

## Netherfield Science Curriculum

We recognise the importance of science within every aspect of daily life. At Netherfield, we follow the National Curriculum for science. We have designed our science curriculum to be progressive and ensure that children have a wide understanding of science and the world around them. We aim to develop children's natural curiosity of the world and how it works. We want the children in our school to respect living organisms, their environments and their own bodies.

Science at Netherfield Primary School offers opportunities for children to:

- Experience hands-on experiences of science.

We know that as children move to Key Stage Three, science becomes increasingly more abstract. Therefore, we aim to provide children with as many hands-on experiences of science as possible to provide them with a strong understanding of knowledge on which they can build future science understanding.

- Develop their scientific skills and attitudes

We teach these skills throughout our teaching of science across all year groups. Within our units of science, we teach knowledge and key vocabulary alongside guided enquiry, leading up to children working on an independent scientific enquiry. This allows children to acquire the prior knowledge needed to come to scientific explanations and conclusions.

- Be equipped with scientific knowledge

We want children at Netherfield Primary School to be equipped with the knowledge of science that prepares them to utilise their understanding and apply it to science of today and of the future.

- Develop love and enjoyment of scientific learning and discovery

Science is taught every week at Netherfield and where possible, meaningful links are made to children's learning across other subject domains taught within their year group and other years.

Progression of Knowledge

Domains of Science			
	Chemistry	Physics	Biology
The 10 big ideas of Science	<ol style="list-style-type: none"> <li>All matter in the Universe is made of very small particles</li> <li>5. The composition of the earth and its atmosphere, and the processes occurring within them, shape the earth's surface and its climate</li> </ol>	<ol style="list-style-type: none"> <li>Objects can affect other objects at a distance</li> <li>3. Changing the movement of an object requires a net force to be acting on it</li> <li>4. The total amount of energy in the universe is always the same but can be transferred from one energy store to another during an event</li> <li>6. Our solar system is a very small part of one of billions of galaxies in the universe</li> </ol>	<ol style="list-style-type: none"> <li>7. Organisms are organised on a cellular basis and have a finite life span</li> <li>8. Organisms require a supply of energy and materials for which they depend on, or compete with, other organisms</li> <li>9. Genetic information is passed down from one generation of organisms to another</li> <li>10. The diversity of organisms, living and extinct, is the result of evolution</li> </ol>
Year 6		<ul style="list-style-type: none"> <li>Light and shadows; the eye</li> <li>Forces, including gravity</li> <li>Electricity: investigating circuits</li> </ul>	<ul style="list-style-type: none"> <li>Classification, including micro-organisms</li> <li>Health and lifestyles, including circulatory system</li> <li>Evolution and adaptation</li> </ul>
Year 5	<ul style="list-style-type: none"> <li>Classify materials according to a variety of properties</li> <li>Understand mixtures and solutions</li> <li>Know about reversible changes; identify irreversible</li> </ul>	<ul style="list-style-type: none"> <li>Understand location and interaction of Sun, Earth and Moon</li> <li>Introduce gravity, resistance and mechanical forces</li> </ul>	<ul style="list-style-type: none"> <li>Life cycles of plants and animals (including mammal, insect, bird, amphibian)</li> <li>Describe changes as humans develop and mature</li> </ul>
Year 4	<ul style="list-style-type: none"> <li>Changes of state</li> <li>The water cycle</li> </ul>	<ul style="list-style-type: none"> <li>Sound as vibrations</li> <li>Electricity: simple circuits and conductors</li> </ul>	<ul style="list-style-type: none"> <li>Classify living things</li> <li>Digestive system &amp; teeth</li> <li>Food chains</li> </ul>
Year 3	<ul style="list-style-type: none"> <li>Classification of rock types</li> <li>Simple understanding of fossilisation</li> </ul>	<ul style="list-style-type: none"> <li>Sources of light; shadows and reflections</li> <li>Simple forces, including magnetism</li> </ul>	<ul style="list-style-type: none"> <li>Plants, including parts, lifecycle and requirements for life</li> <li>Animals: skeletons and nutrition</li> </ul>
Year 2	<ul style="list-style-type: none"> <li>Identify and compare materials for particular uses</li> <li>Explore how some solids can have their shape altered</li> </ul>		<ul style="list-style-type: none"> <li>Differentiate living, dead and non-living</li> <li>Growing plants (water, light and warmth)</li> <li>Basic needs of animals and offspring</li> <li>Simple food chains and habitats</li> </ul>
Year 1	<ul style="list-style-type: none"> <li>Distinguish between objects and materials</li> <li>Identify and name common materials and describe simple properties</li> <li>Compare and classify materials</li> <li>Observe changes across the seasons and describe how weather and day length varies</li> </ul>		<ul style="list-style-type: none"> <li>Identify basic plant parts</li> <li>Identify and name basic body parts and which senses these link to</li> <li>Identify and compare common animals</li> <li>Identify basic plants</li> <li>Identify common animals that are carnivores, omnivores and herbivores</li> </ul>
EYFS	<ul style="list-style-type: none"> <li>Know about similarities and differences in relation to objects, materials and living things</li> <li>Use and explore a variety of materials, tools and techniques</li> </ul>		<ul style="list-style-type: none"> <li>Talk about the features of their immediate environment and how environments may vary from one another</li> <li>Make observations of animals and plants and explain why some things occur and talk about changes</li> <li>Show awareness of good practices with regard to exercise, sleeping, hygiene and how they contribute to good health</li> </ul>

