

Science at Mallard

Science at Mallard Primary pays close attention to guidance provided by the National Curriculum sequence and content. It is infused with evidence-led practice and enriched with retrieval studies to ensure long-term retention of foundational knowledge. The foundations of our science curriculum are cemented in the EYFS through learning within the Natural World, and People, Culture and Communities. Our ambitious interpretation of the National Curriculum places knowledge, vocabulary, working and thinking scientifically at the heart of our principles, structure and practice. Our Science curriculum precisely follows the units outlined in the National Curriculum. We also offer guidance on the teaching of foundational knowledge through mixed aged classes. Our aim is that through our Science approach, children become 'a little more expert' as they progress through the curriculum, accumulating, connecting and making sense of the rich substantive and disciplinary knowledge.

We have taken the National Curriculum Primary Science headlines to define each domain.

Biology	Physics	Chemistry
is the study of living things (organisms), their structure and environments.	is the study of matter, forces and motion, sound, light and waves, electricity and magnetism and Earth in Space.	is the study of the composition, behaviour and properties of matter, and of the elements of the Earth and its atmosphere. (BBC Bitesize)
In the Primary Curriculum it is the study of Animals, including humans Plants Living things and their habitats Evolution and inheritance	In the Primary Curriculum it is the study of Seasonal changes Light Forces and magnets Electricity Sound Forces and Earth in Space Light	In the Primary Curriculum it is the study of Everyday materials Uses of everyday materials Rocks States of matter Properties and changes of materials

1. WHAT CHILDREN WILL KNOW

Substantive knowledge - this is the subject knowledge and explicit vocabulary used to learn about the content. Common misconceptions are explicitly revealed as non-examples and positioned against known and accurate content. In Science, an extensive and connected knowledge base is constructed so that children can use these foundations and integrate it with what they already know. Misconceptions are challenged carefully and in the context of the substantive and disciplinary knowledge. In Science, it is recommended that misconceptions are not introduced too early, as children need to construct a mental model in which to position that new knowledge.

2. WHAT CHILDREN WILL DO

Disciplinary knowledge – this is knowing how to collect, use, interpret, understand and evaluate the evidence from scientific processes. This is taught. It is not assumed that children will acquire these skills by luck or hope. Children construct understanding by applying substantive knowledge to questioning and planning, observing, performing a range of tests, accurately measuring, comparing through identifying and classifying, using observations and gathering data to help answer questions, explaining and reporting, predicting, concluding, improving, and seeking patterns. We call it 'Working Scientifically.' Our Science provides Working Scientifically coverage maps to check the balance of provision in KS1, Lower and Upper KS2.

3. Substantive concepts include concrete examples, such as 'plant' or more abstract ideas, such as 'biodiversity'. Concepts are taught through explicit vocabulary instruction as well as through the direct content and context of the study.

AN EXAMPLE OF THE LONG-TERM SEQUENCE FOR SCIENCE – EYFS to KS1

Specific Area of Learning Understanding the World	ELG's	How this is achieved in EYFS	Key Vocabulary to be developed in EYFS		Science KS1	
					Year 1	Year 2
	<p>Managing Self</p> <ul style="list-style-type: none"> Manage their own basic hygiene and personal needs, including dressing, going to the toilet, and understanding the importance of healthy food choices. <p>ELG 14 The Natural World</p> <ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants. 	<ul style="list-style-type: none"> Discussions at snack time of the importance of healthy food choices. During lunch time discussions. Through stories and circle time discussions, e.g. the story – Now wash your hands and Funny bones. P.E lessons that encourage getting dressed and undressed independently. Naming body parts through songs – Heads, shoulders, knees, and toes. RSE link – Correct naming of body parts. Talking about pets at home. Exploring minibests and recording our observations. 	<ul style="list-style-type: none"> Exercise Healthy Wash Toothbrush Tooth / Teeth Body Head Bones Skeleton Family 	<ul style="list-style-type: none"> Animal Human Mammal Bird Fish Amphibian Insect Lifecycle Nocturnal 	Animals, including humans.	
<p>ELG 14 The Natural World</p> <ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants. 	<ul style="list-style-type: none"> Going on walks to observe the local environment and to compare and learn about the seasons. Taking photos to compare seasons and discuss. Planting seeds and plants. Looking after the EYFS garden. Creating bug hotels. 	<ul style="list-style-type: none"> Lifecycle Plant seed grow roots Flower 	<ul style="list-style-type: none"> Seasons Autumn Winter Spring Summer Change Weather 	Plants		
<p>ELG 14 The Natural World</p> <ul style="list-style-type: none"> Understanding some important processes and changes in the natural world around them, including seasons and changing states of matter. 	<ul style="list-style-type: none"> Growing plants from bulbs and seeds. Making boats to explore best materials. Water tray activities to explore water, ice, and materials that float and sink. Testing the best material for a raincoat for Paddington bear. 	<ul style="list-style-type: none"> Material Wood Plastic Glass Float 	<ul style="list-style-type: none"> Sink Liquid Solid 	Seasonal changes	Living things and their habitats.	
				Everyday materials	Uses of everyday materials.	

Scientific Vocabulary – scientist, sort, observation, identify, compare, group, investigate, test, evaluate

AN EXAMPLE OF THE LONG-TERM SEQUENCE FOR SCIENCE Year 1 – Year 6

(This model shows conceptual sequence and references where the content may be taught:

AT = Autumn Term, SpT = Spring Term, ST = Summer Term

	EYFS Understanding the world	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Biology (53% of Science content)	The Natural World Explore the natural world around them, making observations and drawing pictures of animals and plants.		Living things and their habitats (+ revisit modules) (AT)		Living things and their habitats (AT)	Living things and their habitats (ST)	Living things and their habitats (AT)
		Plants (AT / ST))	Plants (ST)	Plants (ST)			
		Animals, including humans (AT) (+ revisit modules) (SpT / ST))	Animals, including humans (AT) (+ revisit modules) (SpT / ST))	Animals, including humans (AT)	Animals, including humans (SpT)	Animals, including humans (AT)	Animals, including humans (SpT)
Physics (29% of Science content)	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.	Seasonal changes (+ revisit module) (AT)		Light (SpT)			Light (AT)
				Forces and magnets (SpT)		Forces (SpT / ST)	
					Electricity (ST)		Electricity (ST)
					Sound (ST)		
						Earth and space (SpT)	
Chemistry (18% of Science content)		Everyday materials (SpT)	Use of everyday materials (SpT)			Properties and change of materials (AT)	
				Rocks (AT) (+ revisit module) (AT)			
					States of matter (AT)		