



## Science Curriculum Statement

### Intent

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

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

Here at Beechwood School we want to inspire a love of Science in our pupils and equip them with the skills and confidence to explore and discover scientific phenomena. We want our students to view themselves as scientists, to be excited by scientific ideas and to be curious about the world around them, throughout their time at school and beyond.

We have high aspirations for our children and want them to understand the importance of Science in everyday life and the exciting opportunities that are open to them through Science. Our curriculum has been designed to be engaging and practical wherever possible. We build on the natural inquisitiveness of our children by encouraging a culture of questioning and provide them with opportunities to discover, work collaboratively and challenge themselves.

Our curriculum is coherently planned and sequenced to build upon prior learning; There is rigor and depth to the knowledge and skills the children learn. Throughout the programmes of study, the children will acquire and develop the key knowledge that has been identified within each unit, as well as the application of scientific skills. We ensure that the Working Scientifically skills are built-on and developed throughout our children's time at the school so that they can apply these when using equipment, conducting experiments, building arguments and explaining concepts confidently.

### Implementation

At Beechwood, teachers inspire a love of Science through engaging and stimulating lessons and reinforce an expectation that all pupils are capable of achieving high standards in science. Each unit will develop at least one of our key concepts; Physics, Chemistry, Biology and working scientifically as this will support the children as they move on to their secondary education. Within RE the children will get the opportunity to;

**explore** their own learning using research and enquiry, **discover** new skills and learning through hands on experience and **achieve** when they bring all their learning together to showcase their understanding.

This culture begins in the Early Years Foundation Stage where children's understanding of Science is sparked through the planning and teaching of 'Understanding the World'. Both the environment and skilled practitioners foster curiosity and encourage explorative play. Our children find out about objects, materials and living things through using all of their senses. They are encouraged to explore their environment and notice and discuss similarities, differences, patterns and change. Children are motivated to ask questions about why things happen and how things work. Our children enjoy spending time outdoors exploring mini-beasts and their habitats, observing the changing seasons, plants and animals. Children participate in cookery and baking sessions which allows them to experience changes in state as ingredients are mixed, heated and cooled.

From Years 1-6, Science is taught weekly by the class teacher in planned and arranged blocks. This is a strategy to enable our children to achieve a greater depth of knowledge and progression of skills. Here at Beechwood we utilise the Hamilton Trust Scheme for Science, which follows the National Curriculum.

Each new unit of work begins with a recap of the previous related knowledge from previous years. This helps children to retrieve what they have learnt in the earlier sequence of the programme of study, and ensures that new knowledge is taught in the context of previous learning. Key vocabulary for the new topic is also introduced through Knowledge Organisers. This means that children are able to understand the new vocabulary when it is used in teaching and learning activities and apply it themselves when they approach their work.

During their lessons, Children have frequent opportunities to explore, question, predict, plan, carry out investigations and observations as well as conclude their findings. They are encouraged to present their findings and learning using science specific language, observations and diagrams. In order to support children in their ability to 'know more and remember more' there are regular opportunities to review the learning taken place in previous topics as well as previous lessons. We encourage collaborative working to help develop our pupils' oracy skills and differentiation to ensure that all can achieve. Teachers use highly effective assessment for learning in each lesson to ensure misconceptions are highlighted and addressed.

As Science touches every part of life and as such, can connect with other areas of the curriculum. Many aspects of data handling and measure in mathematics is used when completing investigations. Specific subject knowledge can also be linked across the curriculum, for example reversible and irreversible changes. This can relate to cookery in DT, deforestation in Geography and the sharing of information online in Computing.

**Equity of implementation**– At Beechwood we recognise that all children learn differently and all children have different strengths. A well rounded curriculum ensures that everyone gets their chance to shine. We use a range of strategies to ensure all children are included with our curriculum some of these being; widgets to scaffold oracy and writing, use of ipads / laptops to support writing, pictures to support key vocabulary being used, learning logs to remind the children of the previous learning which will support them a lots of child centred learning to full immerse them in their new skills and knowledge

**School Vision**  
**Explore, Discover, Achieve**

**Explore** – We want to inspire children with Science and captivate their interests by creating a sense of awe and wonder about scientific concepts.

