



Skills Ladder - Science

Unit	EYFS	Puffin - Year 1/2		Swift Year 3/4		Eagle Year 5/6		
Animals including humans	<p>Explore the natural world around them, making observations and drawing pictures of animals and plants.</p> <p>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.</p>	The five senses and how we use these to find out about the world.	How do humans keep healthy? (Exercise, food, hygiene)	Needing the right amount of nutrition.	Simple functions of the basic parts of the digestive system.	<p>What are the changes as humans develop to old age?</p>	The human circulatory system.	
		Identify and name common animals (fish, amphibians, reptiles, birds and mammals).	<p>What are the basic needs for survival? (water, food, air)</p>	Get nutrition from what they eat.	The different types of teeth in a human and their simple functions.		The functions fo the heart, blood vessels and blood.	
		Identify and name common animals (carnivores, herbivores and omnivores).		Why do we have a skeleton and what does it protect?	Construct and interpret a variety of food chains.		The impact of diet, exercise, drugs and lifestyle on the way the boys functions.	
		Describe and compare the structure of common animals.		How do animals move their muscles?	Identify producers, predators and prey.		Ways nutrients and water are transported within animals including humans.	
				How do muscles work?				
Plants	<p>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</p>	Naming parts of a flowering plant and trees.	How seeds and bulbs grow into mature plants.	<p>Explore the part the flower plays in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>				
		What plants needs to grow well.	<p>Find out and describe how plants need water, light and suitable temperature to grow and stay healthy.</p>					How water is transported through the plant.
		What plants can you find by our school?						The requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow).
		Identify and name common wild and garden plants (deciduous and evergreen trees).						How can this vary from plant to plant?
The job of roots, leaves and stems / trunk and flowers.								
Evolution and inheritance							How living things change over time.	
							What information does a fossil provide? (information about living things that inhabited the Path millions of years ago)	
							Living things produce offspring of the same kind but normally offspring vary and are not identical to their parents.	
							How animals and plants adapt to suit their environment.	
							How adaption leads to evolution.	

Living things and their habitats

Materials

	Identify / name plants and animals including micro-habitats.		Recognise that living things can be grouped in a variety of ways.	The difference between the life cycles of a mammal, an amphibian, an insect and a bird.	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences including micro-organisms, plants and animals.
	Sort living, dead and never been alive things.		How to use a key to identify local plants and animals.		
	Describe how animals get food - food chain.		That environments can change and that this can sometimes pose dangers to living things.	Describe the life processes of reproduction in some plants and animals.	The reasons for classifying plants and animals (specific characteristics).
	The similarities and differences between local habitats and how it affects the animals and plants that live there.		The ways we can protect living things and the environment.		
Distinguish between an object and the material from which it is made.	Identify and compare the suitability of a variety of everyday materials including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.			Compare and group together everyday materials on the basis of the properties including hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets.	
Identify and name a variety of everyday materials including wood, plastic, glass, metal, water and rock.	Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.			Some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.	
Describe the simple physical properties of a variety of everyday materials.				Separate solids, liquids and gases through filtering, sieving and evaporating.	
Compare and group together a variety of everyday materials based on their simple properties.					Give reasons, based on evidence from comparative and fair tests, for the particular use of everyday materials including wood, plastic and metals.
				Demonstrate that dissolving, mixing and changes of state are reversible changes.	
				Some changes result in the formation of new materials.	
				Changes associated with burning and the action of acid on bicarbonate of soda are irreversible.	

Seasonal changes	Observe changes across the four seasons.				
	Observe and describe weather associated with the seasons.				
	Observe and describe how the day length varies based on the season.				
Rocks			Compare and group together different kinds of rocks based on appearance and simple physical properties.		
			Describe in simple terms how fossils are formed when things have lived and then are trapped within rock.		
			Recognise that soils are made from rocks and organic matter.		
Light			Recognise the need for light to see things and that dark is the absence of light.		What direction does light travel?
			Light is reflected from surfaces.		Objects are seen because they give out or reflect light into the eye.
			Light from the sun can be dangerous and that there are ways to protect our eyes.		How do we see things? (Light travels from light sources to our eyes or from light sources to objects and then our eyes)
			Shadows are formed when the light from light sources is blocked by a solid object.		Understand that light travels in straight lines which explains why shadows have the same shape as the object that cast them.
Sound				How are sounds made? (Vibration)	
				Vibrations travel through a medium to the ear.	
				Find patterns between the volume of a sound and the strength of the vibration.	
				Find patterns between the pitch of a sound and features of the object that produces it.	
				What happens to sound as the distance from the sound source increases?	

Electricity

Forces

			Common appliances that run on electricity.		How does the number and voltage of cells effect the brightness of a lamp or the volume of a buzzer?
			Construct a simple series circuit.		Compare and give reasons for variations in how components function including brightness of bulb, loudness of buzzer, on/off position of switches.
			Identify the different parts to a circuit including cell, wires, bulbs, switches and buzzers.		Recognise symbols when representing a simple circuit in a diagram.
			Identify whether a lamp will light in a series circuit based on whether or not the lamp is part of a complete loop with a battery.		
			How does a switch work and will this light the lamp in the simple series circuit?		
			What are the common conductors and isolators?		
			Are metals good conductors?		
How do objects move?	What pushes and pulls?	Compare how things move on different surfaces.		Why do unsupported objects fall towards the Earth?	
How do you stop or slow down an object?	How can we control speed and direction of an object?	Some forces need contact between two objects but magnetic forces can act at a distance.		What are the effects of air resistance, water resistance and friction on moving surfaces?	
	How do they effect an object - can pushes and pulls change the shape of objects?	Magnets can attract or repel each other.		That come mechanisms, including levers, pulleys and gears allow a smaller force to have a greater effect.	
		That magnets can attract some materials and not others.			
		That agents have two poles.			
		Predict whether two magnets will attract or repel each other based on which poles are facing.			
		Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet.			
Identify some magnetic materials.					

