

St Helena's Church of England Primary School

Science Long-Term Plan

Following a personalised and adapted version of the Grammarsaurus scheme of work, Science is delivered across a 2-year rolling programme of study. In KS1, teachers must be mindful when planning for the delivery of the units that the Year 1 children will need some pre-teaching of Y2 content and Year 2 children will need extending/challenging during the Y1 content. Units are not structured around individual half terms, meaning a topic may last more or less than a six-week block. This allows for flexibility of the curriculum delivery where additional learning time or re-visits of topics can be planned by the teacher at their discretion. The below long-term plan for the subject includes the enquiry questions for each unit, alongside their core content.

| | Autumn Term | Spring Term | Summer Term | |
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| | Y1 Materials <ol style="list-style-type: none"> 1. What are materials? 2. How are materials different? 3. What are objects made from? 4. How can we sort Materials? 5. Which material would be best for an umbrella? 6. Which material will be best for curtains? | Y1 Seasonal Changes <ol style="list-style-type: none"> 1. What is autumn? 2. What is Winter? 3. What is rain? 4. What is Spring 5. What is Summer? 6. Changing Seasons. | Y2 Animals Including Humans <ol style="list-style-type: none"> 1. What do humans need? 2. What are offspring? 3. How do animals change as they grow into adults? 4. Do we all grow the same? 5. Do we need to exercise? 6. What is a healthy diet? 7. Why do we need good hygiene? 8. How can we feel better when we are ill? | Y2 Plants <ol style="list-style-type: none"> 1. Which plants can we eat? 2. Are all seeds the same? 3. What do plants need? 4. Where will they grow? 5. How do plants grow and change? |
| | <p>During this unit of work, children will learn about different materials and be able to identify objects made from different materials. They will be able to identify the difference between an object and the material from which it is made. Throughout</p> | <p>During this unit of work, children will learn about the four different seasons. This topic is best done throughout the year in the appropriate season so children can observe the season first hand. The first four lessons cover the four</p> | <p>During this unit of work, children will learn about the basic needs that all humans need to survive and live. They will study more closely the importance of exercise, a healthy diet and good hygiene as ways to keep us healthy. They will also look</p> | <p>During this unit of work, children will learn about different seeds and bulbs. They will learn about plants we can eat and begin to gather seeds. They will also look at what plants need to grow and what they</p> |

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| KS1 Year A | the unit, they will be helping Blot, an alien from the Planet Glog, who does not know anything about materials. Children will group and sort different materials based on their properties. They will also have the opportunity to investigate different materials to see which material would be best to make an umbrella and curtains. | seasons and can be completed in any order. | at offspring of different animals and how they develop and change into adults as they grow. Finally, children will also look at ways to keep themselves from becoming ill as well as things they can do if they do become ill. | need to continue to grow and stay healthy. |
| KS1 Year B | Y2 Materials | Y2 Living things and their Habitats | Y1 Animals Including Humans | Y1 Plants |
| | <ol style="list-style-type: none"> 1. What are materials? 2. What are things made from? 3. Which material should the pigs make their house from? 4. Which material will protect humpty dumpty? 5. How can we change materials? | <ol style="list-style-type: none"> 1. Is it living, dead or never been alive? 2. What is a microhabitat? 3. How are habitats different around the world? 4. What conditions do woodlice prefer? 5. How are living things adapted to their habitat? 6. What is a food chain? | <ol style="list-style-type: none"> 1. What is this animal called? 2. How are animals different? 3. Do all animals eat the same food? 4. What are our body parts called? 5. What are senses? 6. Are all humans the same? | <ol style="list-style-type: none"> 1. What is a plant? 2. What are the parts of a plant called? 3. Do plants grow? 4. Do wild plants grow in our local area? 5. How can we group plants? 6. Can we eat plants? 7. Are trees a type of plant? 8. What is a leaf? |
| | During this unit of work, children will learn about different everyday materials such as wood, metal, plastic, glass, rubber, rock, fabric, paper and brick. They will identify the properties of these materials and conduct investigations to explore how different materials are better suited for different objects through well-known stories. Children will also explore how some of these materials can be changed by squashing, bending, twisting and stretching them. | During this unit of work, children will learn about living things and their habitats. They will start the unit of work looking at whether things are living, dead or have never been alive. They will then look at microhabitats and larger habitats identifying some animals that may live there. Children will then conduct an investigation to see which type of conditions woodlice prefer in their habitat. After that they will look at how living things are adapted to their environment. Finally, they will look at food chains within habitats. | During this unit of work, children will learn about different common animals and be able to discuss their features using scientific language such as feathers, beak, scales, fins etc. They will begin to identify similarities and differences between different animals. Children will also look at the diets of different animals and compare these. | During this unit of work, children will learn about different wild and common plants and label their basic features. They will look for wild plants in their local area and discuss plants that we can eat. Children will then look at trees and their basic features. They will look at the difference between deciduous and evergreen trees before looking at different leaves from trees. Children will plant a seed in lesson 3 and keep a plant diary during the rest of the lessons to show how their plant grows and changes. |

