

CAPTAIN WEBB PRIMARY SCHOOL

Science Curriculum – Key Knowledge and Skills

Daycare	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants								
<p>I know that plants need to be cared for to keep them alive.</p>	<p>I know that from a seed, will grow a plant.</p>	<p>I know the name of some plants I am likely to see whilst I am outside at school (daffodils, daisy).</p> <p>I can make observational drawings of plants, which include the main parts (stem, flower, leaf).</p>	<p>I know that the main parts of a plant are the petals, stem, leaf, flower, seed and root.</p> <p>I know a range of common wild and garden plants.</p> <p>I know that the main parts of a tree are trunk, branches and root.</p>	<p>I know the difference between a seed and a bulb</p> <p>I know how seeds and bulbs grow into mature plants.</p> <p>I know that plants need water, light and a suitable temperature to grow and stay healthy.</p> <p>I know a range of deciduous and evergreen trees and that evergreen trees keep their leaves all year.</p>	<p>I know the functions of different parts of flowering plants (roots, stem/trunk, leaves and flowers).</p> <p>I know the way in which water is transported within plants.</p> <p>I know the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>			
Vocabulary								
Plant, water, care	Seed, grow	Stem, flower, leaf, daffodil, daisy	root, stem, flower, seeds, petal, branch, trunk, oak, silver birch, ash, nettle, ivy,	Bulb, water, light, suitable temperature, deciduous,	Transport, stem, leaf, root hair, life cycle, pollination, seed dispersal			

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			dandelion, rose, sunflower, lavender	evergreen, seedling				
All Living things (and their habitats – Year 2)								
	<p>I know that some things decay over time.</p> <p>I know that I need to respect and care for living things.</p>			<p>I know some of the life processes common to plants and animals, including humans.</p> <p>I know whether something is living, dead or non-living.</p> <p>I know a variety of plants and animals' worldwide habitats</p> <p>I know why some plants and animals are suited to British habitats.</p> <p>I know that certain living things depend on one another to survive</p> <p>I know what a simple food</p>		<p>I know that living things can be grouped in a variety of ways (animals, plants, vertebrates, and invertebrates using Venn diagrams and Carroll diagram)</p> <p>I know that classification keys help group, identify and name a variety of living things (a classification key)</p> <p>I know how to classify animals found in my local environment</p> <p>I know that changing environments</p>	<p>I know the characteristics of a mammal, amphibian, insect, reptile, fish and a bird</p> <p>I know the differences between the life cycles of an amphibian and an insect</p> <p>I know the differences between the life cycles of a bird and a mammal</p> <p>I know the process of reproduction in plants</p>	<p>I know that living things are classified into broad groups according to common observable characteristics</p> <p>I know that plants can be classified based on their similarities and differences</p> <p>I know that some microorganisms can be harmful</p>

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				chain shows I know that animals obtain their food from plants and other animals		can sometimes pose dangers to living things		
Vocabulary								
	Rotten, alive, not alive, plants, animals			Habitat, conditions, living, dead, food chain, shelter, depend, suitability, life processes, non-living		Classify, species, invertebrate, vertebrate, environment, classification key	Life cycle, bird, fish, amphibian, reptile, mammal, reproduction, asexual, fertilisation, germination, pollination, seed dispersal, metamorphosis	Microorganism, characteristics, fungi, virus, bacteria, mosses, ferns, flowering plants, conifers, algae, preservation
Animals Including Humans								
I know that I need to care for animals. I know where my eyes, ears, mouth and nose are.	I know that a chick hatches from an egg. I know the names of some body parts (arms, legs, feet, hands and head).	I know what my five senses are. I know what a pet needs to be cared for. I know how to use my eyes, ears and hands to describe what I can	I know the names of a variety of common animals and their body parts (birds, fish, amphibians, reptiles and mammals) I know a variety of common animals that are carnivores,	I know that animals, including humans, have offspring which grow into adults. I know the lifecycles of some living things I know the basic needs of animals,	I know the importance of a nutritionally balanced diet I know that animals, including humans, cannot make their own food: they get nutrition from what they eat I know that humans have a skeletal system to	I know the basic parts of the digestive system in humans I know the name and the function of different types of teeth in humans I know why the teeth of herbivores and	I know and can describe the changes as humans develop to old age I know that gestation periods vary between animals I know the changes humans experience during puberty	I know the main parts of the human circulatory system and the function of the blood vessels. I know the functions of the heart. I know the components of blood. I know the impact of diet and exercise on the way my body

