

Beaufront First School Long-Term Plan: Science

Intent	Implementation	Impact
The Science Curriculum at Beaufront meets the requirements of the National Curriculum, is informed by planning from Kapow and White Rose Science, and is enriched by Beaufront's rural location and staff interests and skills. This curriculum follows three key stands of 1) Scientific knowledge and understanding 2) Working scientifically 3) Science in action It aims to ensure that all pupils: • Develop scientific knowledge and conceptual understanding through the specific disciplines of Biology, Chemistry and Physics. • Develop a deep understanding of the nature, processes and methods of Science through a range of scientific enquiries that allow them to engage with scientific questions about the world. • Develop the knowledge, understanding and skills needed to appreciate, question, and challenge the implications of science now and in the future. • Make connections In addition, through a rich, challenging and engaging Science Curriculum, children will build: a) Substantive knowledge - concepts, laws, theories and models. b) Disciplinary knowledge - nature, processes and methods of Science. This will enable all pupils to organise and connect	All children will engage in weekly Science lessons, which will be supplemented and complemented by STEM weeks and cross-curricular themed weeks. Our inclusive and enriched curriculum enables all children to experience and engage with Science through: • Carefully planned sequences of lessons including theoretical and practical learning opportunities, designed to develop the knowledge, understanding and skills needed to work scientifically and to understand science in action. • Carefully planned, appropriate resources and enriched learning experiences, which may include visits to places, and visitors of, scientific significance as well as short and full investigations in a range of contexts. Children will engage in a Cycle of Enquiry to be able to work scientifically and this will involve developing the skills to: - Question - Plan and predict - Observe, test and measure - Record - Conclude - Evaluate Children will also build skills in relation to: - Listening - Speaking - Problem Solving - Creativity - Adapting	Through a focused, thorough and enriched Science Curriculum children are able to: • Ask questions and answer them in different ways. • Make observations and comment on them. • Use a range of scientific equipment. • Perform tests and carry out investigations using different methods and resources and in different contexts. • Use observations and findings to suggest answers to questions or to challenge ideas and concepts. • Gather and record data and use it to support ideas, theories and answers to questions. • Know about plants and animals and be able to classify them at an appropriate level for their age and stage. • Know about food chains and life cycles. • Know about the human body, be able to name and label parts of the human body, and what it needs to be able to live and grow well. • Know about materials, identifying materials, distinguishing between them through comparisons and describing their properties. • Know about changes of states and changes in nature, for example, seasonal changes. • Explore, investigate, observe, discuss, record and report on living and non-living things, states of matter, rocks and soils, light, dark, sounds and forces.

their developing knowledge of Science, enabling them to engage fully with the subject on a theoretical and practical level.	- Planning - Leadership - Teamwork	All children will develop a deep understanding of the importance of Science now and in the future.
Science Curriculum Objectives		
EYFS (Nursery & Reception)	KS1 (Year 1 & 2)	KS2 (Year 3 & 4)
ELGs <i>Communication and Language</i> • Make comments about what they have heard and ask questions to clarify their understanding. <i>Personal, Social and Emotional</i> • Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. <i>Understanding the World</i> • Observe 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.	<i>Working Scientifically</i> • Ask simple questions and recognise that they can be answered in different ways. • Make close observations, using simple equipment. • Perform simple tests. • Identify and classify. • Use observations and ideas to suggest answers to questions. • Gather and record data to help answer questions. <i>Scientific Knowledge and Understanding</i> • Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees → Identify and name a variety of plants and animals in their habitats, including microhabitats. • Identify and describe the basic structure of a variety of common flowering plants, including trees → Observe and describe how seeds and bulbs grow into mature plants. • Identify and name a variety of common animals that are carnivores, herbivores and omnivores → 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.	<i>Working Scientifically</i> • Ask relevant questions and use different types of scientific enquiries to answer them. • Set up simple practical enquiries, comparative and fair tests. • Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment such as thermometers and data loggers. • Gather, record, classify and present data in a variety of ways to help answer questions. • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. • Report on findings from enquiries, including oral and written explanations, displays or presentations of results or conclusions. • Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • Identify differences, similarities or changes related to simple scientific ideas and processes. • Use straightforward scientific evidence to answer questions or support own findings. <i>Scientific Knowledge and Understanding</i>