| | Autumn Term | Spring Term | Summer Term | | |
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| LKS2 Year A | <p>Year 3 Magnets</p> <ol style="list-style-type: none"> 1. What is a force? 2. How do objects move on different surfaces? 3. How do magnetic forces work? 4. Which materials are magnetic? 5. Do magnets attract each other? 6. Are all magnets the same strength? | <p>Year 3 Animals including Humans</p> <ol style="list-style-type: none"> 1. How does our skeleton help us? 2. Do our bones affect what we can do? 3. What do our muscles do? 4. Do all animals have the same skeleton? 5. What times of nutrition do we need? | <p>Year 4 Electricity</p> <ol style="list-style-type: none"> 1. What appliances use electricity? 2. How can I make a simple circuit? 3. Will the bulb light? 4. How can we test if a material is a conductor or insulator? 5. How do switches affect a circuit? | <p>Year 3 Rocks</p> <ol style="list-style-type: none"> 1. What are rocks? 2. Are all rocks the same? 3. How are rocks formed? 4. Which rocks make up the earth? 5. What are soils? 6. How are soils formed? | <p>Year 4 Animals including Humans</p> <ol style="list-style-type: none"> 1. What is the digestive system? 2. Why are teeth different shapes? 3. What drink causes the most tooth decay? 4. What is a good chain? 5. How can I construct a food chain? |
| | <p>During this unit of work, children will explore simple pushes and pulls as an introduction to forces. They will explore how the texture of an object or the surface it is on can affect how the object moves. They will then explore pushes and pulls further by investigating different magnets and how they can pull (attract) and push (repel) at a distance without contact.</p> | <p>During this unit of work, children will learn about the structure of the human skeleton and how the muscles also work alongside the skeleton to support and protect the human body. They will then look at how skeletons differ in different animals. Finally, children will look at nutrition and the importance of eating a healthy diet.</p> | <p>During this unit of work, children will learn to sort common electrical appliances into battery and mains powered. They will construct simple series circuits containing a variety of components and understand the difference between complete and incomplete circuits. They will be able to identify whether or not a bulb will light in a simple series circuit and put forward ideas to fix incomplete circuits. The children will plan and conduct an investigation to discover which materials make good insulators and design, construct and test their own switches.</p> | <p>During this unit of work, children will explore different rocks and soils. They will classify and group together rocks based on their appearance as well as their physical properties. They will learn how the Earth is made up of different rocks and fossils and begin to explain how some of the different rocks are formed. Children will also look at fossils, what they are and how they are formed in rock.</p> | <p>During this unit of work, children will learn about the importance of the digestive system. They will learn the names and functions of each part of the system and be able to identify the different types of teeth in humans and their purpose. The children will plan and conduct an investigation to answer the question: which drink causes the most tooth decay? They will extend their knowledge of food chains by constructing and interpreting a variety of food chains, identifying producers, predators and prey.</p> |

