

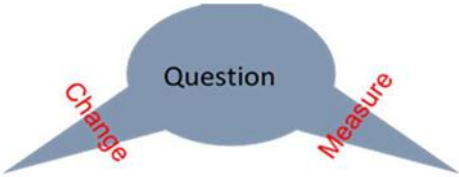


Aiming High, Achieving Together

Progression of Skills and Knowledge: Science

Disciplinary Knowledge Skills		Links to KS1
YR Communication & Language	YR – Development Matters - Ask questions to find out more and to check what has been said to them. - Articulate their ideas and thoughts in well-formed sentences. - Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. ELG: Listening, Attention and Understanding - Make comments about what they have heard and ask questions to clarify their understanding	Asking Questions & Using Ideas to Predict and Hypothesise
	YR – Development Matters - Describe events in some detail - Learn new vocabulary. Use new vocabulary in different contexts	Reporting on Findings and Drawing Conclusions
Understanding the World	YR – Development Matters Describe what they see, hear and feel while they are outside	Reporting on Findings and Drawing Conclusions
	ELG: The Natural World Explore the natural world around them, making observations and drawing pictures of animals and plants	Observing and Measuring; Using Equipment
	ELG: The Natural World 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	Using Scientific Evidence and Secondary Sources of Information
Progression of Substantive Knowledge		Links to KS1
Personal, Social & Emotional Development	YR – Development Matters - Know & talk about the different factors that support their overall health and wellbeing; healthy eating; toothbrushing ELG: Managing Self - Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices	Animals including Humans

Understanding the World	YR – Development Matters • Explore the natural world around them. Recognise some environments that are different to the one in which they live. • Understand the effect of changing seasons on the natural world around them ELG: The Natural World: • 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	Animals including Humans Materials
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Areas of Learning	Pre-School	YR	Y1	Y2	Y3
Working Scientifically	Describe what they see, hear and feel whilst outside.		Asking simple questions and recognising that they can be answered in different ways Understanding: • What a scientific question is. • How a scientific question can be answered. • Using simple secondary sources Performing simple tests • To learn that we can change and measure variables in practical work.  Observing closely, using simple equipment • Perform simple tests and use simple equipment to take measurements (e.g. hand lenses, egg timers) and make close observations and gather data • Observe changes over time Identifying and classifying Gathering and recording data to help in answering questions • Describe simple features to identify and compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying) • Begin to identify patterns and relationships. • To learn what a table and data are and record data in a simple table given to them • Understand that data in a table can be clearer when displayed as a graph. • To ranking results to help draw conclusions.		

			- To make drawings of observations and start to add simple labels Using their observations and ideas to suggest answers to questions - Recognise what scientific evidence is and what a conclusion is - Begin to draw simple conclusions: - notice links between cause and effect with support. - begin to notice patterns and relationships with support; for example, they can state what was the fastest and what was the lightest. - identify and discuss differences between their results. - use simple and scientific language. - Talk about their findings to a variety of audiences in a variety of ways - Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1		
Plants	Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant.	Explore the natural world around them, making observations and drawing pictures of plants.	Plants - Plants include trees (deciduous and evergreen), flowers (wild and cultivated) and hedges and bushes. - Most plants usually grow from seeds and bulbs. - Plants need warmth, light and water to grow and survive - A seed contains a miniature plant that can develop into a fully-grown plant. - A bulb has underground vertical shoots which already has modified leaves - Seeds and bulbs need water to grow but most do not need light (germination) - Seeds and bulbs have food stores inside them to help the plant start to grow. - To survive plants, need to get water, light, and avoid being eaten - A seed produces roots to allow water to get into the plant. - A seed produces shoots to produce leaves to collect the sunlight.	New Plants - All flowering plants make seeds (reproduction) that can grow (germinate) into new plants. - Plants need water, light and a suitable temperature to grow and stay healthy. - Some plants die after it has produced its seed and sometimes the plant lives for many generations producing seeds each year	How do Plants make their food? - Plants do not eat food so have to make their own. - This food provides them with energy, and materials to grow - To make the food (sugar) plants need water from the ground, carbon dioxide from the air and light from the sun. - The water is taken up through the roots from the soil - The carbon dioxide is taken in through the leaves - As well as food, plants also make oxygen which is given out back into the air through the leaves
Animals including Humans	Use all their senses in hands-on exploration of natural materials. Talk about what they see,	Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the	Animal Survival - There are many different animals with different characteristics - Animals need food to survive (carnivores, omnivores and herbivores).	Animal Life Cycles - Life cycles vary between different animals. - Animals grow until	Why do we have a skeleton? All vertebrates have internal skeletons that protect vital organs.

