exercise, hygiene.</p> <p><b>Plants</b></p>	<p><b>Year 3</b></p> <p><b>Animals including humans:</b></p> <p>Movement, muscles, bones, skull, nutrition, skeletons (you may want to include names of muscles and bones).</p> <p><b>Plants:</b></p> <p>Air, light, water, nutrients, soil, reproduction, transportation, dispersal, pollination, flower.</p> <p><b>Rocks:</b></p> <p>Fossils, soils, sandstone, granite, marble, pumice, crystals, absorbent.</p> <p><b>Light:</b></p> <p>Light, shadows, mirror, reflective, dark, reflection.</p> <p><b>Forces and magnets:</b></p> <p>Magnetic, force, contact, attract, repel, friction, poles, push, pull.</p> <p><b>Year 4</b></p> <p><b>Animals including humans:</b></p> <p>Mouth, tongue, teeth, oesophagus, stomach, small intestine, large intestine, herbivore, carnivore, canine, incisor, molar.</p>	<p><b>Year 5</b></p> <p><b>Animals including humans:</b></p> <p>Foetus, embryo, womb, gestation, baby, toddler, teenager, elderly, growth, development, puberty.</p> <p><b>Living things and their habitats:</b></p> <p>Mammal, reproduction, insect, amphibian, bird, offspring (and examples of these)</p> <p><b>Properties and changes of materials:</b></p> <p>Hardness, solubility, transparency, conductivity, magnetic, filter, evaporation, dissolving, mixing.</p> <p><b>Earth and Space</b></p> <p>Earth, Sun, Moon, axis, rotation, day, night, phases of the moon, star, constellation.</p> <p><b>Forces:</b></p> <p>Air resistance, water resistance, friction, gravity, Newton, gears, pulleys.</p> <p><b>Year 6</b></p> <p><b>Animals including humans:</b></p> <p>Circulatory, heart, blood vessels, veins, arteries, oxygenated,</p>

	<p>Seeds, bulbs, water, light, temperature, growth.</p> <p><b>Living things and their habitats</b></p> <p>Living, dead, habitat, energy, food chain, predator, prey, woodland, pond, desert.</p> <p><b>Everyday materials and their uses:</b></p> <p>Hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy, waterproof, absorbent, opaque, transparent, brick, paper, fabrics, squashing, bending, twisting, stretching, elastic, foil.</p>	<p><b>Living things and their habitats:</b></p> <p>Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, snails, slugs, worms, spiders, insects, environment, habitats (plus technical vocabulary, for example names).</p> <p><b>States of Matter:</b></p> <p>Solid, liquid, gas, evaporation, condensation, particles, temperature, freezing, heating.</p> <p><b>Sound:</b></p> <p>Volume, vibration, wave, pitch, tone, speaker.</p> <p><b>Electricity:</b></p> <p>Cells, wires, bulbs, switches, buzzers, battery, circuit, series, conductors, insulators.</p>	<p>deoxygenated, valve, exercise, respiration.</p> <p><b>Living things and their habitats:</b></p> <p>Classification, vertebrates, invertebrates, micro-organisms, amphibians, reptiles, mammals, insects (and examples of all)</p> <p><b>Evolution and inheritance:</b></p> <p>Fossils, adaptation, evolution, characteristics, reproduction, genetics.</p> <p><b>Light</b></p> <p>Refraction, reflection, light, spectrum, rainbow, colour.</p> <p><b>Electricity:</b></p> <p>Cells, wires, bulbs, switches, buzzers, battery, circuit, series, conductors, insulators, amps, volts, cell.</p>
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**Skills Map- Science**

**Early Years Foundation Stage**

**Core Knowledge / skills and concepts. By the time children finish in EYFS we want them...**

- To know about Nympsfield and where they live.
- To observe and comment on differences in the seasons and weather in Nympsfield and compare to other hot and cold parts of the world.
- To explore a range of materials and states of being and say how they change overtime and in different conditions e.g. ice.
- To know how plants and animals change over time and understand what they need to grow
- To talk about the Earth, sun, moon, planets and stars

<b>Observing closely</b>	<b>Performing tests</b>	<b>Identifying and Classifying</b>	<b>Recording findings</b>
Through provision, focus groups and with adult support, can children...	Through provision, focus groups and with adult support, can children...	Through provision, focus groups and with adult support, can children...	Through provision, focus groups and with adult support, can children...

