

Progression Map for Science

Purpose of study

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Aims

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.

WORKING SCIENTIFICALLY					
		Observing	Testing	Identifying and classifying	Recording and evaluating
EYFS	N	Engage in extended conversations (DM L 3-4)	- Explore how things work (DM UW 3-4)	- Use a wider range of vocabulary. (DM CL 3-4) - Understand a question (DM CL 3-4)	
	R	Use and understand recently introduced vocabulary during discussions ELG L8c - Use new vocabulary through the day. (DM CL rec) - Ask questions to find out more and to check they understand what has been said to them. (DM CL rec)	-Make comments about what they have heard and ask questions to clarify their understanding (ELG CL 1c) Use a range of small tools, (ELG PD 7b)	- Use talk to help work out problems and organise thinking and activities explain how things work and why they might happen. (DM CL rec)	Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary (ELG CL 2a) Connect one idea or action to another using a range of connectives. - Describe events in some detail. (DM CL rec)
KS1	Y1	-Asking simple questions and recognising that they can be answered in different ways -Observing closely, using simple equipment -talk about what they see, touch, smell, hear or taste. -use simple equipment to help them make observations.	-Performing simple tests - tell other people about what they have done.	-Identifying and classifying -identify and classify things they observe. -think of some questions to ask. -answer some scientific questions. -give a simple reason for their answers. -explain what they have found out.	-Using their observations and ideas to suggest answers to questions - Gathering and recording data to help in answering questions. -show their work using pictures, labels and captions. -record their finding using standard units. -put some information in a chart or table.
	Y2	-Asking simple questions and recognising that they can be answered in different ways -Observing closely, using simple equipment -use senses <see, touch, smell, hear or taste> to help them answer questions. -use some science words to describe what they have seen and measured. -compare several things.	-Performing simple tests -carry out a simple fair test. -explain why it might not be fair to compare two things. -say whether things happened as they expected. -suggest how to find things out. -use prompts to find things out.	-Identifying and classifying -organise things into groups. -find simple patterns (or associations). -identify animals and plants by a specific criteria, e.g, lay eggs or not; have feathers or not.	-Using their observations and ideas to suggest answers to questions - Gathering and recording data to help in answering questions. -use (text, diagrams, pictures, charts, tables) to record their observations. -measure using simple equipment.

LIFE PROCESSES AND LIVING THINGS (BIOLOGY)

		Plants	Animals, including humans	Living things & habitats
EYFS	N	- Plant seeds and care for growing plants. (DM UW 3-4)	- Make healthy choices about food, drink, activity and tooth brushing. (DM PSED 3-4):	- Understand the key features of the life cycle of a plant and an animal. (DM UW 3-4) - Begin to understand the need to respect and care for the natural environment and all living things. (DM UW 3-4)
	R	-Explore the natural world around them, making observations and drawing pictures of animals and plants ELG UW 15a	-Explore the natural world around them, making observations and drawing pictures of animals and plants ELG UW 15a Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. (ELG PSED 4b) - Know and talk about the different factors that support their overall health and wellbeing (DM PSED REC): - regular physical activity - healthy eating - tooth brushing	-Know some similarities and differences between the natural world around them and contrasting environments ELG UW 15b - Explore the natural world around them. (DM UW REC) - Describe what they see, hear and feel whilst outside. (DM UW REC) - Recognise some environments that are different to the one in which they live. (DM UW REC)
KS1	Y1	-Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees -Identify and describe the basic structure of a variety of common flowering plants, including trees -name the petals, stem, leaf and root of a plant. -identify and name a range of common plants and trees. (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem). -recognise deciduous and evergreen trees. -describe the parts of a plant (roots, stem, leaves, flowers). -sort some plants by size. -sort some animals by body covering, e.g. scales, fur and skin.	-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. -point out some of the differences between different animals. -sort photographs of living things and non-living things. -classify common animals. (birds, fish, amphibians, reptiles, mammals, invertebrates) -describe how an animal is suited to its environment. -name the parts of the human body that they can see. (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) -identify the main parts of the human body and link them to their senses. -name the parts of an animal's body. -name a range of domestic animals. -classify animals by what they eat. (carnivore, herbivore, omnivore) -compare the bodies of different animals.	
	Y2	-Observe and describe how seeds and bulbs grow into mature plants -Find out and describe how plants need water, 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 and air)	-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 different habitats provide for the basic needs of