	● Describe and compare the structure of a variety of common animals including fish, amphibians, reptiles, birds and mammals. ● Identify, name, draw and label basic parts of the human body and say which part of the body is associated with each sense. ● Distinguish between an object and the material from which it is made. ● Identify and name a variety of everyday materials including wood, plastic, metal, glass, water and rock. ● Describe the simple physical properties of a variety of everyday materials → Find out about how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. ● Compare and group together a variety of materials on the basis of their simple physical properties → Identify and compare the suitability of a variety of everyday materials, including wood, plastic, metal, glass, brick, rock, paper and cardboard for particular uses. ● Observe changes across the four seasons. ● Observe and describe weather associated with the seasons and how day length varies. ● Explore and compare the differences between things that are living, dead and things that have never been alive. ● Identify that most living things live in habitats to which they are suited and describe how habitats provide for the basic needs of different animals and plants, and how they depend on each other. ● Find out and describe how plants need water,	● 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. ● 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 → Describe the simple functions of the basic parts of the digestive system in humans → Construct and interpret a variety of food chains, identifying producers, predators and prey. ● Identify that humans and some other animals have skeletons and muscles for support, protection and movement → Identify the different types of teeth in humans and their simple functions. ● 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. ● Recognise that they need light in order to see
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	light and a suitable temperature to grow and stay healthy. • 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 (water, food, air). • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	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. • 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. • 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 local and wider environment. • Recognise that environments can change and that this can sometimes pose dangers to living things. • Compare and group materials together,
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		according to whether they are solids, liquids or gases. ● Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). ● Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. ● Identify how sounds are made, associating some of them with something vibrating. ● Recognise that vibrations from sounds travel through a medium to the ear. ● Find patterns between the pitch of a sound and features of the object that produced it. ● Find patterns between the volume of a sound and the strength of the vibrations that produced it. ● Recognise that sounds get fainter as the distance from the sound source increases. ● Identify common appliances that run on electricity. ● Construct a simple series electrical circuit, identifying and naming basic parts, including cells, wires, bulbs, switches and buzzers. ● 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. ● Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. ● Recognise some common conductors and insulators, and associate metals with being
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		good conductors.
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Big Questions

- Why are there similarities and differences between living things?
- How is life on Earth so varied and diverse?
- What is everything made from?
- How do scientific processes impact life on Earth and the Earth itself?
- What is climate change? How do we know the climate is changing? What will the impact be?
- How do objects affect one another from a distance?
- How do we know?
- How has Science changed the world?
- How could Science change the world in the future?

Programme of Study - Overview			
	EYFS	KS1	KS2
Autumn 1A	Growth and Change: How I have grown and changed	Life Cycles and Health	States of Matter
Autumn 2A	Changes of State Seasonal Changes	Everyday Materials	Rocks and Soil
Spring 1A	Habitats: Forest and Woods Food Chains	Introduction to Plants	Plant Reproduction
Spring 2A	Space, Light and Dark	Plant-Based Materials	Movement and Nutrition
Summer 1A	The Weather: Seasons and Weather around the World The Water Cycle	Seasonal Changes	How does the flow of liquids compare?
Summer 2A	Climate: Climate Changes Forces in Nature: Volcanoes	Habitats	Electricity and Circuits

Programme of Study - Overview			
	EYFS	KS1	KS2
	Rocks, Soils and Fossils		
Autumn 1B	My Amazing Body: What do humans need to live and grow well?	Sensitive Bodies	Sound and Vibrations
Autumn 2B	Forces: Push and Pull Magnets	Investigating Science through Stories	Forces and Magnets
Spring 1B	Plants: What do plants need to live and grow well?	Plant Growth	Digestion and Food
Spring 2B	Life Cycles: Minibeasts	Comparing Animals	Light and Shadows
Summer 1B	Habitats: The Oceans and Seas Marine Life Life Cycles: Under the Sea Food Chains: Sea life	Uses of Everyday Materials	Classification and Changing Habitats
Summer 2B	Materials: Natural and Manmade	Microhabitats	Does handspan affect grip strength?