

Science - Progression of Skills



	Working Scientifically				Developmental Matters							
EYFS	<p>EARLY LEARNING GOALS: EXPRESSIVE ARTS AND DESIGN - CREATING WITH MATERIALS - Can they safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function? Can they share their creations, explaining the process they have used? COMMUNICATION AND LANGUAGE - SPEAKING - Can they offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate? LISTENING, ATTENTION AND UNDERSTANDING - Can they make comments about what they have heard and ask questions to clarify their understanding?</p> <p>DEVELOPMENT MATTERS: EXPRESSIVE ARTS AND DESIGN - Can they create collaboratively, sharing ideas, resources and skills? COMMUNICATION AND LANGUAGE - Can they ask questions to find out more and to check they understand what has been said to them? Can they describe events in some detail? Can they use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen?</p>				<p>UNDERSTANDING THE WORLD: Can they explore the natural world around them? Can they describe what they see, hear and feel whilst outside? Can they understand the effect of changing seasons on the natural world around them? PHYSICAL DEVELOPMENT: Can they further develop the skills they need to manage the school day successfully: living up and outwitting / mealtimes / personal hygiene?</p> <p>Early Learning Goals</p> <p>UNDERSTANDING THE WORLD: Can they explore the natural world around them, making observations and drawing pictures of animals and plants? Do they 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? Can they understand some important processes and changes in the natural world around them, including the seasons and changing states of matter? PERSONAL, SOCIAL AND EMOTIONAL DEVELOPMENT: Can they manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices?</p>							
	Working Scientifically				Materials		Light, forces and magnets		Electricity		Seasonal Changes	
Y1	<ul style="list-style-type: none"> Explore the world around them and raise their own simple questions Experience different types of science enquiries, including practical activities Begin to recognise different ways in which they might answer scientific questions Carry out simple tests Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying) Ask people questions and use simple secondary sources to find answers Observe closely using simple equipment with help, observe changes over time With guidance, they should begin to notice patterns and relationships Use simple measurements and equipment (e.g. hand lenses, egg timers) to gather data Record simple data Use their observations and ideas to suggest answers to questions Talk about what they have found out and how they found it out With help, they should record and communicate their findings in a range of ways and begin to use simple scientific language 	Plants	<ul style="list-style-type: none"> Can they name the petals, stem, leaf, bulb, flower, seed, stem and root of a plant? Can they identify and name a range of common plants and trees? Can they recognise deciduous and evergreen trees? Can they name the trunk, branches and root of a tree? Can they describe the parts of a plant (roots, stem, leaves, flowers)? 	Animals, including humans	<ul style="list-style-type: none"> Can they point out some of the differences between different animals? Can they sort photographs of living things and non-living things? Can they identify and name a variety of common animals? (birds, fish, amphibians, reptiles, mammals, invertebrates) Can they describe how an animal is suited to its environment? Can they identify and name a variety of common animals that are carnivores, herbivores and omnivores? Can they name the parts of the human body that they can see? Can they draw & label basic parts of the human body? Can they identify the main parts of the human body and link them to their senses? Can they name the parts of an animal's body? Can they name a range of domestic animals? Can they classify animals by what they eat? (carnivore, herbivore, omnivore) Can they compare the bodies of different animals? 	Living things and their habitats	<ul style="list-style-type: none"> Can they distinguish between an object and the material from which it is made? Can they describe materials using their senses? Can they describe materials using their senses, using specific scientific words? Can they explain what material objects are made from? Can they explain why a material might be useful for a specific job? Can they name some different everyday materials? e.g. wood, plastic, metal, water and rock Can they sort materials into groups by a given criteria? Can they explain how solid shapes can be changed by squashing, bending, twisting and stretching? 					<ul style="list-style-type: none"> Can they observe changes across the four seasons? Can they name the four seasons in order? Can they observe and describe weather associated with the seasons? Can they observe and describe how day length varies?