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		<p>see, hear and feel.</p> <p>I know how to care for the school guinea pig (water, food and a clean home).</p> <p>I know the names of animals I will see at the farm.</p> <p>I can make observational drawings of animals, which include the main parts.</p>	<p>herbivores and omnivores</p> <p>I know the main parts of the human body</p> <p>I know which parts of my body are linked to my senses</p>	<p>including humans, for survival (water, food and air)</p> <p>I know the importance of eating the right amounts of food for humans</p> <p>I know why exercise is important for humans</p> <p>I know why hygiene is important for humans</p>	<p>protect our organs</p> <p>I know how the muscular system of a human helps you move</p>	<p>Carnivores are different</p> <p>I know how to construct and interpret a variety of food chains (identifying producers, predators and prey)</p>		<p>functions (heart rate and salt).</p> <p>I know the impact of drugs and lifestyle on the way my body function.</p> <p>I know the ways in which nutrients and water are transported within animals, including humans.</p>
Vocabulary								
Animals, care, eyes, ears, nose, mouth	Egg, hatched, born, chick, hen, head, arms, legs, feet, hands	Senses, smell, touch, taste, hear, sight, food, home, water	bird, fish, amphibian, reptile, mammal, carnivore, herbivore, omnivore, feathers, scales, fur, skin,	human, adult, parent, young, offspring, air, exercise, lifecycle, basic needs, survival, hygiene, healthy, diet, height, growth, weight	nutrition, protein, carbohydrate, minerals, vitamins, fats, sugars, balanced diet, skeleton, skull, spine, ribcage, pelvis, femur, calcium, muscle	Stomach, intestines, liver, anus, mouth, canine, molar, incisor, digest, producer, prey, fibre, predator	Puberty, Life cycle, gestation, womb, elderly, reproduction, sperm, egg, fetus, baby, fertilisation,	circulation, heart, blood vessel, veins, capillaries, lungs, respiration, pulse, ventricle, aorta, atrium, artery, oxygen, lungs, Blood cells, inhale, breathing.

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			features, compare, fingers, foot, skin, hair, elbows, neck					
Materials								
<p>I know that not all materials feel the same.</p> <p>I know that different objects feel a different way.</p>	<p>I can talk about the materials that I have collected.</p> <p>I know some objects can snap, can stretch or cannot bend.</p> <p>I know that different objects will sink or float.</p>	<p>I know that light travels through transparent materials.</p> <p>I know that heavy objects will sink and light objects float.</p>	<p>I know the difference between an object and the material from which it is made.</p> <p>I know a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</p> <p>I know simple physical properties of a variety of everyday materials.</p> <p>I can compare and group together a</p>	<p>I know which objects are translucent, opaque, and transparent.</p> <p>I know how to group together and compare a variety of materials based on their simple physical properties.</p> <p>I know how the shapes of solid objects can be changed.</p> <p>I know the suitability of a variety of everyday materials.</p>			<p>I know the scientific vocabulary to group materials.</p> <p>I know that a solution is when a material dissolves in a liquid.</p> <p>I know how mixtures might be separated through filtering, sieving and evaporating.</p> <p>I know that dissolving, mixing and changes of state are reversible changes.</p> <p>I know that some changes result in the formation of new materials.</p>	

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			variety of everyday materials on the basis of their simple physical properties.					
Vocabulary								
			materials, properties, wood, plastic, glass, metal, rock, stiff, waterproof, strong, shiny, dull, smooth, rough, stretchy	transparent, opaque, translucent, suitable, squashing, bending, twisting, stretching			soluble, insoluble, solute, solvent, conductor, insulator, magnetic, filter, filtrate, evaporate, reversible, irreversible, hardness, solubility, transparency, conductivity (electrical and thermal)	
States of Matter								
	I know that chocolate melts when it is heated. I know that ice melts when it is left out in the sun.	I can explore what happens when ice is left outside and in a fridge.					I know the properties of solids, liquids and gases I know that some materials change state when they are heated or cooled	

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						<p>I can research and measure the temperature at which changes of state happen in degrees Celsius (°C)</p> <p>I know how the rate of evaporation is effected by temperature.</p>		
Vocabulary								
	Hot, cold, heat, runny, hard	Melt, set, freeze, temperature				solid, liquid, gas, state, boiling, evaporation, condensation, thermometer, degrees, Celsius		
Rocks								
					<p>I know how to compare and group together different rocks on the basis of their appearance and simple physical properties.</p> <p>I know that different rocks can</p>			

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					<p>be useful to us.</p> <p>I know how fossils are formed (when things that have lived are trapped within rocks)</p> <p>I know that soils are made from rocks and organic matter.</p>			
Vocabulary								
					<p>fossil, erosion, granite, chalk, sandstone, crystal, weathering, permeable, sedimentary, metamorphic, igneous.</p>			
Forces and Magnets								
	<p>I can talk about what happens when I play with toys in water.</p> <p>I know magnets can attract and repel</p>				<p>I know that objects move differently on different surfaces.</p> <p>I know some materials which are attracted to materials and some which are not.</p> <p>I know that magnetic forces can act at a</p>		<p>I know that unsupported objects fall towards the earth because of the force of gravity.</p> <p>I know air resistance slows down moving objects.</p> <p>I know that water</p>	