**Discover** – The heart of science teaching at Beechwood is our commitment to practical, explorative and investigative learning. We believe in a hands-on approach where children learn by doing it for themselves. This approach encourages our children to build resilience and become critical thinkers.

**Achieve** – Children will be able to approach scientific questions and problems with confidence. They develop the skills to enable them to plan and perform tests, classify and record. Pupils will be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future

### Curriculum coverage

FS	<p style="text-align: center;"><b>Autumn</b></p> <ul style="list-style-type: none"> <li>• I can describe what I can see, hear and feel outside.</li> <li>• I can talk about the area I live in, including the weather etc.</li> <li>• I can talk about forces I feel e.g. push, pull etc.</li> <li>• I can talk about some differences in the materials I use.</li> <li>• Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world. Can talk about some of the things they have observed such as plants, animals, natural and found objects. Talks about why things happen and how things work. Developing an understanding of growth, decay and changes over time. Shows care and concern for living things and the environment.</li> </ul>		<p style="text-align: center;"><b>Spring</b></p> <ul style="list-style-type: none"> <li>• I understand and can talk about the effect of changing seasons on the natural world around them.</li> </ul> <p>Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another.</p> <ul style="list-style-type: none"> <li>• I understand and can talk about the effect of changing seasons on the natural world around them.</li> </ul>	<p style="text-align: center;"><b>Summer</b></p> <ul style="list-style-type: none"> <li>• Explore the natural world around them, making observations and drawing pictures of animals and plants; - Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class; - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</li> </ul>		
Year 1	<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>- 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 the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</li> </ul>	<p><b>Materials</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> </ul> <p><b>Working Scientifically:</b></p> <ul style="list-style-type: none"> <li>observing closely, using simple equipment</li> <li>performing simple tests</li> </ul>	<p><b>Seasonal changes</b></p> <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> <p><b>Working Scientifically:</b></p> <ul style="list-style-type: none"> <li>gathering and recording data to help in answering questions.</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>Working Scientifically:</b></p> <ul style="list-style-type: none"> <li>using their observations and ideas to suggest answers to questions</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>- 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 the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</li> </ul> <p><b>Working Scientifically:</b></p> <ul style="list-style-type: none"> <li>asking simple questions and recognising that</li> </ul>	<p><b>Materials</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> </ul> <p><b>Working Scientifically:</b></p> <ul style="list-style-type: none"> <li>observing closely, using simple equipment</li> <li>performing simple tests</li> </ul>

	<b>Working Scientifically:</b> asking simple questions and recognising that they can be answered in different ways				they can be answered in different ways	
Year 2	<b>Rocks</b> 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 recognise that soils are made from rocks and organic matter	<b>Light</b> recognise that they need light in order 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 an opaque object find patterns in the way that the size of shadows change.	<b>Plants</b> 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.	<b>Animals including humans.</b> 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 identify that humans and some other animals have skeletons and muscles for support, protection and movement.	<b>Forces and Magnets</b> compare how things move on different surfaces notice that some forces need contact between two objects, but magnetic forces can act at a distance observe how magnets attract or repel each other and attract some materials and not others compare and group 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 two poles predict whether two magnets will attract or repel each other, depending on which poles are facing.	<b>Rocks</b> 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 recognise that soils are made from rocks and organic matter
Year 3	<b>Rocks</b> 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 recognise that soils are made from rocks and organic matter	<b>Light</b> recognise that they need light in order 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 an opaque object find patterns in the way that the size of shadows change.	<b>Plants</b> 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	<b>Animals including humans.</b> 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 identify that humans and some other animals have skeletons and muscles for support, protection and movement.	<b>Forces and Magnets</b> compare how things move on different surfaces notice that some forces need contact between two objects, but magnetic forces can act at a distance observe how magnets attract or repel each other and attract some materials and not others compare and group 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 two poles predict whether two magnets will attract or repel each other, depending on which poles are facing.	<b>Rocks</b> 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 recognise that soils are made from rocks and organic matter
Year 4	<b>States of matter</b> -Compare and group materials together, according to whether they are solids, liquids or gases. -Observe that some materials change state when they are heated or cooled, and	<b>Living things</b> -Recognise that living things can be grouped in a variety of ways. -Explore and use classification keys to help group, identify and name a variety of living things in their	<b>Electricity</b> -Identify common appliances that run on electricity. -Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. - Identify whether or not a	<b>Sound</b> -Identify how sounds are made, associating some of them with something vibrating. -Recognise that vibrations from sounds travel	<b>Animals, including humans - Digestion</b> -Describe the simple functions of the basic parts of the digestive system in humans. -Identify the different types of teeth in humans and their simple functions.	<b>Animals, including Humans - Health</b> - recognise the impact of diet and exercise on the way their bodies function.