<ul style="list-style-type: none"> <li>• Discuss what they can see, touch, smell, hear or taste?</li> <li>• Use simple equipment to help them make observations?</li> </ul>	<ul style="list-style-type: none"> <li>• Perform a simple test?</li> <li>• Describe/explain what they have done?</li> </ul>	<ul style="list-style-type: none"> <li>• Identify and classify things they observe?</li> <li>• Think of some questions to ask?</li> <li>• Answer some scientific questions?</li> <li>• Give a simple reason for their answer?</li> <li>• Explain what they have found out?</li> </ul>	<ul style="list-style-type: none"> <li>• Show their work using pictures, labels and captions?</li> <li>• Record their findings using standard units?</li> <li>• Record some information in a chart or table, or using ICT?</li> </ul>
<b>Early Years Greater Depth</b>			
<ul style="list-style-type: none"> <li>• Can they find out by watching, listening, tasting, smelling and touching?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they give reasons for their answers?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they discuss similarities and differences?</li> <li>• Can they explain what they have found out using scientific vocabulary?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they compare measurements?</li> </ul>

**Skills Map- Science**

**Year 1- Plants and animals including Humans.**

Plants	Animals, including Humans	
<ul style="list-style-type: none"> <li>• Can they describe and name the petals, stem, leaf, bulb, flower, seed, stem and root of a plant?</li> <li>• Can they identify and name a range of common plants and trees?</li> <li>• Can they name the trunk, branches and root of a tree?</li> <li>• Can they discuss what they can see, touch, smell, hear or taste?</li> </ul> <p><b>Writing opportunities: Non-chronological report</b> <i>Geography/Science Article.</i></p>	<ul style="list-style-type: none"> <li>• Can they identify some of the differences between different animals?</li> <li>• Can they identify living and non-living things?</li> <li>• Can they identify and name a variety of common animals?</li> <li>• Can they describe how an animal is suited to its environment?</li> <li>• Can they identify and name a variety of common animals that are carnivores, herbivores and omnivores?</li> </ul> <p><b>Writing opportunities- poetry, non-chronological report</b> <i>Write a mini-beast poem/Create a mini-beast fact file.</i></p>	<ul style="list-style-type: none"> <li>• Can they name the parts of the human body and link them to their senses?</li> <li>• Can they name the parts of an animal's body?</li> <li>• Can they name a range of domestic animals?</li> <li>• Can they compare the bodies of different animals?</li> <li>• Can they talk about what they see, touch, smell, hear or taste?</li> </ul> <p><b>Writing opportunities: Non-chronological Report</b> <i>Create an animal fact file to compare with others.</i></p>
<b>Year 1 Greater Depth</b>		
<ul style="list-style-type: none"> <li>• Can they begin to describe what each part of the plant does?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they begin to classify animals according to a number of given criteria?</li> <li>• Can they point out differences between living and non-living?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they name some parts of the human body that cannot be seen?</li> <li>• Can they say why certain animals have certain characteristics?</li> <li>• Can they name a range of wild animals?</li> </ul>

**Skills Map- Science**

**Year 1- Everyday Materials and Seasonal changes**

Everyday materials (classifying and grouping)	Seasonal Changes
<ul style="list-style-type: none"> <li>• Can they distinguish between an object and the material from which it is made?</li> <li>• Can they describe materials using their senses, using specific scientific words?</li> <li>• Can they explain what material objects are made from?</li> <li>• Can they explain why a material might be useful for a specific job?</li> <li>• Can they name some different everyday materials? E.g wood, plastic, metal, water and rock.</li> <li>• Can they sort materials into groups by a given criteria?</li> <li>• Can they explain how solid shapes can be changed by squashing, bending, twisting and stretching?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they observe changes across the four seasons?</li> <li>• Can they name the four seasons in order?</li> <li>• Can they observe and describe weather associated with the seasons?</li> <li>• Can they observe and describe how day length varies?</li> <li>• Can they talk about what they see, touch, smell, hear or taste?</li> </ul> <p><b>Writing opportunities: Diary/ Poetry</b> <i>Write a diary to show the changes across the four seasons.</i> <i>Write a seasons poem using the senses.</i></p>

**Year 1 Greater Depth**

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| <ul style="list-style-type: none"> <li>• Can they describe things that are similar and different between materials?</li> <li>• Can they explain what happens to certain materials when they are heated?</li> <li>• Can they explain what happens to certain materials when they are cooled?</li> </ul> | <ul style="list-style-type: none"> <li>• Can they observe features in the environment and explain that these are related to specific seasons?</li> <li>• Can they observe and talk about changes in the weather?</li> <li>• Can they talk about weather variation in different parts of the world?</li> </ul> |
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**Skills Map- Science**

**Year 1- Working Scientifically.**

<b>Observing closely</b>	<b>Performing tests</b>	<b>Identifying and Classifying</b>	<b>Recording findings</b>
<ul style="list-style-type: none"> <li>• Can they discuss what they can see, touch, smell, hear or taste?</li> <li>• Can they use simple equipment to help them make observations?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they perform a simple test?</li> <li>• Can they describe/explain what they have done?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they identify and classify things they observe?</li> <li>• Can they think of some questions to ask?</li> <li>• Can they answer some scientific questions?</li> <li>• Can they give a simple reason for their answer?</li> <li>• Can they explain what they have found out?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they show their work using pictures, labels and captions?</li> <li>• Can they record their findings using standard units?</li> <li>• Can they record some information in a chart or table, or using ICT?</li> </ul>