		<ul style="list-style-type: none"> -describe what plants need to survive. -describe how seeds and bulbs grow into plants. -describe what a plant needs to grow and stay healthy. -explain that plants grow and reproduce. 	<ul style="list-style-type: none"> -Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. -describe what animals need to survive. -explain that animals grow and reproduce. -explain why animals have offspring. -describe the life cycle of some living things. (e.g. egg, chick, chicken) -explain the basic needs of animals, including humans. -describe why exercise and a balanced diet are important for humans. 	<p>different kinds of animals and plants, and how they depend on each other</p> <ul style="list-style-type: none"> -Identify and name a variety of plants and animals in their habitats, including micro-habitats -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. -match certain living things to the habitats they are found in. -explain the differences between living and non-living things. -describe some of the life processes common to plants and animals, including humans. -decide whether something is living, dead or non-living. -describe how a habitat provides for the basic needs of things living there. -describe a range of different habitats. -describe how plants and animals are suited to their habitat. -sort living things into groups and say why they sorted them in that way. -compare how plants grow in different conditions by making measurements. -identify and compare a variety of plants and animals found in different habitats and microhabitats. -collect weather data about a local habitat and use it to explain the plants and animals they will find there. -explain how animals get their food and draw a simple food chain.
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MATERIALS AND THEIR PROPERTIES (CHEMISTRY)

		Everyday Materials	Properties & Changes of Materials	States of Matter
EYFS	N	<ul style="list-style-type: none"> - Use all their senses in hands on exploration of natural materials. (DM UW 3-4) - Explore and talk about different forces they can feel. (DM UW 3-4) 	<ul style="list-style-type: none"> - Talk about the differences between materials and changes they notice. (DM UW 3-4) 	
	R			<ul style="list-style-type: none"> -Understand some important processes and changes in the natural world around them, including changing states of matter. ELG UW 15b
KS1	Y1	<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. -describe materials using their senses. -describe materials using their senses, using specific scientific words. 	<p>Classifying and grouping materials</p> <ul style="list-style-type: none"> -distinguish between an object and the material from which it is made. -identify and name a range of everyday materials. (wood, plastic, metal, water, rock) -describe the simple physical properties of a variety of everyday materials. -compare and classify a variety of materials based on their simple physical properties. 	

	<p>hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent</p> <ul style="list-style-type: none"> -explain what material objects are made from. -explain why a material might be useful for a specific job. -name some different materials. -sort materials into groups by a given criteria. -explain how solid shapes can be changed by squashing, bending, twisting and stretching. 		
Y2	<p>- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</p> <p>- Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</p> <p>Classifying and grouping materials</p> <ul style="list-style-type: none"> -explore how the shapes of solid objects can be changed. (squashing, bending, twisting, stretching) -find out about people who developed useful new materials. (Dunlop, MacKintosh, MacAdam) - identify and compare the uses of a range of everyday materials. (wood, metal, plastic, glass, brick/rock, paper/cardboard) -explain how things move on different surfaces. 	<p>Classifying and grouping materials</p> <ul style="list-style-type: none"> -distinguish between an object and the material from which it is made. -identify and name a range of everyday materials. (wood, metal, plastic, glass, brick, rock, paper) -describe the simple physical properties of a variety of everyday materials. -compare and classify a variety of materials based on their simple physical properties. 	

PHYSICAL PROCESSES (PHYSICS)

		Light	Sound	Forces and Magnets	Seasonal Change	Earth and Space	Electricity
EYFS	N						
	R				-Understand some important processes and changes in the natural world around them, including the seasons. ELG UW 15b - Understand the effect of changing seasons on the natural world around them. (DM UW REC)		
KS1	Y1	-identify and name the sources of light. -identify and name sources of light that we can see. -explain what darkness is. -compare sources of light. (brightest, duller, darker, lighter) -observe and describe shadows during the day.		-describe and show how to make something move, e.g. push and pull.	-Observe changes across the four seasons - Observe and describe weather associated with the seasons and how day length varies. making tables and charts about the weather; and making displays of what happens in the world around them, including day length, as the seasons change.	-Do they know that the sun lights up the Earth. -stay safe when observing the sun. -describe how the sun moves across the sky.	
	Y2	-compare the brightness and colour of lights. -explain what dark is; using words like shadow. -explain why their shadow changes during the day.	-describe different ways of making sound. -explain why a sound is louder the closer they are to the source.				-identify everyday appliances which use electricity. -recognise that electricity is an important source of light.