Y2	<ul style="list-style-type: none"> Raise their own relevant questions about the world around them Should be given a range of scientific experiences including different types of science enquiries to answer questions Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions Set up simple practical enquiries, comparative and fair tests Recognise when a simple fair test is necessary and help to decide how to set it up Talk about criteria for grouping, sorting and classifying; and use simple keys Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them Take accurate measurements using standard units Learn how to use a range of (few) equipment, such as data loggers / thermometers appropriately Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done 	<ul style="list-style-type: none"> Can they describe what plants need to survive? Can they observe and describe how seeds and bulbs grow into mature plants? Can they find out & describe how plants need water, light and a suitable temperature to grow and stay healthy? 	<ul style="list-style-type: none"> Can they describe what animals need to survive? Can they explain that animals grow and reproduce? Can they explain why animals have offspring which grow into adults? Can they describe the life cycle of some living things? (e.g. egg, chick, chicken) Can they explain the basic needs of animals, including humans (air, water, nutrients, food, shelter, etc.) Can they describe why exercise, balanced diet and hygiene are important for humans? 	<ul style="list-style-type: none"> Can they match certain living things to the habitats they are found in? Can they explain the differences between living and non-living things? Can they describe some of the life processes common to plants and animals, including humans? Can they decide whether something is living, dead or non-living? Can they describe how a habitat provides for the basic needs of things living there? Can they describe a range of different habitats? Can they describe how plants and animals are suited to their habitat? 	<ul style="list-style-type: none"> Can they describe the simple physical properties of a variety of everyday materials? Can they compare and group together a variety of materials based on their simple physical properties? Can they explain how the shapes of solid objects can be changed? (squashing, bending, twisting, stretching) Can they find out about people who developed useful new materials? (John Dunning, Charles Macintosh, John McAdam) Can they identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper, cardboard for particular uses? Can they explain how things move on different surfaces? 							
Y3	<ul style="list-style-type: none"> Raise their own relevant questions about the world around them Should be given a range of scientific experiences including different types of science enquiries to answer questions Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions Set up simple practical enquiries, comparative and fair tests Recognise when a simple fair test is necessary and help to decide how to set it up Talk about criteria for grouping, sorting and classifying; and use simple keys Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them Take accurate measurements using standard units Learn how to use a range of (few) equipment, such as data loggers / thermometers appropriately Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done 	<ul style="list-style-type: none"> Can they identify and describe the functions of different parts of flowering plants? (roots, stem/fruits, leaves and flowers) Can they explore the requirement of plants for life and growth (air, light, water, nutrients from soil, and room to grow)? Can they explain how they vary from plant to plant? Can they investigate the way in which water is transported within plants? Can they explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal? 	<ul style="list-style-type: none"> Can they explain the importance of a nutritionally balanced diet? Can they describe how nutrients, water and oxygen are transported within animals and humans? Can they identify that animals, including humans, cannot make their own food: they get nutrition from what they eat? Can they describe and explain the skeletal system of a human? Can they describe and explain the muscular system of a human? 	<ul style="list-style-type: none"> Can they recognise that living things can be grouped in a variety of ways? Can they explore and use a classification key to group, identify and name a variety of living things? (plants, vertebrates, invertebrates) Can they compare the classification of common plants and animals to living things found in other places? (under the sea, greenhouse) Do they recognise that environments can change and this can sometimes pose a danger to living things? 	<ul style="list-style-type: none"> Can they compare and group materials together, according to whether they are solids, liquids or gases? Can they explain what happens to materials when they are heated or cooled? Can they measure or research the temperature at which different materials change state in degrees Celsius? Can they use measurements to explain changes to the state of water? Can they identify the part that evaporation and condensation has in the water cycle? Can they associate the rate of evaporation with temperature? 	<ul style="list-style-type: none"> Can they compare how things move on different surfaces? Can they observe that magnetic forces can be transmitted without direct contact? Can they observe how some magnets attract or repel each other? Can they classify which materials are attracted to magnets and which are not? Can they notice that some forces need contact between two objects, but magnetic forces can act at a distance? Can they compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet? Can they identify some magnetic materials? Can they describe magnets have having two poles (N & S)? Can they predict whether two magnets will attract or repel each other depending on which poles are facing? Can they recognise that they need light in order to see things? Can they recognise that light is reflected from surfaces? Can they notice that light is reflected from surfaces? Can they recognise that light from the sun can be dangerous and that there are ways to protect their eyes? Can they recognise that shadows are formed when the light from a light source is blocked by a solid object? Can they find patterns in the way that the size of shadows change? 				<ul style="list-style-type: none"> Can they describe a range of sounds and explain how they are made? Can they associate some sounds with something vibrating? Can they compare sources of sound and explain how the sounds differ? Can they explain how to change a sound (louder/softer)? Can they recognise how vibrations from sound travel through a medium to a ear? Can they find patterns between the pitch of a sound and features of the object that produce it? Can they find patterns between the volume of the sound and the strength of the vibrations that produced it? Can they recognise that sounds get fainter as the distance from the sound source increases? Can they explain how you could change the pitch of a sound? Can they investigate how different materials can affect the pitch and volume of sounds? 		