**Year 1 Greater Depth**

<ul style="list-style-type: none"> <li>• Can they find out by watching, listening, tasting, smelling and touching?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they give reasons for their answers?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they discuss similarities and differences?</li> <li>• Can they explain what they have found out using scientific vocabulary?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they make accurate measurements using non-standard measurements e.g. unifix.</li> </ul>
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**Skills Map- Science**

**Year 2- Living things and their habitats, Animals including Humans and Plants**

<b>Living things and their habitats</b>	<b>Animals, including Humans</b>	<b>Plants</b>
<ul style="list-style-type: none"> <li>• Can they match certain living things to the habitats they are found in?</li> <li>• Can they explain the differences between living and non-living things?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they describe what animals need to survive?</li> <li>• Can they explain that animals grow and reproduce?</li> <li>• Can they explain why animals have offspring which grow into adults?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they describe what plants need to survive?</li> <li>• Can they observe and describe how seeds and bulbs grow into mature plants?</li> <li>• Can they investigate and describe the impact of removing light, soil or water from a growing or germinating plant?</li> </ul>

<ul style="list-style-type: none"> <li>• Can they describe some of the life processes common to plants and animals, including humans?</li> <li>• Can they describe how a habitat provides for the basic needs of things living there?</li> <li>• Can they describe how some animals get their food using basic food chains?</li> <li>• Can they describe how plants and animals are suited to their habitat?</li> </ul> <p><b>Writing opportunities: Non-chronological report</b> Create a class book detailing how to look after all the animals in the park. Write a fact sheet for each one with all the essential information on it. Write a recount of the trip to a Country park or local habitat.</p>	<ul style="list-style-type: none"> <li>• Can they describe the life cycle of some living things?</li> <li>• Can they explain the basic needs of animals including humans for survival?</li> <li>• Can they describe why exercise, balanced diet and hygiene are important for humans?</li> </ul> <p><b>Writing opportunities- Non-chronological report</b> <i>Write about the life cycle of a moth or butterfly.</i></p>	<p><b>Writing opportunities: Instructions</b> <i>Write instructions to explain how to plant a seed to grow into a beautiful forest.</i></p>
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Year 2 Greater Depth		
<ul style="list-style-type: none"> <li>• Can they name some characteristics of an animal that help it to live in a particular habitat?</li> <li>• Can they describe what animals need to survive and link this to their habitats?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they explain that animals reproduce in different ways?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they describe what plants need to survive and link it to where they are found?</li> <li>• Can they explain that plants grow and reproduce in different ways?</li> </ul>

Skills Map- Science	
Year 2- Materials	
Classifying and grouping materials	Changing materials
<ul style="list-style-type: none"> <li>• Can they describe the simple physical properties of a variety of everyday materials?</li> <li>• Can they compare and group together a variety of materials based on their simple physical properties?</li> <li>• Can they use see, touch, smell, hear or taste to help them answer any questions?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they explore how the shapes of solid objects can be changed?</li> <li>• Can they identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick for particular uses?</li> <li>• Can they explain how materials are changed by bending, twisting and stretching?</li> </ul>

**Year 2 Greater Depth**

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| <ul style="list-style-type: none"> <li>• Can they describe the properties of different materials using words like transport, opaque, flexible?</li> <li>• Can they sort materials into groups and say why they have sorted them in that way?</li> <li>• Can they say which materials are natural and which are man-made?</li> </ul> | <ul style="list-style-type: none"> <li>• Can they explain how materials are changed by heating and cooling?</li> <li>• Can they tell which materials cannot be changed back after being heated, cooled, bent, stretched or twisted?</li> </ul> |
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**Skills Map- Science  
Year 2- Working Scientifically.**

<b>Observing closely</b>	<b>Performing tests</b>	<b>Identifying and Classifying</b>	<b>Recording findings</b>	<b>Types of investigations</b>
<ul style="list-style-type: none"> <li>• Can they use what they can see, touch, smell, hear or taste to help them answer questions?</li> <li>• Can they use some scientific words to describe what they have just seen and measured?</li> <li>• Can they compare several things?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they carry out a simple test?</li> <li>• Can they explain why it might not be fair to compare two things?</li> <li>• Can they say whether things happened as they expected?</li> <li>• Can they suggest how to find things out?</li> <li>• Can they use prompts to find things out?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they organise things into groups?</li> <li>• Can they find simple patterns (or associations)?</li> <li>• Can they identify animals and plants by a specific criteria?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they use text, diagrams, pictures, charts, tables to record their observations?</li> <li>• Can they measure using simple equipment?</li> </ul>	<p>Can children investigate by:</p> <ul style="list-style-type: none"> <li>• Observing changes over time?</li> <li>• Noticing similarities and differences and patterns?</li> <li>• Grouping and classifying?</li> <li>• Carrying out comparative tests?</li> <li>• Find things out using secondary sources of information?</li> </ul>
<b>Year 2 Greater Depth</b>				
<ul style="list-style-type: none"> <li>• Can they suggest ways of finding out through listening, hearing, smelling, touching and tasting?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they say whether things happened as they expected and if not, why not?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they suggest more than one way of grouping animals and plants and explain their reasoning?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they use information from books and online information to find things out?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they begin to independently consider controlling variables to create a fair test?</li> </ul>