	using a wide vocabulary Understand the key features of the life cycle of an animal. Begin to understand the need to respect and care for the natural environment and all living things.	importance of healthy food choices. • Explore the natural world around them, making observations and drawing pictures of animals. • Know and talk about the different factors that support their overall health and wellbeing: - regular physical activity - healthy eating - toothbrushing - sensible amounts of 'screen time' - having a good sleep routine being a safe pedestrian	• Animals need a variety of food to help them grow, repair their bodies, be active and stay healthy. • Animals move in order to survive. • Exercise keeps animal's bodies in good condition and increases survival chances. • Animals have senses to help individuals survive. When animals sense things they are able to respond • Animals are groups of organisms that need to consume food to survive. • Food provides energy and the building blocks of growth • There are many different groups of animals including fish, amphibians, reptiles, birds and mammals. They have different structures, and they eat different types of foods • Mammals give birth to live young, fish can breathe underwater using gills, birds have wings and beaks, reptiles cannot breathe underwater, and amphibians live on land and in water. • Some eat other animals (carnivores), and others only eat vegetables (herbivores), and some like to eat both plants and meat (omnivores) • Name some common animals that are carnivores, herbivores and omnivores	they reach maturity and then don't grow any larger. • Animals reproduce when they reach maturity. • All animals eventually, die. • Different animals live to different ages. • Different animals reach different sizes before they are able to reproduce. Different animals reproduce at different ages. Animals, including humans, have offspring which grow into adults	• Invertebrates have exoskeletons that protect vital organs. • Skeletons support the weight of land animals. • Stronger bones can support a greater mass. • Bones are connected (but can move relative to each other) at joints. • Muscles connect to bones and move them when they contract. • Stronger bones can anchor stronger muscles.
Habitats	Understand the effect of changing seasons on the natural world around them.	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	• There is variation in all living things. • Animals and plants live in a variety of different places called habitats. • Animals and plants have adapted to survive in different habitats • Plants have specific adaptations for survival • To survive they need to get water, light, and avoid being eaten • All animals get their nutrients by eating. Some animals hunt and eat other animals (predators) and some animals are hunted and eaten by other animals (prey) • There is variation between all living things • Different animals and plants live in different places • All animals are adapted to eat and survive (they are adapted to survive as predators and prey)		

			- Plants are also adapted to survive; they have adapted to get the water and light they need and avoid being eaten or dying when chewed - Living things are adapted to survive in different habitats - The changing seasons have a dramatic effect on plants, which has an impact on the animals that feed on them. Animals have adapted ways of surviving when the seasons change and food become scarce including hibernating, storing food (fattening up), migrating		
Materials	Explore and respond to different natural phenomena in their setting and on trips. Explore collections of materials with similar and/or different properties. .		Describing Materials - There are many different materials that have different observable properties. - Materials that have similar properties are grouped into metals, rocks, fabrics, wood, plastic and ceramics (including glass) - The properties of a material determine whether they are suitable for a purpose	Changing Materials Materials can be changed by physical force (twisting, bending, squashing and stretching)	How can I identify materials based on their properties? - Materials can be divided into solids, liquids and gases. - Solids hold their shape unless forced to change. - Liquids flow easily but stay in their container because of gravity. The more viscous a liquid the less runny it is. - Gases move everywhere and are not held in containers by gravity. - Heating causes solids to melt into liquids and liquids to evaporate to gases. - Cooling causes gases to condense to liquids and liquids to freeze to solids. - Different substances change state at different temperatures but the temperatures at which given substances changes state is always the

					same • The temperature at which a substance melts from a solid to a liquid is the same at which it freezes from a liquid to a solid. • The temperature at which a substance boils from a liquid to a gas is the same at which it condenses from a gas to a liquid. • Liquids evaporate slowly, even below their boiling temperatures.
Forces				Pushes & Pulls • Materials can be changed by physical force (twisting, bending, squashing and stretching). • The pushing or pulling of an object can affect its motion. • Pushing or pulling can do three things, slow down, speed up or change the direction of an object. • The larger the push/pull the bigger the effect on motion. • Pushing and pulling objects can change their shape	What is a magnet? • Magnets exert attractive forces on some metals • Magnetic forces work through other materials including air, so magnets don't need to be touching to exert their force. It is called a non-contact force • Each end of a magnet is called a pole, opposite poles are called north and south. • Magnets exert attractive forces on each other when the poles facing each other are north and

					south (opposites). • Magnets exert repulsive forces on each other when the poles facing each other are the same. • The strength of magnetic forces is affected by: ➤ The strength of the magnet. ➤ The distance between the magnet and the object. The material the object is made from.
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