Y4	<ul style="list-style-type: none"> Raise their own relevant questions about the world around them Should be given a range of scientific experiences including different types of science enquiries to answer questions Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions Set up simple practical enquiries, comparative and fair tests Recognise when a simple fair test is necessary and help to decide how to set it up Talk about criteria for grouping, sorting and classifying; and use simple keys Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them Take accurate measurements using standard units Learn how to use a range of (few) equipment, such as data loggers / thermometers appropriately Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done 	<ul style="list-style-type: none"> Can they identify and name the basic parts of the digestive system in humans? Can they describe the simple functions of the basic parts of the digestive system in humans? Can they identify the simple function of different types of teeth in humans? Can they compare the teeth of herbivores and carnivores? Can they explain what a simple food chain shows? Can they construct and interpret a variety of food chains, identifying producers, predators and prey? 	<ul style="list-style-type: none"> Can they explain the importance of a nutritionally balanced diet? Can they describe how nutrients, water and oxygen are transported within animals and humans? Can they identify that animals, including humans, cannot make their own food: they get nutrition from what they eat? Can they describe and explain the skeletal system of a human? Can they describe and explain the muscular system of a human? 	<ul style="list-style-type: none"> Can they recognise that living things can be grouped in a variety of ways? Can they explore and use a classification key to group, identify and name a variety of living things? (plants, vertebrates, invertebrates) Can they compare the classification of common plants and animals to living things found in other places? (under the sea, greenhouse) Do they recognise that environments can change and this can sometimes pose a danger to living things? 	<ul style="list-style-type: none"> Can they compare and group materials together, according to whether they are solids, liquids or gases? Can they explain what happens to materials when they are heated or cooled? Can they measure or research the temperature at which different materials change state in degrees Celsius? Can they use measurements to explain changes to the state of water? Can they identify the part that evaporation and condensation has in the water cycle? Can they associate the rate of evaporation with temperature? 							
Y5	<ul style="list-style-type: none"> Raise their own relevant questions about the world around them Should be given a range of scientific experiences including different types of science enquiries to answer questions Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions Set up simple practical enquiries, comparative and fair tests Recognise when a simple fair test is necessary and help to decide how to set it up Talk about criteria for grouping, sorting and classifying; and use simple keys Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them Take accurate measurements using standard units Learn how to use a range of (few) equipment, such as data loggers / thermometers appropriately Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done 	<ul style="list-style-type: none"> Can they describe the changes as humans develop to old age? 	<ul style="list-style-type: none"> Can they identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood? Can they explain the impact of diet, exercise, drugs and lifestyle on the way their bodies function? Can they describe the ways in which nutrients and water are transported within animals, including humans? Can they recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents? Can they give reasons why offspring are not identical to each other or to their parents? Can they explain the process of evolution and describe the evidence for this? Can they identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution? 	<ul style="list-style-type: none"> Can they describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences including microorganisms, plants and animals? Can they give reasons for classifying plants and animals based on specific characteristics? 	<ul style="list-style-type: none"> Can they compare and group together everyday materials on the basis of their properties, including hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets? Can they explain how some materials dissolve in liquid to form a solution? Can they describe how to recover a substance from a solution? Can they use their knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving, evaporating? Can they give reasons, based on evidence for comparative and fair tests for the particular uses of everyday materials, including metals wood and plastic? Can they describe changes using scientific words? (evaporation, condensation) Can they demonstrate that dissolving, mixing and changes of state are reversible changes? Can they explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda? Can they use the terms 'reversible' and 'irreversible'? 	<ul style="list-style-type: none"> Can they explain that unsupported objects fall towards the earth because of the force of gravity acting between the earth and the falling object? Can they identify the effects of air resistance, water resistance and friction that act between moving surfaces? Can they recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect? 						
Y6	<ul style="list-style-type: none"> Raise their own relevant questions about the world around them Should be given a range of scientific experiences including different types of science enquiries to answer questions Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions Set up simple practical enquiries, comparative and fair tests Recognise when a simple fair test is necessary and help to decide how to set it up Talk about criteria for grouping, sorting and classifying; and use simple keys Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them Take accurate measurements using standard units Learn how to use a range of (few) equipment, such as data loggers / thermometers appropriately Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done 		<ul style="list-style-type: none"> Can they identify and name the basic parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood? 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(cells, wires, bulbs, switches, buzzers) Can they compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers, the on/off position of switches? Can they use recognised symbols when representing a simple circuit in a diagram? 		
Earth and Space												
						<ul style="list-style-type: none"> Can they explain that light appears to travel in straight lines? Can they use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye? Can they explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes? Can they use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them? 						<ul style="list-style-type: none"> Can they identify and explain the movement of the Earth and other planets relative to the sun in the solar system? Can they explain how seasons and the associated weather is created? Can they describe and explain the movement of the Moon relative to the Earth? Can they describe the sun, earth and moon as approximately spherical bodies? Can they use the idea of the earth's rotation to explain day and night and the apparent movement of the sun across the sky?