**Skills Map- Science**

**Year 3- Plants and Animals, including Humans**

<b>Animals including Humans</b>	<b>Plants</b>
<ul style="list-style-type: none"> <li>• Can they explain the importance of a nutritionally balanced diet?</li> <li>• Can they describe how nutrients, water and oxygen are transported within animals and humans?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they identify and describe the functions of different parts of flowering plants?</li> <li>• Can they explore the requirement of plants for life and growth?</li> </ul>

<ul style="list-style-type: none"> <li>• Can they identify that animals, including humans, cannot make their own food: they get nutrition from what they eat?</li> <li>• Can they describe and explain the skeletal system of a human?</li> <li>• Can they describe and explain the muscular system of a human?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they investigate the way in which water is transported within plants?</li> <li>• Can they explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal?</li> </ul> <p><i>Writing opportunities: Non-chronological reports, Explanations Plant fact files, explaining the pollination process, finding out how nature regenerates.</i></p>
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**Year 3 Greater Depth**

<ul style="list-style-type: none"> <li>• Can they explain how the muscular and skeletal systems work together to create movement?</li> <li>• Can they classify living things and non-living things by a number of characteristics that they have thought of?</li> <li>• Can they explain how people, weather and the environment can affect living things?</li> <li>• Can they explain how certain living things depend on one another to survive?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they classify a range of common plants according to many criteria?</li> </ul>
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**Skills Map- Science**

**Year 3- Rocks, forces and magnets, Light**

<b>Rocks</b>	<b>Forces and Magnets</b>	<b>Light</b>
<ul style="list-style-type: none"> <li>• Can they compare and group together different rocks on the basis of their appearance and simple physical properties?</li> <li>• Can they describe and explain how different rocks can be useful to us?</li> <li>• Can they describe in simple terms how fossils are formed when things that have lived are trapped within rock?</li> <li>• Can they describe and explain the differences between sedimentary and igneous rocks, considering the way they are formed?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they compare how things move on different surfaces?</li> <li>• Can they observe that magnetic forces can be transmitted without direct contact?</li> <li>• Can they observe how some magnets attract or repel each other?</li> <li>• Can they identify and classify which everyday materials are attracted to magnets and which are not?</li> <li>• Can they notice that some forces need contact between two objects, but magnetic forces can act at a distance?</li> <li>• Can they describe magnets as having two poles and predict whether two magnets will attract or repel each other depending on which way the poles are facing?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they recognise that they need light in order to see things?</li> <li>• Can they recognise that dark is the absence of light?</li> <li>• Can they notice that light is reflected from the surfaces?</li> <li>• Can they recognise that light from the sun can be dangerous and that there are ways to protect their eyes?</li> <li>• Can they recognise that shadows are formed when the light from a light source is blocked by a solid object?</li> <li>• Can they find patterns in the way that the size of shadows change?</li> <li>• Can they explain the difference between transparent, translucent and opaque?</li> </ul>

<ul style="list-style-type: none"> <li>• Can they recognise that soils are made from rocks and organic matter?</li> <li>•</li> </ul> <p><b>Writing opportunities: Non-chronological report /Instructions</b>  <i>Mary Anning, write instructions on how fossils are made.</i></p>	<p><b>Writing opportunities- Diary</b>  <i>Diary entry as Magnes- discovery of magnetism in science.</i></p>	
<b>Year 3 Greater Depth</b>		
<ul style="list-style-type: none"> <li>• Can they classify igneous and sedimentary rocks?</li> <li>• Can they begin to relate the properties of rocks with their uses?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they investigate the strengths of different magnets and find fair ways to compare them?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they explain why lights need to be bright or dimmer according to need?</li> <li>• Can they say what happens to the electricity when more batteries are added?</li> <li>• Can they explain why their shadow changes when the light source is moved closer or further from the object?</li> </ul>

