St. George's CE First School and Nursery

Long Term Planning
Science
Year Four

Our children work scientifically by: - investigating - enquiring - experimenting	We map the National Curriculum content onto each half term and deliver Science lessons though our own pathway. Science lessons are practical and relatable to real-life.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 4	Animals, including humans	States of matter	Sound	Living things	Animals, including humans	Electricity
Overview	Pupils should be introduced to the main body parts associated with the digestive system, for example, mouth, tongue, teeth, oesophagus, stomach and small and large intestine and explore questions that help them to understand their special functions	Pupils should explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container). Pupils should observe water as a solid, a liquid and a gas and should note the changes to water when it is heated or cooled.	Pupils should explore and identify the way sound is made through vibration in a range of different musical instruments from around the world; and find out how the pitch and volume of sounds can be changed in a variety of ways	Pupils should use the local environment throughout the year to raise and answer questions that help them to identify and study plants and animals in their habitat. They should identify how the habitat changes throughout the year. Pupils should explore possible ways of grouping a wide selection of living things that include animals and flowering plants and non-flowering plants. Pupils could begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects.	Pupils should be introduced to the main body parts associated with the digestive system, for example, mouth, tongue, teeth, oesophagus, stomach and small and large intestine and explore questions that help them to understand their special functions	Pupils should construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices. Pupils should draw the circuit as a pictorial representation, not necessarily using conventional circuit symbols at this stage; these will be introduced in year 6.
Knowledge	**(PZAZ 4.1)** To know the main parts of the digestive system. **mouth, teeth, saliva, oesophagus, liver, pancreas, gall bladder, stomach, small intestine large intestine, rectum, anus** To understand how the digestive system works.	(**PZAZ 4.6, 4.7, 4.8**) To identify, draw and interpret particle diagrams of solids, liquids and gases **Children identify, explain a particle and how it behaves in a solid, liquid and gas** **Vocab – solid, liquid, gas, particle, flow, pour, vibrate, energy, volume, fluid** To classify and group materials together,	**(PZAZ 4.13)** To know and identify how sounds are made, associating some of them with something vibrating. **Sounds are made when objects vibrate. This makes the air around the object vibrate and the air vibrations then**	To know and recognise that living things can be grouped in a variety of ways. **Group a wide variety of animals and plants into their own categories. Why have they grouped them that way? (prior knowledge).** **(PZAZ 4.11)** To know, explore and use classification keys to help group, identify and name a	**(PZAZ 4.2)** To know the different types of teeth and why they are different. **Name, locate & describe functions of 4 different types of teeth – incisors, canines, molars, pre-molars** To know what damages teeth and how to care for them.	To know and identify common appliances that run on electricity. **Electrical and non-electrical Mains or battery** **(PZAZ 4.4)** To know how to construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches, crocodile clip and buzzers, brightness, voltage Identify why a circuit isn't working.

Functions of each organ: **absorb, transport, acids, nutrients, bile, chyme, faeces,** **(PZAZ (4.3)** To know how to classify animals as predators and prey. **prey, herbivore, carnivore, omnivore identify features of predator and prey. Use of stem sentences to explain thinking:** *A predator has … in order to…* *Prey has… in order to…* To know how to construct and interpret a variety of food chains, identifying producers, predators and prey. **Food chain, producer, consumer, predator, prey, herbivore, carnivore, omnivore, scavenger, decomposer, energy, nutrition, habitat, food web**	according to whether they are solids, liquids or gases. **Vocab – state of matter, solid, liquid, gas,** **(PZAZ 4.9)** To know and observe that some materials change state when they are heated or cooled. **Investigate melting chocolate to a liquid, then cooling to a solid** To know how to measure the temperature at which changes of state happen in degrees Celsius (°C). **(PZAZ 4.10)** To know the 3 states of water – evaporation at 100°C, condensation, freezing at 0°C To know and identify the part played by evaporation and condensation in the water cycle. **Evaporation, Precipitation, Condensation, Liquid, Gas, Vapour**	**travel to and enter your ear.** **(PZAZ 4.14)** To know and recognise that vibrations from sounds travel through a medium to the ear. **Sound waves can travel through solids (such as metal, stone and wood), liquids (such as water) and gases (such as air). Experiment – sound travels through a solid better than liquid or gas.** **(PZAZ 4.15)** To find and know patterns between the pitch of a sound and features of the object that produced it. **Pitch is the 'squeakiness' of a sound.** **Loudness and pitch are not the same thing.** **The higher the pitch, the higher the frequency of the sound.** **Vocab - Pitch, frequency, loudness.** **(PZAZ 4.16)** To find and know patterns between the volume of a sound and the strength of the vibrations that produced it. **Amplitude is a measure of how loud or quiet a sound is, and pitch is a**	variety of living things in their local and wider environment. **Classification, Mammal, Reptile, Amphibian, Bird, Fish, Vertebrate, Invertebrate, Key Use photo's to classify the animals as invertebrates, reptile, fish, amphibian, bird or mammal.** **Write a description of each broad group's common characteristics.** **Choose 2 animals from different classes and list their differences.** **Produce a classification key so that you can classify the animals on the cards.** To know and recognise that environments can change and that this can sometimes pose dangers to living things. **Look at a local species such as the hedgehog. How has the change in farming, more housing, and lack of food led to a steep decline.** To know the impact humans can have on environments. **What can we do to Help hedgehogs? Feeding them, holes in fencing to make hedgehog highways. Charities.**	**Plaque, decay,bacteria calcium, dentist** Use egg experiment to test effects of different types of drink. Test different types of toothpaste on eggs. To know and sort a variety of animals that are carnivores, herbivores and omnivores. To know how and why the teeth of carnivores and herbivores are different. Make observations of different types of animal teeth and compare (herbivore, omnivore, carnivore).	To know how to identify whether a lamp will light in a simple series circuit, based on whether the lamp is part of a complete loop with a battery. Use knowledge of circuits to identify diagrams of a complete circuit before testing. To know and recognise that a switch opens and closes a circuit and associate this with whether a lamp lights in a simple series circuit. Explain a switch and test different types. **(PZAZ 4.5)** To know and recognise some common conductors and insulators, and associate metals with being good conductors. Classify a material as metal and non-metal. Predict and explain why a material is a good **insulator/conductor.** Test materials to sound a buzzer.

			measure of how high or low a sound is. **volume describes the loudness of a sound.** **The relationship between the energy used to make the sound and the loudness of the sound.** **(PZAZ 4.17)** To know and recognise that sounds get fainter as the distance from the sound source increases.			
Skills Pupils work scientifically by:	They might draw and discuss their ideas about the digestive system and compare them with models or images.	Grouping and classifying a variety of different materials. Exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party). They could research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. They might observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting.	Children make their own 'noise maker' and test how far they can hear it being shaken. **Loudness, volume, vibration, distance, energy, dissipate.**	Using and making simple guides or keys to explore and identify local plants and animals. Making a guide to local living things. Raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched	Comparing the teeth of carnivores and herbivores, and suggesting reasons for differences. Finding out what damages teeth and how to look after them.	Observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.
Prior Learning	In Year 3: Children are introduced to the main body parts associated with the skeleton.	New Unit	New Unit	In Year 3: Children group animals into vertebrates and invertebrates	New Unit	New Unit

	know the different food groups and how they keep us healthy. know what food groups our food contain				