



Curriculum Design for Science

Science Intent

At Broomhill Infant School, our intent is to deliver a high-quality and broad and balanced science curriculum which enables children to confidently explore and discover what is around them, so that they have a deeper understanding of the world we live in and develop a respect for living organisms and the physical environment. We aim to promote positive attitudes to science as an interesting and enjoyable subject, and also to develop pupils' awareness of how science is relevant in our daily lives and plays a pivotal role in shaping the future. The world we live in is constantly changing and pupils need to be equipped with the necessary skills to thrive and be successful in that future. We aim to instil a passion for science through investigative learning, allowing students to ask questions, explore problems and search for solutions using their creativity. We want them to have no limits to their ambitions and to grow up wanting to be anything from astronauts, forensic scientists, vets or marine biologists. To achieve this, we will include exciting, practical hands-on experiences that encourage curiosity and questioning. Our aim is that these stimulating and challenging experiences help every child secure and extend their scientific knowledge and vocabulary, as well as promoting a love and thirst for science.

Science Implementation

Science follows the National Curriculum; objectives are delivered through weekly science lessons weaved into our Forest School learning and activities. At Broomhill Infant School we ensure that skills specific to being a scientist are taught each and every year, so, wherever possible, the units have a practical element. The curriculum makes use of prior substantive knowledge and provides clear references on how learning will be used in future enquiries. Science learning is structured around the repeated themes of chemistry, biology, physics and earth sciences. These unit studies are assigned key knowledge and vocabulary to be learnt and understood.

Science Impact Children will know more, remember more and understand more about science. This is evidenced through pupil voice, monitoring and looking at outcomes, which are measured by looking at whether children are working below, at or above the national standard. Children are to retain prior-learning and explicitly make connections between what they have previously learned and what they are currently learning.

Progression of Knowledge

	Year 1	Year 2	Year 3 (NCCE)
Long Enquiry	<p>Children will build on their substantive knowledge by observing a tree across the four seasons. Children will also observe and describe weather associated with seasons and day length. They will embed their knowledge of materials by comparing and identify the suitability for materials in a variety of uses ie. by building structures linked to DT learning on castles. Pupils will also be continually using their senses across their time at Broomhill to explore natural materials in Forest School. At Broomhill Infant School we recognise and teach children the importance for humans of exercise, eating the right amount of different types of food and hygiene.</p>		<p>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. Properties and changes of materials is re-introduced in Y5. Seasonal changes taught in Y1.</p>
Short Enquiry	<p>Children will learn to identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. They will know 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. They will learn to 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. Children will find out about and describe the basic needs of animals, including humans, for survival (water, food and air) and notice that humans including animals, have offspring which grow into adults. They will be able to sort photographs of living things and non-living things (living, dead, never alive) and be able to classify common animals (birds, fish, amphibians, reptiles, mammals, invertebrates) Children will be taught how an animal is suited to its environment and sort animals by body covering (skin, scales, fur). They will learn how to identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p>		<p>Identify that humans and some animals have skeletons and muscles for support, protection and movement. They will be able to identify and describe the functions of different flowering plants and explore the requirements of plants for life and growth. They will also investigate the way in which water is transported within plants and explore the part that flowers play in the life cycle of a flowering plant. Habitats is taught again in Y5.</p>

End point

By the end of Key Stage 1, children will have:

- ✓ Plants: identify some common plants and describe basic plant and tree structure.
- ✓ Animals: identify common animals including fish and reptiles, and use the terms carnivore, herbivore and omnivore. Notice how offspring grow into adults.
- ✓ Humans: Label a human diagram and investigate senses. Understand basic human needs and how to sustain healthy life.
- ✓ Materials: name and describe features of a range of common materials and compare their suitability for different uses. Find out how to change shapes of basic materials.
- ✓ Seasons: observe and record changes in seasons and weather.
- ✓ Living things: study habitats and how animals are suited to them and discuss simple food chains.
- ✓ Plants: observe how seeds grow and the conditions that they need.

By the end of Year 3, children will have:

- ✓ 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 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 a flowering plant, including pollination, seed formation and seed dispersal.
- ✓ Animals: 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.
- ✓ Humans: Identify that humans and some animals have skeletons and muscles for support, protection and movement.

Disciplinary Knowledge

	Develop Biology Knowledge		Develop Chemistry Knowledge		Develop Physics Knowledge		Develop Earth Sciences Knowledge
EYFS	<ul style="list-style-type: none"> ✓ Explore the natural world around them, making observations and drawing pictures of animals and plants ✓ To begin to make sense of their own life story and family's History. ✓ Understand the key features of the life-cycle an animal. 	EYFS	<ul style="list-style-type: none"> ✓ Talk about differences between materials and changes they notice. ✓ Use all their senses in hands-on exploration of natural materials. 	EYFS	<ul style="list-style-type: none"> ✓ To explore the natural world around them. ✓ To understand the difference between light and dark. ✓ To explore different sources of light. ✓ To learn how their ears locate sounds. ✓ To be able to create different sounds 	EYFS	<ul style="list-style-type: none"> ✓ Explore the natural world around them. ✓ Describe what they see, hear and feel whilst outside. ✓ Understand the effect of changing seasons on the natural world around them. ✓ Begin to understand the need to respect and care for the natural environment and all living things.

<p>KS1</p>	<ul style="list-style-type: none"> ✓ Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. ✓ Identify and name a variety of common animals that are carnivores, herbivores and omnivores. ✓ Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). ✓ Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. ✓ Notice that animals, including humans, have offspring which grow into adults. ✓ Find out about and describe the basic needs of animals, including humans, for survival. 	<p>KS1</p> <ul style="list-style-type: none"> ✓ Distinguish between an object and the material from which it is made. ✓ Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. ✓ Describe the simple physical properties of a variety of everyday materials. ✓ Compare and group together a variety of everyday materials on the basis of their simple physical properties ✓ Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. ✓ Find out how the shapes of solid objects made from 	<p>KS1</p> <p>Non-statutory</p> <ul style="list-style-type: none"> ✓ What sources of light are. Features of day and night, including temperature. ✓ Electricity as a source of light ✓ Observe and describe shadows ✓ Identify sources of sound ✓ Identify louder and softer sounds 	<p>KS1</p> <ul style="list-style-type: none"> ✓ Observe changes across the four seasons. ✓ Observe and describe weather associated with the seasons and how day length varies
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	<p>✓ Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p> <p>✓ Explore and compare the differences between things that are living, dead, and things that have never been alive.</p> <p>✓ 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.</p> <p>✓ Identify and name a variety of plants and animals in their habitats, including microhabitats.</p> <p>✓ Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain.</p>		<p>some materials can be changed by squashing, bending, twisting and stretching.</p>				
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