<b>Skills Map- Science</b>			
<b>Year 3- Working Scientifically.</b>			
<b>Planning</b>	<b>Obtaining and presenting evidence</b>	<b>Considering evidence and evaluating</b>	<b>Types of investigations</b>
<ul style="list-style-type: none"> <li>• Can they use different ideas and suggest how to find something out?</li> <li>• Can they make and record and prediction before testing?</li> <li>• Can they plan a fair test and explain why it was fair?</li> <li>• Can they set up a simple fair test to make comparisons?</li> <li>• Can they explain why they need to collect information to answer a question?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they take accurate measurements using different equipment and units of measure?</li> <li>• Can they record their observations in different ways such as labelled diagrams, charts etc.</li> <li>• Can they describe what they have found using scientific language?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they explain what they have found out and use their measurements to say whether it helps to answer their questions?</li> </ul>	<p>Children should have the opportunity to investigate by:</p> <ul style="list-style-type: none"> <li>• Observing changes over different periods of time.</li> <li>• Noticing patterns</li> <li>• Grouping and classifying</li> <li>• Carrying out comparative and fair tests</li> <li>• Finding things out using secondary sources.</li> </ul>
<b>Year 3 Greater Depth</b>			
<ul style="list-style-type: none"> <li>• Can they record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they explain their findings in different ways (display, presentation and writing)?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they suggest how to improve their work if they did it again?</li> </ul>	

	<ul style="list-style-type: none"> <li>• Can they use their findings to draw a simple conclusion?</li> <li>• Can they suggest improvements and predictions for further tests?</li> </ul>		
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**Skills Map- Science**

**Year 4- Living things and their Habitats, Animals including Humans and States of matter.**

<b>Animals including humans</b>	<b>Living Things and their Habitats</b>	<b>States of Matter</b>
<ul style="list-style-type: none"> <li>• Can they identify, name and describe the functions of the basic parts of the digestive system in humans?</li> <li>• Can they identify the simple function of different types of teeth in humans?</li> <li>• Can they compare the teeth of herbivores and carnivores?</li> <li>• Can they identify, construct and interpret a variety of food chains, identifying producers, predators and prey?</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Can they recognise that living things can be grouped in a variety of ways?</li> <li>• Can they classify and identify into broad groups?</li> <li>• Can they explore and use a classification key to group, identify and name a variety of living things (plants, vertebrates, invertebrates)?</li> <li>• Do they recognise that environments can change and this can sometimes pose a danger to living things?</li> <li>• Can they explain how environmental changes have an impact on living things?</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Can they compare and group materials together according to whether they are solids, liquids or gases?</li> <li>• Can they explain what happens to materials when they are heated or cooled?</li> <li>• Can they measure or research the temperature at which different materials change state in degrees Celsius?</li> <li>• Can they describe how materials change state at different temperatures?</li> <li>• Can they use measurements to explain changes to the state of water?</li> <li>• Can they explain everyday phenomena including the water cycle?</li> </ul> <p><i>Writing opportunities- Information texts</i> <i>The water cycle</i></p>

**Year 4 Greater Depth**

<ul style="list-style-type: none"> <li>• Can they classify living things and non-living things by a number of characteristics that they have thought of?</li> <li>• Can they explain how people, weather and the environment can affect living things?</li> <li>• Can they explain how certain living things depend on one another to survive?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they give reasons for how they have classified animals and plants, using their characteristics and how they are suited to their environment?</li> <li>• Can they explore the work of pioneers in classification (e.g. Carl Linnaeus)?</li> <li>• Can they name and group a variety of living things based on feeding patterns?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they group and classify a variety of materials according to the impact of temperature on them?</li> <li>• Can they explain what happens over time to materials such as puddles on the playground or washing hanging on the line?</li> </ul>
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**Skills Map- Science**

**Year 4- Sound and Electricity**

<b>Sound</b>	<b>Electricity</b>
<ul style="list-style-type: none"> <li>• Can they describe a range of sounds and explain how they are made?</li> <li>• <b>Can they associate some sounds with something vibrating?</b></li> <li>• Can they compare sources of sound and explain how the sounds differ?</li> <li>• Can they explain how to change a sound to make it louder/softer/higher/lower?</li> <li>• <b>Can they recognise how vibrations from sound travel through a medium to an ear?</b></li> <li>• <b>Can they describe the relationship between the pitch of the sound and the features of its source that produces it?</b></li> <li>• <b>Can they find patterns between the volume of the sound and the strength of the vibrations that produced it, and the distance of the source?</b></li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Can they identify common appliances that run on electricity?</b></li> <li>• <b>Can they construct a simple series electric circuit?</b></li> <li>• <b>Can they identify and name the basic part in a series circuit, including cells, wires, bulbs, switches and buzzers?</b></li> <li>• Can they recognise symbols to represent simple series circuit diagrams?</li> <li>• <b>Can they 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?</b></li> <li>• Can they recognise that a switch opens and closes a circuit?</li> <li>• <b>Can they associate a switch opening with the fact the lamp may or may not light in a simple series circuit?</b></li> <li>• <b>Can they recognise some common conductors and insulators?</b></li> <li>• <b>Can they associate metals with being good conductors?</b></li> <li>•</li> </ul>