| LKS2 Year B | Year 3 Light | Year 4 Sound | Year 4 Living Things and Their Habitats | Year 4 States of Matter | Year 3 Plants |
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| | <ol style="list-style-type: none"> 1. What is light? 2. What is reflected light? 3. Is the sun dangerous? 4. What is a shadow? 5. Does moving the light source change the shadow? 6. How do mirrors work? | <ol style="list-style-type: none"> 1. How are sounds made? 2. What are sound vibrations? 3. What's in the ear? 4. How does the size of the pinnae affect the volume of sound? 5. What is pitch? 6. Volume patterns 7. Which material is best at muffling sound? | <ol style="list-style-type: none"> 1. What are the seven life processes? 2. How can we group and sort animals? 3. What are vertebrate animals? 4. Which living things can be found in the local area? 5. What is a classification key? 6. Environmental changes | <ol style="list-style-type: none"> 1. Solids, liquids and gasses. 2. liquid investigation 3. Using a thermometer 4. How do materials change state? 5. What is the water cycle? 6. Evaporation fair test 7. Evaporation investigation | <ol style="list-style-type: none"> 1. What do plants need? 2. Do the different parts of a plant have a function? 3. What are roots? 4. How do plants transport water? 5. How do plants reproduce? 6. How are seeds dispersed? |
| | <p>During this unit of work, children will recognise that they need light in order to see things and that dark is the absence of light. They will learn to identify light sources; explore what happens when light reflects off mirrors or other reflective materials and think of ways to protect themselves from the Sun. They will investigate which materials make the best/worst shadows and conduct an experiment to find out about the relationship between the height of a light source and the length of a shadow. Children will also experience a range of activities to discover how mirrors work.</p> | <p>During this unit of work, children will learn how vibrations cause sounds and how sounds travel through different mediums at different speeds. They will explore how sounds can change in pitch and loudness and be able to explain this using scientific language. They will develop their scientific skills by planning two fair test investigations to answer the questions: which material is the best at muffling sounds and does the size of the pinnae affect the volume of the sound? Children will also learn what happens to sound vibrations when they reach the ear.</p> | <p>During this unit of work, children will learn to recognise the seven life processes common to all living things. They will learn to sort living things using a variety of criteria and extend their use of scientific vocabulary to describe features and characteristics of animals and plants. They will conduct a local habitat search and learn to identify unknown living things using a classification key. Children will consider how environmental change impacts the local area and suggest ways in which humans can prevent further damage.</p> | <p>During this unit of work, children will learn to compare and group materials according to whether they are solids, liquids or gases. They will learn that some materials change state when they are heated or cooled and be able to identify and name these processes as melting, freezing, evaporating or condensing. They will learn about the water cycle and be able to identify the part played by evaporation and condensation in the water cycle. Children will work scientifically to plan and conduct investigations involving melting and evaporation. They will learn to associate the rate of evaporation with temperature.</p> | <p>During this unit of work, children will build upon their previous knowledge of plants and trees from Year 2 where children find out what plants need to stay healthy once they have grown. Throughout this topic, children will be creating a booklet of what they find out which they can then give to Y6 pupils to help with their SATs revision. This gives them a real life context for their work. They will identify and describe the functions of the different parts of plants. They will explore what plants need for life and growth. Children will complete an investigation to see how water is transported through plants. Children will look at seeds and explore the different ways that plants disperse their seeds.</p> |

| | Autumn Term | | Spring Term | | Summer Term |
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| UKS2 Year A | Year 5 Earth and Space | Year 5 Forces | Year 6 Animals including Humans | Year 5 Living things and their Habitats | Year 6 Electricity |
| | <ol style="list-style-type: none"> 1. What are the names of the planets in the solar system? 2. How do we know the earth is a sphere? 3. How long does it take the Earth to orbit the sun? 4. Movement of the moon. 5. Day and night 6. Does the moon change shape? | <ol style="list-style-type: none"> 1. Gravity 2. What is friction? 3. Friction investigation. 4. Identify the effects of air resistance. 5. What is water resistance? 6. Gears, levers and pulleys. | <ol style="list-style-type: none"> 1. What is the circulatory system? 2. How does the heart work? 3. How does my exercise affect my heartbeat? 4. What does the blood transport through the body? 5. How can I live a healthy lifestyle? 6. What can damage our health? | <ol style="list-style-type: none"> 1. What are the seven life processes? 2. How do mammals reproduce? 3. Do animals reproduce in the same way? 4. How do plants reproduce? 5. What is a life cycle? 6. What are the stages in a life cycle of a plant? | <ol style="list-style-type: none"> 1. How do I draw a scientific diagram of a circuit? 2. How does the voltage in a circuit affect the brightness of a bulb? 3. How do I plan a fair test experiment to investigate variations in how components function? 4. How do I write a conclusion for my investigation? 5. What is renewable and non-renewable energy? |
| | <p>During this unit of work, children will learn that the Earth is part of the solar system and that the Sun is at the centre of that system. They will learn the names of the other planets (based on their distance from the Sun) and be able to describe the movement of Earth (and other planets) in relation to the Sun. Children will discover why there is day and night on Earth and relate this to time. They will plan an investigation to answer the question - what happens to the Sun during the daytime? Children will also gain an understanding of the phases of the Moon and be able to describe the Moon's movement in relation to the Earth.</p> | <p>During this unit of work, children will consolidate and extend their knowledge of forces by naming individual forces (e.g. gravity, friction, upthrust). They will extend their knowledge of frictional forces (air resistance and water resistance) and plan fair test investigations to discover which shoe has the greatest friction and which shapes offer the most water resistance. They will learn how forces can be helpful and unhelpful in various scenarios and identify the forces involved in each scenario. They will learn what a mechanism is and how pulleys, levers and gears are used to allow a smaller force to have a greater effect.</p> | <p>During this unit of work, children will learn about the importance of the circulatory system and how it transports oxygen around our body. They will learn about the heart and how it is an important muscle in our bodies. Children will learn about their heart rate and different activities that can increase the heart rate. Children will learn about being healthy and things they can do to lead a healthy lifestyle as well as learning about things that people do that can cause them to be unhealthy.</p> | <p>During this unit of work, children will learn the seven life processes that distinguish living from non-living things. They will consolidate and extend previous learning on the life cycles of plants and animals, comparing and describing differences in the life cycles of mammals, amphibians, reptiles, birds and insects. They will learn how animals and plants reproduce; comparing differences and similarities between five different animal groups.</p> | <p>During this unit of work, children will consolidate and extend previous learning from year 4 by constructing simple series circuits and drawing them using scientific symbols. They will conduct investigations to determine how the voltage in a circuit affects the brightness of a bulb. They will use their 'working scientifically' skills to plan an experiment to investigate variations in how components function and use the results to write a clear and concise conclusion. They will use the internet to research information about renewable and non-renewable energy sources and communicate this information in the form of a leaflet.</p> |

