



**Christ Church Junior School**

**Long Term Plan – Science 2023-2024**

The following plan shows the order of topics with in each year group at Christ Church Junior School. This plan is not set out half termly so that there is fluidity with in the plans allowing teachers to allocate needed time to each topic dependent on children’s misconceptions, previous knowledge, length of half terms, missed lesson time due to holidays etc.

Year 3	Forces and magnets Animals, including humans Rocks and Soils Plants Light
Year 4	States of matter Electricity Sound Living things and their habitats Animals, including humans
Year 5	Properties and changes of materials Forces and magnets Earth and space Living things and their habitats Animals, including humans
Year 6	Electricity Evolution and inheritance Animals including humans Light Living things and their habitats

**Additional notes about sequencing;**

**Year 4** - Living things and their habitats/ Animals Including Humans

Pupil should be taught to construct and interpret a variety of food chains, identifying producers, predators and prey. This statement is within the Animals, including humans topic. In order to construct food chains based on their first-hand experience, this statement should be taught after they have visited a habitat to name and identify the plants and animals.

**Year 4** - States of matter/Sound In the States of matter topic, children learn about solids, liquids and gases. This knowledge is required in order for children to understand, in the Sound topic, that vibrations from sounds travel through a medium to the ear. It is therefore appropriate to teach the States of matter topic before the Sound topic.

**Year 5** - Living things and their habitats/ Animals Including Humans Before learning about the life cycle of humans, it is helpful if pupils have learnt about the life cycle of plants and animals. It is therefore appropriate to teach the Living things and their habitats topic before the Animals, including humans topic.

**Year 5** - Earth and space/Forces If the Forces topic is taught before the Earth and space topic, pupils are able to use their understanding of gravity to help them make sense of why the planets orbit the Sun, and the Moon orbits the Earth.

**Disciplinary Knowledge through ‘Big Questions’**



Each topic will have an attached 'big question' to help children to link their learning. This will be displayed on class boards for children to add their ideas to as the topic progresses.

Year 3	Forces & Magnets	Animals, including humans		Rocks	Plants	Light
BIG QUESTION	How can we move magnets?	Why do animals have skeletons? What is a healthy diet and why is it important?		What are rocks and soils like?	Why do plants have flowers?	What is a shadow?
Year 4	States of matter		Electricity	Sound	Living things and their habitats	Animals, including humans
BIG QUESTION	Where do ice cubes go when they disappear?	Why does it rain and hail?	What can we do with electricity?	How can we make different sounds?	Are living things in danger?	What do our bodies do with the food we eat?
Year 5	Properties and changes of materials		Forces & Magnets	Space	Living things and their habitats	Animals, including humans
BIG QUESTION	How can we separate a mixture of water, iron filings, salt and sand?	How can we change materials reversibly and irreversibly?	How and why do objects move?	Sun, Earth & Moon: What is moving and how do we know?	Do all plants and animals reproduce in the same way?	How will I change as I grow?
Year 6	Electricity	Evolution & Inheritance		Animals, including humans	Light	Living things and their habitats
BIG QUESTION	Can we vary the effects of electricity?	What is evolution, how does it happen and how do scientists know?		How do our choices affect how our bodies work? Why does my heart beat?	Why does my shadow change length over the course of a day?	In what ways can we sort living things?

### Long term plan for Scientific Enquiry

YEAR 3	Forces and magnets – how can we move magnets? Sort toys (leading to what makes them move).	Animals including humans – why do animals have skeletons? What is a healthy diet and why is it important?	Rocks and Soils – what are rocks and soils like? How would you group the rocks?	Plants – why do plants have flowers? Classify flowers based on the children's own criteria.	Light – what is a shadow? Classify materials based on reflective/non reflective, transparent/translucent/opaque
-----------	---	---	--	--	--