**Year 4 Greater Depth**

<ul style="list-style-type: none"> <li>• Can they explain why sound gets fainter or louder according to the distance?</li> <li>• Can they explain how pitch and volume can be changed in a variety of ways?</li> <li>• Can they work out which materials give the best insulation for sound?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they explain how a bulb might get lighter?</li> <li>• Can they recognise if all metals are conductors of electricity?</li> <li>• Can they work out which metals can be used to connect across a gap in a circuit?</li> <li>• Can they explain why cautions are necessary for working safely with electricity?</li> </ul>
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**Skills Map- Science**

**Year 4- Working Scientifically**

<b>Planning</b>	<b>Obtaining and presenting evidence</b>	<b>Considering evidence and evaluating</b>	<b>Types of investigations</b>
<ul style="list-style-type: none"> <li>• Can they plan and set up a fair test and isolate variables?</li> <li>• Can they explain why the test was fair and which variables have been isolated?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they take measurements using different equipment and units of measure?</li> <li>• Can they record what they have found in a range of ways?</li> <li>• Can they use a range of scientific equipment to make</li> </ul>	<ul style="list-style-type: none"> <li>• Can they find any patterns in their evidence or measurements?</li> <li>• Can they evaluate and communicate their methods and findings?</li> <li>• Can they make a prediction based on something they have found out?</li> </ul>	<p>Children should have the opportunity to investigate by:</p> <ul style="list-style-type: none"> <li>• Observing changes over difference periods of time</li> <li>• Noticing patterns</li> <li>• Grouping and classifying</li> <li>• Carrying out comparative and fair tests</li> </ul>

<ul style="list-style-type: none"> <li>• Can they suggest improvements and predictions?</li> <li>• Can they ask their own questions?</li> <li>• Can they decide which information needs to be collected and decide what the best way to collect it is?</li> <li>• Can they use their findings to draw a simple conclusion?</li> </ul>	<p>accurate measurements or readings?</p> <ul style="list-style-type: none"> <li>• Can they explain their findings in different ways such as posters, presentations, writing?</li> <li>• Can they record data using diagrams, labels, classification keys, tables, scatter graphs, bar graphs and line graphs?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they ask further questions based on their data and observations?</li> <li>• Can they evaluate what they have found using scientific language, drawings, labelled diagrams, bar charts and tables?</li> <li>• Can they identify differences, similarities or changes related to simple scientific ideas or processes?</li> </ul>	<ul style="list-style-type: none"> <li>• Finding things out using secondary resources</li> </ul>
<b>Year 4 Greater Depth</b>			
<ul style="list-style-type: none"> <li>• Can they plan and carry out an investigation by controlling variables fairly and accurately?</li> <li>• Can they use test results to make further predictions and set up further comparative tests?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they report findings from investigations through written explanations and conclusions?</li> <li>• Can they use a graph or diagram to answer scientific questions?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they use a range of variables to investigate?</li> </ul>

<b>Skills Map- Science</b>		
<b>Year 5- Animals including Humans, Living things and their Habitats, Properties and changes to Materials</b>		
<b>Animals including humans</b>	<b>Living Things and their Habitats</b>	<b>Properties and changes to Materials</b>
<ul style="list-style-type: none"> <li>• Can they describe the changes as humans develop to old age?</li> <li>• Can they use basic ideas of inheritance, variation and adaption to describe how living things have changed over time?</li> <li>• Can they use a graph to compare gestation times?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they describe the differences in the life cycles of mammals, amphibians, insects, and birds?</li> <li>• Can they identify the reproductive processes of some animals?</li> <li>• Can they describe the life cycles of common plants?</li> </ul> <p><b>Writing opportunities: Non-chronological reports</b> <i>The life cycles of the rain forest dwellers.</i></p>	<ul style="list-style-type: none"> <li>• Can they compare and group together everyday materials on the basis of their properties (hardness, solubility, transparency, conductivity (electrical and thermal) and magnetism)?</li> <li>• Can they explain how some materials dissolve in liquid to form a solution?</li> <li>• Can they explain what happens when dissolving occurs?</li> <li>• Can they use their knowledge of solids, liquids and gases to decide and describe how mixtures might be separated (including through filtering, sieving and evaporating)?</li> <li>• Can they give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials such as wood, metal and plastic?</li> <li>• Can they describe changes using scientific words?</li> </ul>