| UKS2 Year B | Year 5 Materials | Year 6 Evolution | Year 6 Living Things and their habitats | Year 6 Light | Year 5 Animals Including Humans |
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| | <ol style="list-style-type: none"> 1. Solids, liquids and gasses 2. Describe and compare properties 3. Insulation investigation 4. Magnetic materials 5. Dissolving 6. Separating materials 7. Irreversible changes | <ol style="list-style-type: none"> 1. Plant adaptation. 2. Adaptation 3. Natural selection 4. Charles Darwin 5. Offspring and Genetics 6. How do fossils help us to understand evolution? | <ol style="list-style-type: none"> 1. How are animals classified? 2. What is a classification key? 3. How can we classify plants? 4. Is yeast a living organism? 5. What are the five main groups of microorganisms? 6. Who was Carolus Linnaeus? | <ol style="list-style-type: none"> 1. How does light travel? 2. Which materials make the best reflectors? 3. How does the eye work? 4. How do shadows change through the day? 5. Why do objects look different in water? 6. How do mirrors work? | <ol style="list-style-type: none"> 1. How do humans change throughout their life? 2. How do we develop in the womb? 3. How do we change through puberty? 4. How do we change when we are senior? |
| | <p>During this unit of work, children will consolidate previous learning by revisiting the properties of solids, liquids and gases; learn to describe the properties of materials using scientific language; investigate which materials make the best thermal insulators; and which materials are magnetic. Children will be introduced to key scientific vocabulary to describe the properties of materials (e.g. soluble and insoluble) and investigate how to separate materials using these properties. They will be able to name separation methods (filtering, sieving, evaporation, magnets) and decide on the most efficient method for separating a mixture of materials.</p> | <p>During this unit of work, children will explore how animals and plants are adapted to the environment in which they live. They will learn that adaptations occur over time and that may lead to a species evolving. Children will conduct an experiment to answer the question - which beak is best adapted to pick up a seed? They will consider how certain adaptations occur in response to environmental conditions. They will learn about natural selection and how this links to inheritance and how some characteristics are inherited from parents and some are not. Children will consolidate previous learning on fossilisation and understand how studying fossils has helped explain the theory of evolution.</p> | <p>During this unit of work, children will learn about classification of living things, including microorganisms. They will learn the names and characteristics of the main groups used to classify animals, plants and microorganisms. Children will learn to use a classification key and create their own key using yes/no questions. Children will investigate the question: Is yeast a microorganism? And conduct an experiment involving the respiration of yeast. They will produce a presentation about the life and work of Carolus Linnaeus and understand the importance of his standard classification system.</p> | <p>During this unit of work, children will consolidate previous learning by exploring the way that light behaves, including light sources, reflection and shadows. Pupils will make predictions and investigate the relationship between light sources, objects and shadows and understand how the eye works. Children will extend their experience of light by looking at rainbows, prisms and bending light in water (although they don't need to explain why these phenomena occur at this stage).</p> | <p>During this unit of work, children will learn about the different stages of the human life cycle. They will discuss a simple timeline first before going into more depth about what happens in the womb, during puberty and when you are older.</p> |