

















Science MTP - Living things and their habitats - Year 4

National Curriculum Objectives		Sticky Knowledge		Key Scientists	
<ul style="list-style-type: none"> Recognise that living things can be grouped in a variety of ways. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change and that this can sometimes pose danger to living things. 		<ul style="list-style-type: none"> Living things can be divided into groups based upon their characteristics. Environmental change can positively or negatively affect a habitat; changes can be natural or caused by humans. Organisms are affected in different ways by environmental change. Conservationists work to help promote the protection of the environment. 		Jacques Cousteau <i>(Ocean Explorer & Conservationist)</i> Rachel Carson <i>(Marine Biologist, Conservationist & Author)</i>	
		Vocabulary			
		amphibians, birds, change, classification key, danger, deforestation, development, environment, fish, flowering, habitat, human impact, invertebrates, litter, living things, mammals, nature reserve, negative, non-flowering, population, positive, reptiles, vertebrate			
Prior Learning		Future Learning		Key Questions	
In Year 2 children should: <ul style="list-style-type: none"> Explore and compare the difference 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 different kinds of animals and plants, and how they depend on each other. 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 the different sources of food. 		In Year 5 (Animals, including humans): <ul style="list-style-type: none"> Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals. In Year 6 (Living things and their habitats): <ul style="list-style-type: none"> Classify living things into broad groups according to observable characteristics and based on similarities and differences. Give reasons for classifying plants and animals based on specific characteristics. 		<ul style="list-style-type: none"> What food chains and webs are there in our local habitat? How does energy move through the food chain? How does removal of one species from an environment affect others? (keystone species) How does environmental change affect different organisms? What are the most important things we could do to improve our outside area? (pond, compost, wildflowers, litter picking) How does human activity affect our environment? (new house buildings, use of pesticides, deforestation) 	
					BIG Question (assessment opportunity)
Does the amount of light affect how many woodlice move around? How does the average temperature of the pond water change in each season?	Can we use the classification keys to identify all the animals that we caught pond dipping?	How does the variety of invertebrates on the school field change over the year?	Has the use of insecticides affected the bee population?	Why are people cutting down the rainforests and what effect does that have?	Are living things in danger?
					






Science MTP - Animals including humans - Year 4

National Curriculum Objectives		Sticky Knowledge		Key Scientists	
<ul style="list-style-type: none"> Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey. 		<ul style="list-style-type: none"> The teeth of animals (including humans) are designed to eat different foods depending on the diet of the animal. Food is broken down by the teeth and further in the stomach and intestines where nutrients go into the blood; the blood takes nutrients around the body. Nutrients produced by plants move to primary consumers then to secondary consumers through food chains; this flow of energy is shown on a food chain. 		Marie M. Daly <i>(Biochemist)</i> Pierre Fauchard <i>(Physician)</i>	
		Vocabulary			
		canine, carnivore, consumers, damages, digestive system, food chain, functions, herbivore, humans, incisor, large intestine, molar, mouth, oesophagus, predators, premolar, prey, producers, small intestine, stomach, teeth, tongue			
Prior Learning		Future Learning		Key Questions	
In Year 3 children should: <ul style="list-style-type: none"> Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get their nutrition from what they eat. Know how nutrients, water and oxygen are transported within animals and humans. Know about the importance of a nutritious, balanced diet. Identify that humans and some other animals have skeletons and muscles for support, protection and movement. 		In Year 5 children will: <ul style="list-style-type: none"> Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals. Describe the changes as humans develop to old age. 		<ul style="list-style-type: none"> What different types of food are there? Why do we need a variety of different foods? Do all organisms eat the same things? Why do some people need different diets? (weightlifter vs marathon runner) Why are teeth important? What happens to our food? What is our digestive system? How does our food turn into faeces and urine? 	
 In our class, are omnivores taller than vegetarians?	 What are the names for all the organs involved in the digestive system? Look at examples of teeth. Can we organise them into groups?	 How does an egg shell change when it is left in cola, milk, water, vinegar? What does this tell us about oral hygiene?	 Are foods that are high in energy always high in sugar?	 How do dentists fix broken teeth?	BIG Question (assessment opportunity) What do our bodies do with the food we eat? @MrsF_primary






Science MTP - States of Matter - Year 4

National Curriculum Objectives		Sticky Knowledge		Key Scientists	
<ul style="list-style-type: none"> Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 		<ul style="list-style-type: none"> Materials can be divided into solids, liquids and gases. Some materials can change from one state to another and back again. Heating causes solids to melt into liquids and liquids evaporate into gases. Cooling causes gases to condense into liquids and liquids to freeze into solids. The temperature at which given substances change state are always the same. Condensation and evaporation occur within the water cycle. 		Daniel Gabriel Fahrenheit <i>(Physicist)</i> Antoine Lavoisier <i>(Chemist)</i>	
		Vocabulary			
		change state, condensation, condense, cooled, degrees Celsius, escape, evaporation, everyday materials, gases, heated, liquids, melt, pool, shape, solids, substance, temperature, water cycle			
Prior Learning		Future Learning		Key Questions	
In KS1 children should: <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. Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. 		In Year 5 children will: <ul style="list-style-type: none"> Compare and group together everyday materials on the basis of their properties, including hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons based on evidence from comparative and fair tests, for the particular uses of everyday materials, including wood, metals and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials, and this kind of change is usually not reversible, including changes associated with burning and the action of acid on bicarbonate of soda. 		<ul style="list-style-type: none"> How does the amount of water added to flour affect its state? How does the amount of detergent added to water affect how slippery it is? Are all liquids the same? How does the material sprinkled on ice affect how quickly it melts? How does the type of chocolate affect its melting temperature? What is the melting temperature of ice and how does it compare with the freezing temperature of water? Is the melting temperature of wax the same as its freezing temperature? 	
					BIG Question (assessment opportunity)
How does the mass of a block of ice affect how long it takes to melt? How does the surface area of water affect how long it takes to evaporate?	Can you group these materials and objects into solids, liquids, and gases? How would you sort these objects/materials based on their temperature?	Which material is best for keeping our hot chocolate warm? How does the level of water in a glass change when left on the windowsill?	Is there a pattern in how long it takes different sized ice lollies to melt? How does the evaporation rate change as you add more salt to your water?	What are hurricanes, and why do they happen?	How can water change? @MrsF_primary