		<ul style="list-style-type: none"> <li>• Can they demonstrate that dissolving, mixing and changes of state are reversible changes?</li> <li>• Can they explain that some changes result in the formation of new materials and this change is irreversible (e.g. burning)?</li> <li>• Can they use the terms "reversible" and "irreversible"?</li> </ul>
<b>Year 5 Greater Depth</b>		
<ul style="list-style-type: none"> <li>• Can they create a timeline to indicate stages of growth in certain animals such as frogs?</li> <li>• Can they explain the changes experienced in puberty?</li> <li>• Can they draw a timeline to indicate stages in the growth and development of humans?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they observe their local environment and draw conclusions about life-cycles e.g. plants in the vegetable garden?</li> <li>• Can they compare the life cycles of plants and animals in their local environment with life cycles of those around the world e.g. rainforests?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they describe methods for separating mixtures?</li> <li>• Can they work out which materials are most effective for keeping us warm or keeping something cold?</li> <li>• Can they use their knowledge of materials to suggest ways to classify (solids, liquids, gases)?</li> <li>• Can they explore changes that are difficult to reverse e.g. burning?</li> <li>• Can they explore the work of chemist who created new materials e.g. Spencer Silver (glue on sticky notes).</li> </ul>
<b>Skills Map- Science</b>		
<b>Year 5- Earth, Space and Forces</b>		
<b>Earth and Space</b>		<b>Forces</b>
<ul style="list-style-type: none"> <li>• Can they identify and explain the movement of the Earth and other planets relative to the Sun in the Solar System?</li> <li>• Can they explain how seasons and the associated weather is created?</li> <li>• Can they describe and explain the movement of the Moon relative to the Earth?</li> <li>• Can they describe the Sun, Earth and moon as approximately spherical bodies?</li> <li>• Can they use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky?</li> </ul> <p><i>Writing opportunities: Non-chronological reports Space and astronauts, fact files on the planets.</i></p>		<ul style="list-style-type: none"> <li>• Can they explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object?</li> <li>• Can they identify the effects of air resistance, water resistance and friction that act between moving surfaces?</li> <li>• Can they recognise that some mechanisms such as levers, pulleys and gears allow a smaller force to have a greater effect?</li> </ul> <p><i>Writing Opportunities: Explaining what gravity is.</i></p>
<b>Year 5 Greater Depth</b>		
<ul style="list-style-type: none"> <li>• Can they compare the time of day at different places on the Earth?</li> <li>• Can they create shadow clocks?</li> <li>• Can they begin to understand how older civilizations used the sun to create astronomical clocks e.g. Stonehenge?</li> <li>• Can they explore the work of some scientists such as Ptolemy, Alhazen, Copernicus?</li> </ul>		<ul style="list-style-type: none"> <li>• Can they describe and explain how motion is affected by forces (including gravitation attractions, magnetic attraction and friction)?</li> <li>• Can they design very effective parachutes?</li> <li>• Can they work out how water can cause resistance to floating objects?</li> <li>• Can they explore how Scientists such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation?</li> </ul>

**Skills Map- Science**

**Year 5- Working Scientifically**

<b>Planning</b>	<b>Obtaining and presenting evidence</b>	<b>Considering evidence and evaluating</b>
<ul style="list-style-type: none"> <li>• Can they plan and carry out a scientific enquiry to answer questions, including recognising and controlling variables where necessary?</li> <li>• Can they make a prediction with reasons?</li> <li>• Can they use test results to make predictions to set up comparative and fair tests?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they take measurements using a range of scientific equipment with increasing accuracy and precision?</li> <li>• Can they take repeat readings when appropriate?</li> <li>• Can they record more complex data and results using scientific diagrams, labels, classification keys, tables, scatter graphs, bar graphs and line graphs?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they use a graph to answer scientific questions?</li> <li>• Can they present a report of their findings through writing, display and presentation?</li> </ul>

**Year 5 Greater Depth**

<ul style="list-style-type: none"> <li>• Can they explore different ways to test an idea, then choose the best way and give reasons?</li> <li>• Can they vary one factor whilst keeping the others the same in an experiment?</li> <li>• Can they use information to help make a prediction?</li> <li>• Can they explain, in simple terms, a scientific idea and what evidence supports it?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they decide which units of measurement they need to use?</li> <li>• Can they explain why a measurement needs to be repeated?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they find a pattern from their data and explain what it shows?</li> <li>• Can they link what they have found out to other science?</li> <li>• Can they suggest how to improve their work and say why they think this is?</li> </ul>
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**Skills Map- Science**

**Year 6- Evolution and inheritance, Living things and their Habitats, Animals including Humans**

<b>Evolution and inheritance</b>	<b>Living things and their Habitats</b>	<b>Animals including Humans</b>
<ul style="list-style-type: none"> <li>• Can they recognise that living things have changed over time and that</li> </ul>	<ul style="list-style-type: none"> <li>• Can they describe how living things are classified into broad groups according to</li> </ul>	<ul style="list-style-type: none"> <li>• Can they identify and name the main parts of the human circulatory system?</li> </ul>

<p>fossils provide information about living things millions of years ago?</p> <ul style="list-style-type: none"> <li>• Can they recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents?</li> <li>• Can they give reasons why offspring are not identical to each other or to their parents?</li> <li>• Can they explain the process of evolution and describe the evidence for this?</li> <li>• Can they identify how animals and plants are adapted to suit their environment in different ways and that adaption may lead to evolution?</li> </ul> <p><b>Writing opportunities- biograph and explanations</b> <i>Charles Darwin, Evolution</i></p>	<p>common observable characteristics and based on similarities and differences?</p> <ul style="list-style-type: none"> <li>• Can they give reasons for classifying plants and animals based on specific characteristics?</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Can they describe the functions of the heart, blood vessels and blood?</li> <li>• Can they recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function?</li> <li>• Can they describe the ways in which nutrients and water are transported within animals and plants, including humans?</li> <li>•</li> </ul>
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**Year 6 Greater Depth**