	<p>measure or research the temperature at which this happens in degrees Celsius (°C).</p> <p>-Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p>local and wider environment.</p> <p>-Recognise that environments can change and that this can sometimes pose dangers to living things.</p>	<p>lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.</p> <p>-Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</p> <p>-Recognise some common conductors and insulators, and associate metals with being good conductors.</p>	<p>through a medium to the ear.</p> <p>-Find patterns between the pitch of a sound and features of the object that produced it.</p> <p>-Find patterns between the volume of a sound and the strength of the vibrations that produced it.</p> <p>Recognise that sounds get fainter as the distance from the sound source increases.</p>	<p>-Construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	
Year 5	<p><b>Living things and their habitat</b></p> <p>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</p> <p>give reasons for classifying plants and animals based on specific characteristics</p>	<p><b>Animals including humans</b></p> <p>identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>describe the ways in which nutrients and water are transported within animals, including humans.</p>	<p><b>Light</b></p> <p>recognise that light appears to travel in straight lines</p> <p>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</p> <p>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</p> <p>use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>	<p><b>Evolution and inheritance</b></p> <p>recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>	<p><b>Electricity</b></p> <p>associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>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</p> <p>use recognised symbols when representing a simple circuit in a diagram.</p>	<p><b>Living things and their habitat</b></p> <p>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</p> <p>give reasons for classifying plants and animals based on specific characteristics</p>
Year 6	<p><b>Living things and their habitat</b></p> <p>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</p> <p>give reasons for classifying plants and animals based on specific characteristics</p>	<p><b>Animals including humans</b></p> <p>identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>describe the ways in which nutrients and water are transported within animals, including humans.</p>	<p><b>Light</b></p> <p>recognise that light appears to travel in straight lines</p> <p>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</p> <p>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</p> <p>use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>	<p><b>Evolution and inheritance</b></p> <p>recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>	<p><b>Electricity</b></p> <p>associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>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</p> <p>use recognised symbols when representing a simple circuit in a diagram.</p>	<p><b>Living things and their habitat</b></p> <p>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</p> <p>give reasons for classifying plants and animals based on specific characteristics</p>

## Impact

The impact of this curriculum design will lead to outstanding progress over time, across key stages, relative to a child's individual starting point and their progression of skills. Children will therefore be expected to leave Beechwood reaching at least age-related expectations for Science. Our children will be inspired by the world of Science. They will be motivated to achieve, confident to work scientifically and they will know more, remember more and understand more about the Science curriculum. Children will be able to retain prior-learning and explicitly make connections between what they have previously learned and what they are currently learning. They will develop a rich vocabulary which will enable them to articulate their understanding of taught concepts. Various workshops, trips and whole school events, will enrich and enhance our pupils' enthusiasm for Science; helping them to understand how science has changed our lives and that it is vital to the world's future prosperity.