Science MTP - Sound - Year 4

National Curriculum Objectives		Sticky Knowledge		Key Scientists	
<ul style="list-style-type: none"> Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between the pitch of a sound and features of the object that produced it. Find patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound source increases. 		<ul style="list-style-type: none"> Sound is a type of energy created by vibrations; the louder the sound, the bigger the vibration. Sound travels from its source in all directions and we hear it when it travels to our ears. Sound travel can be blocked. Changing the shape, size and material of an object will change the sound it produces. Sound moves through all materials by making them vibrate; changing the way an object vibrates changes it's sound. Bigger vibrations produce louder sounds and smaller vibrations produce quieter sounds. Faster vibrations (higher frequencies) produce higher pitched sounds. 		<p>James West <i>(Inventor & Acoustician)</i></p> <p>Alexander Graham Bell <i>(Inventor & Engineer)</i></p>	
		Vocabulary			
		distance, ear, fainter, features, high, instruments, insulation, loud, low, pitch, quiet, sound, sound source, strength, travel, vibrating, volume			
Prior Learning		Future Learning		Key Questions	
<p>In KS1 children should:</p> <ul style="list-style-type: none"> Have some understanding that objects make different sounds. Understand that they use their ears to hear sounds. Know about their different senses. <p><i>N.B. This is a new unit of learning not previously studied.</i></p>		<p>In KS3 children will:</p> <ul style="list-style-type: none"> Know about frequencies of sound waves, measured in hertz (Hz); echoes, reflection and absorption of sound. Know that sound needs a medium to travel, the speed of sound in air, water and solids. Know that sound is produced by vibrations of objects and detected by the ear drum. Sound waves are longitudinal. The auditory range of humans and animals. 		<ul style="list-style-type: none"> How can you change the volume of a sound? How does the size of an ear trumpet affect the volume of sound detected? How does the type/thickness of material affect how well it blocks a sound? Which materials vibrate better and produce louder sounds? Can we identify any patterns? Which materials make the best string telephone components? (tin cans, paper cups, plastic cups, wire, cable, string, plastic or elastic) How does the length of the tube (when making a straw oboe) affect the pitch and volume? Can you predict the relative pitch of tuning forks from the patterns of ripples they make in the water? 	
					<p>BIG Question (assessment opportunity)</p>
How does the volume of a drum change as you move further away from it? How does the length of a guitar string affect the pitch of the sound?	Which material is best to use for muffling sound in ear defenders?	When is our classroom the quietest?	Is there a link between how loud it is in school and the time of day? If there is a pattern, is it the same in every area of the school?	Do all animals have the same hearing range?	How can we make different sounds?
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Science MTP - Electricity - Year 4

National Curriculum Objectives		Sticky Knowledge		Key Scientists	
<ul style="list-style-type: none"> Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors. 		<ul style="list-style-type: none"> A source of electricity (mains or battery) is needed for electrical devices to work. Electricity sources push electricity round a circuit. More batteries will push the electricity round the circuit faster. A complete circuit is needed for electricity to flow and devices to work. Some materials allow electricity to flow easily and these are called conductors. Materials that don't allow electricity to flow easily are called insulators. 		<p>Hertha Ayrton <i>(Engineer, Physicist & Inventor)</i></p> <p>Joseph Swan <i>(Physicist, Chemist & Inventor)</i></p>	
		Vocabulary			
		appliances, battery, brighter, bulb, buzzer, cell, components, conductor, device, electricity, insulator, lamp, loop, metals, motor, parts, series circuit, switch, wire			
Prior Learning		Future Learning		Key Questions	
<p>Children will have an awareness that:</p> <ul style="list-style-type: none"> Objects need electricity to work. That a switch will turn something on or off. Some electric hazard awareness. <p><i>N.B. This is a new unit of learning not studied previously.</i></p>		<p>In Year 6 children will:</p> <ul style="list-style-type: none"> Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. Use recognised symbols when representing a simple circuit in a diagram. 		<ul style="list-style-type: none"> What would life be like without electricity? What sorts of things use/need electricity? In which ways can we 'get' electricity? (mains/plugs/batteries/wireless) How do we make electricity? How do batteries work? How quickly can batteries run out? Does this make a difference depending on the number of components? How does the number of batteries added to the circuit affect a device? What materials can carry electricity? (conductors/insulators) 	
					<p>BIG Question (assessment opportunity)</p>
How does the thickness of a conducting material affect how bright the lamp is? Which metal is the best conductor of electricity?	How would you group these electrical devices based on where the electricity comes from?	How long does a battery light a torch for?	Which room has the most electrical sockets in a house? Why?	How has electricity changed the way we live? How does a light bulb work?	What can we do with electricity? @MrsF_primary