<ul style="list-style-type: none"> <li>• Can they research and discuss the work of famous scientists such as Charles Darwin?</li> <li>• Can they explain how some living things adapt to survive in extreme conditions?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they explain why classification is important?</li> <li>• Can they readily group animals into reptiles, fish, amphibians, birds and mammals?</li> <li>• Can they sub divide their original groupings and explain their divisions, such as vertebrates and invertebrates?</li> <li>• Can they work out the significance of the work of scientists such as Carl Linnaeus?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they compare the organ systems of humans to other animals?</li> <li>• Can they make a diagram of the human body and explain how different parts work and depend on one another?</li> <li>• Can they name and locate the major organs in the human body?</li> </ul>
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**Skills Map- Science**

**Year 6- Electricity and Light**

<b>Electricity</b>	<b>Light</b>
<ul style="list-style-type: none"> <li>• Can they identify and name the basic parts of a simple electric series circuit?</li> <li>• Can they compare and give reasons for variations in how components function, including the brightness of bulbs etc?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they recognise that light appears to travel in straight lines?</li> <li>• Can they use the idea that light travels in straight lines to explain that objects are seen because they give out and reflect light into the eye?</li> </ul>

<ul style="list-style-type: none"> <li>• Can they use recognised symbols when representing a simple circuit in a diagram?</li> <li>• Can they make parallel circuits?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they 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?</li> <li>• Can they use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them?</li> <li>•</li> </ul>
<b>Year 6 Greater Depth</b>	
<ul style="list-style-type: none"> <li>• Can they explain the advantages of a parallel circuit?</li> <li>• Can they explain how to make changes in a circuit?</li> <li>• Can they explain the impact of changes in a circuit?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they explain how different colours of light can be created?</li> <li>• Can they use and explain how simple optical instruments work?</li> <li>• Can they explore a range of phenomena including rainbows?</li> </ul>

<b>Skills Map- Science</b>			
<b>Year 6- Working Scientifically.</b>			
<b>Planning</b>	<b>Obtaining and presenting evidence</b>	<b>Considering evidence and evaluating</b>	<b>Types of investigations</b>
<ul style="list-style-type: none"> <li>• Can they explore different ways to test an idea then choose the best way and to give reasons?</li> <li>• Can they identify the key factors when planning a fair test?</li> <li>• Can they vary one factor whilst keeping the others the same in an experiment? Can they explain why they do this?</li> <li>• Can they use information to make a prediction and give reasons for it?</li> <li>• Can they use test results to make further predictions and set up further comparative tests?</li> <li>• Can they explain, in simple terms, a scientific idea and what evidence supports it?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they explain why they have chosen specific equipment?</li> <li>• Can they decide which units of measurement they need to use?</li> <li>• Can they make precise measurements?</li> <li>• Can they explain why a measurement needs to be repeated?</li> <li>• Can they record their measurements in different ways such as bar charts, tables and line graphs?</li> <li>• Can they read and record measurements systematically using a range of scientific equipment with increasing accuracy and precision?</li> <li>• Can they present a report of their findings through writing, display and presentation?</li> </ul>	<ul style="list-style-type: none"> <li>• Can they find a pattern from their data and explain what it shows?</li> <li>• Can they use a graph to answer scientific questions?</li> <li>• Can they link what they have found out to other areas of science?</li> <li>• Can they suggest how to improve their work and say why they think this?</li> <li>• Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models?</li> <li>• Can they draw conclusions from their work?</li> <li>• Can they report findings from investigations through written explanations and conclusions whilst using appropriate scientific language?</li> </ul>	<p>Children should have the opportunity to investigate by:</p> <ul style="list-style-type: none"> <li>• Recognising and controlling variables accurately and fairly, including changes over different periods of time.</li> <li>• Noticing patterns groupings and classifying</li> <li>• Carrying out comparative and fair tests</li> <li>• Finding things out using a wide range of secondary sources.</li> </ul>

**Year 6 Greater Depth**

- Can they choose the best way to answer a question and use information from different sources to plan an investigation?
- Can they make a prediction which links with other scientific knowledge?

- Can they plan which equipment they will need and use it effectively?
- Can they explain qualitative and quantitative data?

- Can they identify scientific evidence that has been used to support or to refute ideas or arguments and link their conclusions to it?
- Can they explain how they could improve their way of working?
- Can they report and present findings from enquiries, including conclusions, causal relationships and explanations of a degree of trusts in results, in oral and written forms?