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	certain objects.				distance. I know that magnets have two poles and can predict whether two magnets will attract or repel.		resistance slows down objects that are moving through water. I know that friction is caused when one object rubs against another. I know that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	
Vocabulary								
	Sink, float, stick together, don't stick				Friction, force, magnetic, north pole, south pole, attract, repel		newtons, gravity, friction, air resistance, upthrust, water resistance, mechanism, gear, lever, pulley	
Light								
	I know that light shines through some materials, but not others.	I know that objects, such as a torch, a lamp and the sun, cast a shadow. I know that			I know that we need light in order to see things. I know that dark is the absence of light. I know that light is			I know that light appears to travel in straight lines I know objects are seen because they give out or reflect light into the eye.

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	I know that when I put an object in front of a torch, it makes a shadow.	light from the sun can be dangerous and that there are ways to protect my eyes.			reflected from surfaces. I know that shadows are formed when the light from a light source is blocked by a solid object. I know that shadows change according to the position and direction of the light source.			I know how shadows have the same shape as the objects that cast them. I know the parts of the eye.
Vocabulary								
	Light, shadow, torch, shine	Lamp, cast, shadow, dangerous, protect			Absence, reflection, shadow, light source, opaque, transparent, translucent			reflect, absorb, shadow, emit, pupil, retina, iris, optic nerve, lens
Electricity								
								I know the necessary precautions for working safely with electricity. I know the reasons why there are variations in how components function, including the brightness of bulbs
						I know how to construct a simple series circuit, which includes switches and buzzers I know that a switch opens and closes a circuit I know some common		

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						conductors and insulators, and associate metals with being good conductors		<p>I know what the effect of changing the voltage of a battery is within a circuit</p> <p>I know the reasons why there are variations in how components function, including the brightness of bulbs the loudness of buzzers</p> <p>I can use recognised symbols when representing a simple circuit in a diagram</p>
Vocabulary								
						conductor, insulator, switch, series circuit, electricity, buzzer, metal, plastic, graphite, battery, cell, wire		conductor, insulator, battery, cell, lamp, switch, circuit, component, buzzer, motor, voltage, function, symbols, wire, graphite, series, metal, connect.
Sound								
		I know that a loud sounds makes a vibration.				I know that some sounds are made when something is vibrating.		

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						<p>recognise that vibrations from sounds travel through a medium to the ear</p> <p>I can find patterns between the pitch of a sound and features of the object that produced it</p> <p>I can find patterns between the volume of a sound and the strength of the vibrations that produced it</p> <p>I know that sounds get fainter as the distance from the sound source increases</p>		
Vocabulary								
		Loud, quiet, noise, bounce, up, down				vibration, pitch, volume, absorb, medium, vibrate, data logger,		

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sound meter, decibels.							
Earth and Space							
							<p>I know that the sun, earth and moon are approximately spherical bodies.</p> <p>I know the eight planets that make up the solar system and their relative position to the sun.</p> <p>I know how seasons and the associated weather is created.</p> <p>I know the movement of the Moon relative to the Earth.</p> <p>I know the movement of the Earth and the moon, relative to the Sun</p> <p>I know that the Earth's rotation and the apparent movement of the sun across the sky</p>

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							explains night and day.	
Vocabulary								
							gravity, star, planet, attract, attraction, moon, orbit, mass, rotation, axis, equator, solar system, sphere, phases	
Seasonal Change								
I know the weather changes.		I know how to describe the weather using key vocabulary (hot, cold, warm, wet, dry, raining, windy). I know that the four seasons are Summer, Winter, Autumn and Spring.	I know how to record the weather and can observe it across the four seasons. I know the different weather patterns associated with each season. I know that the length of daylight varies over time.					
Vocabulary								
Weather change		Hot, cold, warm, wet, dry, raining,	temperature, daylight, hours, day, night,					

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		windy, snow, Autumn, Winter, Spring, Summer	weather pattern, icy, frosty cloudy, forecast.					
Evolution and Inheritance								
								<p>I know that fossils provide information about living things that inhabited the earth millions of years ago.</p> <p>I know why offspring vary and are not identical to their parents.</p> <p style="background-color: yellow;">I know how animals have adapted to suit their environment</p> <p>I know that lack of adaption can lead to extinction.</p>
Vocabulary								
								Natural selection, characteristic, species, offspring, adapt,