	<p>Which materials are magnetic? How do objects move on different surfaces? Which magnet is the strongest? Does the size and shape of a magnet effect how strong it is? If we magnetise a pin, how long will it stay magnetised for? How are magnets used in every day life?</p>	<p>Do all animals have the same skeleton? Classify animals. How can we group the food that we eat? Comparisons between healthy food and fast food – classify the food items leading to sorting by nutrients. Do healthy drinks contain more or less sugar? Can people with longer legs run faster? Can people with bigger hands catch a ball better? What is a human skeleton made up of? Why do different types of vitamins keep us healthy and which foods can we find them in?</p>	<p>Classify soils in a range of ways based on their appearance. Which is the hardest rock? What happens when we put rocks in water? Which soil absorbs the most water? Is there a pattern in where we find volcanos on planet earth? What happens when water keeps dripping on a sandcastle? Observe how soil can be separated through sedimentation. How are fossils formed?</p>	<p>Classify seeds in a range of ways, including by how they are dispersed. What do plants need to grow well? How does the length of the carnation stem affect how long it takes for the food colouring to dye the petals? Which conditions help seeds germinate faster? What colour flowers do pollinating insects prefer? What happens to celery if it is left in a glass of coloured water? What are all the different ways seeds are dispersed?</p>	<p>Which pair of sunglasses will be best at protecting our eyes? How does the number of layers of transparent plastic affect how much light can pass through? Patterns in the way that the size of shadows change: Position of the light source, distance from the light sources When is our classroom darkest? How does the sun make light?</p>
YEAR 4	<p>States of Matter - where do ice cubes go when they disappear? Why does it rain and hail? Classify materials according to whether they are solids, liquids and gases. Can you group these materials and objects into solids, liquids and gasses? How does the mass of a block of ice affect how long it takes to melt? Which liquid freezes the best? What affects evaporation of a puddle? Observe ice melting. Is there a pattern in how to make ice melt more quickly? How does a level glass of water change when it is left of the windowsill? Observe the changes taking place. Research and investigate the melting point of different materials e.g. ice, margarine, butter and chocolate. Use secondary sources to find out about the water cycle.</p>	<p>Electricity – what can we do with electricity? Based on their own criteria, classify household appliances and/or toys Classify the materials. Which material is the best conductor of electricity? How does the thickness of a conduction material affect how bright the lamp is? How long does a battery light a torch for? How does a lightbulb work?</p>	<p>Sound – how can we make different sounds? Using their own criteria, classify musical instruments. Does volume change when you move away from the source? Which material is best for muffling sound in ear defenders? Are two ears better than one? 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? When is our classroom the quietest?</p>	<p>Living things and their habitats – are living things in danger? How would you classify and sort these living things? Can we use the classification key to identify all the animals/insects from the copse? Classify a number of living things based on the wider environment (plants and animals) after completing research. What is the effect of greenhouse gases on the environment? Why are people cutting down the rainforests and what effect does that have?</p>	<p>Animals including humans – what do our bodies do with the food we eat? How can we organise teeth into groups? Compare and contrast different types of teeth. Classify jaw bones/teeth to id with making food chains e.g. recognise what eats plant and what eats animals by looking at their teeth. Classify animals as herbivores, carnivores or omnivores according to the type of teeth they have in their skulls. In our class, are omnivores taller than vegetarians? Are foods that are high in energy always high in sugar? How does an egg shell change when it is in different liquids? Research the function of the parts of the digestive system. Research what animals eat with in a specific environment in order to construct food chains.</p>
YEAR 5	<p>Properties and changes of materials - how can we separate a mixture of water, iron filings, salt and sand? How can we change materials reversibly and irreversibly? Can you group these materials based on their properties? Children create the criteria. Which material would keep food the coldest? Which material would be good for a tent/to make a teabag from/to make a bag for different purposes? How does the temperature affect how long it takes for a sugar cube to dissolve? How does a sugar cube change as its put in a glass of water? What will happen to each nail if we leave them in different liquids? Research new materials produced by chemist Ruth</p>	<p>Forces and Magnets – how and why do objects move? Which shoe is the most slippery? Which shape parachute takes the longest to fall? Do all objects fall through water in the same way? How do submarines sink if they are full of air? Research the work of scientist Galileo Galilei</p>	<p>Earth and Space – Sun, Earth and Moon: what is moving and how do we know? Can you observe and identify all the phases in the cycle of the moon? Is there a pattern in the size of a planet and the time it takes to travel around the sun? How do our shadows change throughout the day? Research the different planets in our solar system</p>	<p>Living things and their habitats – do all plants and animals reproduce in the same way? Can you identify all the stages in the human life cycle? Do larger mammals have larger gestation periods? Observe plant life cycles. Observe the real-life experience of eggs hatching. This can be ducklings, tadpoles, caterpillars.  Research how gardeners asexually reproduce plants What are the differences between the life cycle of an insect and a mammal? Explain what Jane Goodall discovered about chimpanzees.</p>	<p>Animals including humans – how will I change as I grow? Can you identify all the stages in the human life cycle? How does age effect a human's reaction time? Is there a relationship between a mammal's size and its gestation period? Why do people get grey/white hair when they get old? Children can develop their own questions to ask the school nurse for research.</p>

	Benerito (wrinkle free cotton). What are microplastics and why are they harming the planet?				
YEAR 6	<p>Electricity – can we vary the effects of electricity? How would you group electrical components and appliances based on what electricity makes them do?</p> <p>Investigate changes in circuits - adding more bulbs, more cells, more buzzers, more motors. Which make of battery lasts the longest? How does the voltage of the batteries in a circuit affect the volume of the buzzer?/brightness of the lamp? Does the temperature of a light bulb go up the longer it is on? How has our understanding of electricity changed over time?</p>	<p>Evolution and inheritance – what is evolution, how does it happen and how do scientists know? What is the most common eye colour in our class? Is there a pattern between the size and shape of a bird's beak and the food it will eat? Research different types of species and their characteristics making them suitable for different habitats e.g. penguins</p>	<p>Animals including humans - how do our choices affect how our bodies work? Why does my heart beat? Which type of exercise has the greatest effect on our heart rate? How does the length of time we exercise affect our heart rate? Effect of different activities on my pulse rate Exploring which groups of people may have higher or lower resting pulse rates. Is there a pattern in what we eat for breakfast and how fast we can run? Exploring recovery rate for different groups of people How long does it take my pulse rate to return to my resting pulse rate (recovery rate) How does my heart rate change over the day? Research the negative effects of drugs (e.g. tobacco) and the benefits of a healthy diet and regular exercise by asking an expert or using carefully selected secondary sources.</p>	<p>Light – why does my shadow change length over the course of a day? Which material is most reflective? How does the angle that a light ray hits a plane mirror affect the angle at which it reflects off the surface? Is there a pattern to how bright it is in school over the day? If there is a pattern is it the same in every classroom? How does my shadow change over the day? Children think about how this is linked to light travelling in straight lines.</p>	<p>Living things and their habitats – in what ways can we sort living things? How would you make a classification key for vertebrates/invertebrates or microorganisms? Can you group the animals based on Carl Linnaeus' system? Create a branching database/dichotomous key to classify a set of living things What happens to a piece of bread if you leave it on the windowsill for two weeks? What do different types of micro-organisms do? Are they always harmful?</p>

Key for Working Scientifically Investigations



Identifying and Classifying



Comparative and Fair Testing



Pattern Seeking



Observations over time.



Research from a secondary source.