## Progression of Scientific Enquiry Skills

### Scientific Attitudes

KS3	
Year 5 and 6	<ul style="list-style-type: none"> <li>Take repeat readings, with increasing accuracy and precision and consider degree of trust in results</li> <li>Identify that scientific evidence may support or refute earlier ideas</li> </ul>
Year 3 and 4	<ul style="list-style-type: none"> <li>Appreciate that big ideas in science have changed over time and will continue to do so</li> </ul>
Year 1 and 2	<ul style="list-style-type: none"> <li>Show an awareness that science can be a career path</li> </ul>
EYFS	<ul style="list-style-type: none"> <li>Be curious about the world around them</li> <li>Show a willingness to explore and learn about the world</li> </ul>

### Experimental Skills and Investigation

KS3	
Year 5 and 6	<ul style="list-style-type: none"> <li>Use test results to make predictions to set up further tests</li> <li>Plan different types of enquiry to answer questions including recognising and controlling variables where necessary</li> <li>Take repeated measurements using a range of equipment, considering accuracy and precision</li> <li>Present data in ways of increasing complexity (using scientific diagrams, classification keys, tables, scatter graphs, bar and line graphs)</li> </ul>
Year 3 and 4	<ul style="list-style-type: none"> <li>Use results to make predictions for new values</li> <li>Ask relevant questions</li> <li>Set up and carry out simple enquiries, comparative and fair tests</li> <li>Make observations and take measurements using a range of equipment</li> <li>Present data in a variety of ways (using scientific language, drawings, diagrams, keys, bar charts, tables)</li> </ul>
Year 1 and 2	<ul style="list-style-type: none"> <li>Ask simple questions</li> <li>Make simple predictions</li> <li>Perform simple tests</li> <li>Make observations using simple equipment</li> <li>Gather and record data (observations, simple tables, drawings and some scientific language)</li> <li>Identify, classify and sort</li> </ul>
EYFS	<ul style="list-style-type: none"> <li>Identify similarities and differences</li> <li>Make visual observations</li> </ul>

### Analysis and Evaluation

KS3	
Year 5 and 6	<ul style="list-style-type: none"> <li>Use data to give a scientific conclusion</li> <li>Use results to set up further enquiry</li> <li>Suggest improvements to increase degree of trust in results</li> <li>Report findings from enquiry, including conclusions, causal relationships and explanations</li> </ul>
Year 3 and 4	<ul style="list-style-type: none"> <li>Report findings from enquiries in a variety of ways (oral and written, displays or presentations)</li> <li>Answer questions, giving explanations and evidence</li> <li>Draw simple conclusions and predictions based on results</li> <li>Suggest simple improvements</li> </ul>
Year 1 and 2	<ul style="list-style-type: none"> <li>Use observations to answer questions</li> <li>Communicate findings using simple scientific language</li> <li>Notice patterns and relationships</li> </ul>
EYFS	<ul style="list-style-type: none"> <li>Explain why some changes happen</li> <li>Use simple vocabulary linked to the area of science they have covered</li> </ul>

### Measurement

KS3	
Year 5 and 6	<ul style="list-style-type: none"> <li>Take measurements using a range of scientific equipment, taking repeat readings when appropriate</li> <li>Solve problems involving the calculation and conversions of units of measure</li> </ul>
Year 3 and 4	<ul style="list-style-type: none"> <li>Use standard units when taking measurements</li> <li>Make careful observations</li> <li>Use a range of equipment to measure</li> </ul>
Year 1 and 2	<ul style="list-style-type: none"> <li>Use standard and non-standard units to measure</li> <li>Use simple measurements and equipment (e.g. egg timers and hand lenses) to gather data</li> </ul>
EYFS	<ul style="list-style-type: none"> <li>Notice differences between objects including size and length</li> <li>Handle and use equipment appropriately</li> </ul>