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evolve, inherit, trait,
extinct

Working Scientifically

Plan

Questioning

I can ask simple questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen) with guidance from the class teacher

Questioning

I can consider prior knowledge when asking questions

I can independently use a range of question stems

I can answer questions posed by the teacher

Questioning

I can independently ask scientific questions, often stimulated by a scientific experience

I can asking further questions based on a developed understanding following an enquiry

Do

With support, I can make observations and begin to answer questions

Observing

I can explore the world around me

I can make careful observations to support identification, comparison and noticing change

I can use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make my observations

I can begin to take measurements, initially by comparisons, then using nonstandard units (Yr2)

Observing

I can make systematic and careful observations

I can use a range of equipment for measuring length, time, temperature and capacity, using standard units for my measurements

Observing

I can propose my own observations and execute them with precision

I can select measuring equipment to give the most precise results e.g. ruler, tape measure or trundle wheel, force meter with a suitable scale

During an enquiry, I can make decisions e.g. whether I need to: take repeat readings (fair testing); increase the sample size (pattern seeking); adjust the observation period and frequency (observing over time); or check further secondary sources (researching); in order to get accurate data (closer to the true value)

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		<p><u>Testing</u> I can use practical resources provided to gather evidence to answer questions generated by myself or the teacher</p> <p>I can carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time</p>	<p><u>Testing</u> I can select from a range of practical resources to gather evidence to answer questions generated by myself or the teacher</p> <p>I can follow a plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking</p>	<p><u>Testing</u> I can select from a range of practical resources to gather evidence to answer their questions</p> <p>I can carry out fair tests, recognising and controlling variables</p> <p>I can decide what observations or measurements to make over time and for how long</p> <p>I can look for patterns and relationships using a suitable sample</p>
Record				
		<p><u>Recording</u> I can record my observations e.g. using photographs, videos, drawings, labelled diagrams or in writing</p> <p>I can record my measurements e.g. using prepared tables, pictograms, tally charts and block graphs.</p> <p>I can classify using simple prepared tables and sorting rings</p>	<p><u>Recording</u> I can decide how to record and present evidence, with support</p> <p>I can record my observation e.g. using photographs, videos, pictures, labelled diagrams or writing.</p> <p>I can record my measurements e.g. using tables, tally charts and bar charts (given templates, if required, to which they can add headings)</p> <p>I can record classifications e.g. using tables, Venn diagrams, Carroll diagrams</p>	<p><u>Recording</u> I can decide how to record and present evidence</p> <p>I can record observations e.g. using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing</p> <p>I can record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs</p> <p>I can record classifications e.g. using tables, Venn diagrams, Carroll diagrams and classification keys</p>
Review				
		<u>Answering</u>	<u>Answering</u>	<u>Answering</u>

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		<p>I can use my experiences of the world around me to suggest appropriate answers to questions</p> <p>I can relate my experience to my evidence e.g. observations they have made, measurements they have taken or information they have gained from secondary sources, with support</p> <p>I can recognise 'biggest and smallest', 'best and worst' etc. from my data</p> <p><u>Enquiring</u> I can ask further simple questions based on what I've seen</p> <p><u>Presenting</u> I can talk about my findings (informal discussion)</p>	<p>I can draw conclusions based on my evidence and current subject knowledge</p> <p>I can identify ways in which I adapted my method as it progressed or how I would do it differently if I repeated the enquiry</p> <p>I can use my evidence to suggest values for different items tested using the same method e.g. the distance travelled by a car on an additional surface</p> <p><u>Enquiring</u> Following a scientific experience, I can ask further questions which can be answered by extending the same enquiry</p> <p><u>Presenting</u> I can present the same data in different ways in order to help with answering the question, with support</p>	<p>I can answer my own and others' questions based on observations I have made, measurements I have taken or information I have gained from secondary sources</p> <p>I can discuss whether other evidence e.g. from other groups, secondary sources and their scientific understanding, supports or refutes my answer</p> <p>In my conclusions, I can: identify causal relationships and patterns in the natural world from my evidence; identify results that do not fit the overall pattern; and explain my findings using my subject knowledge</p> <p>I can evaluate, for example, the choice of method used, the control of variables, the precision and accuracy of measurements and the credibility of secondary sources used</p> <p>I can identify any limitations that reduce the trust I have in my data</p> <p><u>Enquiring</u> I can talk about how new discoveries change scientific understanding</p> <p>I can talk about how my scientific ideas change due to new evidence that I have gathered</p> <p><u>Presenting</u></p>
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					<p>I can communicate my findings to an audience using relevant scientific language and illustrations</p> <p>I can present the same data in different ways in order to help with answering the question</p>
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