States of matter				Compare and group materials together according to whether they are solids, liquids or gases.		
				How some materials change state when they are heated or cooled.		
				Measure or research the temperature at which this happens in degree Celsius.		
				Identify the part played by evaporation and condensation in the water cycle.		
				Associate the rate of evaporation with temperature.		
Earth and Space					Describe the movement of the earth and other planets, relative to the sun in the solar system.	
					Describe the movement of the moon relative to the earth.	
					Describe the sun, earth and moon as approximately spherical bodies.	
					Why does the sun seem to move across the sky, rising the East and setting in the West?	
					Why do we have daytime and night time?	
Ideas and evidence in science	To collect evidence to try to answer a question.	To collect evidence to try to answer a question.	To collect evidence in a variety of contexts to answer a question or test an idea.	To collect evidence in a variety of contexts to test an idea or prediction based on their scientific knowledge and understanding.	To consider how scientists have combined evidence from observation and measurement with creative thinking to suggest new ideas and explanations for phenomena.	To consider how scientists have combined evidence from observation and measurement with creative thinking to suggest new ideas and explanations for phenomena.
	To test ideas suggested to them and say what they think will happen.	To suggest some ideas and questions based on simple knowledge and say how they might find out about them.	In a variety of contexts, to suggest questions and ideas and how to test them.	To suggest questions that can be tested and make predictions about what will happen and some of which are based on scientific knowledge, to design a fair test to plan how to collect sufficient evidence.	To make predictions of what will happen based on scientific knowledge and understanding and suggest how to test these.	To decide how to turn ideas into a form that can be tested and, where appropriate, to make predictions using scientific knowledge and understanding.
Investigative skills - Planning		To say what they think might happen.	To make predictions about what will happen.		To use knowledge and understanding to plan how to carry out a fair test to how to collect sufficient evidence to test an idea.	To identify factors that are relevant to a particular situation.

		To think about and discuss whether comparisons and tests are fair or unfair.	To think about how to collect sufficient evidence in some contexts.	In some contexts to choose what apparatus to use what to measure.	To identify factors that need to be taken into consideration in different contexts.	To choose what evidence to collect to investigate a question, ensuring the evidence is sufficient.
			To consider what makes a test unfair or evidence sufficient and, with help, plan fair tests.			To choose what equipment to use.
Obtaining and presenting evidence	To make observations using appropriate senses.	To make observations, to make measurements in standard and non-standard measures.	To make observations and comparisons.	To make observations and comparisons of relevant features in a variety of contexts.	To make relevant observations.	To make a variety of relevant observations and measurements using simple apparatus correctly.
	To make some measurements of length using standard and non-standard measures.	To make records of observations, and to present results in tables, drawings and block graphs using ICT where relevant .	To measure length, volume of liquid and time in standard measures using simple measuring equipment effectively.	To make measurements of temperature, time and force as well as measurements of length.	To consolidate measurement of volume, temperature, times and length.	To decide when observations and measurements need to be checked by repeating, to give more reliable data.
	To present some findings in simple tables and block graphs using ICT where relevant.		To present results in drawings, bar charts and tables using ICT where relevant.	To think about why observations and measurements should be repeated.	To measure pulse rate.	To use tables, bar charts and line graphs to present results using ICT where relevant.
				To present results in bar charts and tables using ICT where relevant.	To think about why observations and measurements should be repeated.	
Considering evidence and evaluating	To make simple comparisons and groupings that relate to differences and similarities between living things and objects.	To make simple comparisons, identifying similarities and differences between living things, objects and events.	To draw conclusions from results and begin to use scientific knowledge to suggest explanations for them.	To identify simple trends and patterns in results presented in tables, charts and graphs and to suggest explanations for some of these.	To decide whether results support any prediction.	To make comparisons, to evaluate repeated results.
	In some cases to say what their observations show and whether it was what they expected.	To say what results show.	To make generalisations and begin to identify simple patterns in results in tables.	To explain what the evidence shows and whether it supports any prediction made.	To begin to evaluate repeated results.	To identify patterns in results and results that do not appear to fit the pattern.
	To draw simple conclusions and explain what they did.	To say whether their predictions were supported.		To link the evidence to scientific knowledge and understanding in some contexts.	To recognise and make predictions from patterns in data and suggest explanations for these using scientific knowledge and understanding.	To use results to draw conclusions and to make further predictions.
		In some cases to use knowledge to explain what was found out and to draw conclusions.			To interpret data and think about whether it is sufficient to draw conclusions.	To suggest and evaluate explanations for the predictions using scientific knowledge and understanding.
		To explain what they did.			To draw conclusions indicating whether these maths any prediction made.	To say whether the evidence supports any prediction made.