



# Holy Cross Catholic Primary School –Long Term Science Map 2019-20



	EFYS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Half Term One</b>	<b>All about Me</b>	<p><b>Investigate Plants and How they Grow</b> <b>Including seasonal patterns 1</b></p> <ul style="list-style-type: none"> <li>Learn about the names of common local and wild garden plants and trees.</li> <li>Must look at planting and harvest in allotment areas. Develop a community based project with parents and children (plus any other local groups).</li> <li>Work scientifically by observing closely parts of plants (using magnifying glasses.). Utilise nature garden and forest schools areas.</li> <li>Use I-pads to create seasonal diaries noting and labeling key differences and the growth cycle.</li> <li>Create an encyclopedia of local plants and trees, using E-books software on the I-pad.</li> <li>Link to geography work on local habitat and seasonal differences.</li> </ul>	<p><b>Habitats and Promoting Bio-Diversity</b></p> <p>Recap and link to year A plans (crucial for year 1 children) on plant growth and types of plants.</p> <p>Ensure that knowledge is recapped for year 1 children and extended for Y2. Explore the concept of habitats. Why can't a Meerkat live in the North Pole? Connect to work on World Geography (different habitats).</p> <p>Habitat focus on world habitats (Ocean, desert and rain forest).</p> <p>Build a class mini beast hotel in forest schools area to promote bio diversity. Look at how habitat meet the animals needs. Explore idea of a micro habitat for insects. Use recycled items (pallets, pipes, old tires etc). Count number of mini beasts found in certain areas.</p>	<p><b>Light</b></p> <ul style="list-style-type: none"> <li>What light is. Why it is important and where it comes from (sources of light).</li> <li>Explore how light responds to different materials. Which are opaque, translucent and transparent?</li> <li>Investigate how light is reflected from surfaces.</li> <li>How are shadows formed? Do shadows change in the da, when the sun is the light source? Why? Work scientifically to predict, test and measure</li> <li>Understand safety and the sun. How we protect our eyes using translucent objects.</li> </ul>	<p><b>Animals and Humans</b></p> <ul style="list-style-type: none"> <li>Recap KS1 and Cycle A learning.</li> <li>Recap different parts of the body and the importance of nutrients.</li> <li>How does our body absorb food. Learn about the digestive system and important parts of the body (tongue, teeth, mouth, oesophagus, stomach, intestines etc).</li> <li>Identify different types of teeth, and their purpose.</li> <li>Compare purpose and function and how they are different in herbivores and carnivores.</li> <li>Investigate how we keep teeth healthy through working scientifically investigations.</li> </ul>	<p><b>Animals Including Humans</b></p> <ul style="list-style-type: none"> <li>Look at growth changes in humans as they grow from birth to old age.</li> <li>Develop timelines to look at skeletal growth and other changes including puberty (for Y5 and Y6). Look at data regarding growth (length and mass of babies for examples).</li> <li>Compare human growth with that of another animal. Life span, gestation periods etc.</li> </ul>	<p><b>All Living Things</b></p> <ul style="list-style-type: none"> <li>Recap previous learning n classification and living things. Expand learning to micro organisms (building on earlier work n plants and animals).</li> <li>Classify animals using broad groups and sub divisions vertebrates (fish, amphibians, reptiles, birds and mammals), invertebrates (insects, spiders worms, snails etc).</li> </ul> <p>Work scientifically by developing observation and classification systems. Extend learning by looking at wider habitats and work of scientists.</p>
<b>Half Term Two</b>				<p><b>Understanding Rocks, Fossils and Soil</b></p> <ul style="list-style-type: none"> <li>Learn about different tocks (sedimentary and igneous). How they are formed (grains, crystal etc). Compare, contrast and classify using class rock sets (see BPSE guidance).</li> <li>Explore uses of rocks (investigate on I-pad)</li> <li>Field trip to explore rock formations and fossil hunting at Wirral Country Park. Link to geographical studies .</li> <li>Explore Fossils and how they are formed. How were rocks useful in the stone age? What do fossils help us learn?</li> </ul> <p>Relate rocks and fossils to soils and how soils are different. Work scientifically to compare differences in soils and rocks.</p>	<p><b>States of Matter</b></p> <ul style="list-style-type: none"> <li>Investigate materials and learn that materials present themselves in different states of matter (liquid, gas, solids). Have opportunities to investigate these states and predict what materials will change state when heated or cooled. Should learn that this is different from chemical change (burning, baking etc).</li> <li>Work scientifically to investigate and measure changing states on chocolate (melt), butter (melt) and cream(cool).</li> <li>Measure evaporation at different temperatures with practical relevance) Embed understand about the water cycle (<u>evaporation and condensation</u>)</li> </ul>	<p><b>Earth Space and Magnetism</b></p> <ul style="list-style-type: none"> <li>Recap KS1 and Y3-4 work on light and Earth.</li> <li>Learn about orbit of the earth. How is it similar or different to other planets in solar system?</li> <li>Learn about the lunar cycle and orbit of earth.</li> <li>Investigate the relationships to learn about light, day, night and shadow length.</li> <li>Learn about understanding of the solar system through scientists such as Ptolemy.</li> <li>Work scientifically to compare day and night (link to different time zones and place in geography). Measure and predict shadow length.</li> <li>Link to DT by making sun dials, solar system models, moon buggy etc.</li> </ul>	<p><b>Electricity</b></p> <ul style="list-style-type: none"> <li>Name parts of simple electrical circuits.</li> <li>Compare variation in how components function (volume, brightness, switches etc).</li> <li>Can they explain how to make changes in a circuit and explain the impact of these changes?</li> <li>Represent circuits using recognised symbols.</li> <li>Investigate scientifically the changes in a circuit, including changing the voltage in a battery.</li> </ul>
<b>Half Term Three</b>	<b>Growing and The Seasons</b>	<p><b>Investigate Plants and How they Grow</b> <b>Including seasonal patterns 2</b></p> <ul style="list-style-type: none"> <li>Label basic structure of common flowering plants (including trees).</li> <li>Group plants by similar features (flowering trees, type of leaves, evergreen, Spring flowering etc).</li> <li>Compare and contrast different plants.</li> <li>Work scientifically by observing closely parts of plants (using magnifying glasses.) and changes in this season. Utilise nature garden and forest schools areas.</li> <li>Update seasonal diaries noting and labeling key differences and the growth cycle. Recap names of parts of plants.</li> <li>Explore allotment work for that period. What needs to be done? Why?</li> <li>Update encyclopedia of local plants and trees, using E-books software on the I-pad.</li> <li>Link to geography work on local habitat and seasonal differences.</li> <li>Explore conditions for growth, water, light, temperature etc.</li> </ul>	<p><b>Understanding Animals and Humans</b></p> <p>Have the opportunity to identify, name and classify animals in their key groups (fish, amphibians, reptiles, birds and mammals)</p> <p>Describe common structure of animals (head, neck, arms, elbows etc).</p> <p>Earn about basic human/animal needs (water, food and air)</p> <p>Importance of health, diet and hygiene for humans. Conduct fair test on the impact of exercise.</p> <p>Explore differences and similarities. Why do some animals come out at night? Why are tigers not like humans? Link adult animals and humans (including humans to off spring) with off spring. Explore the cycle of reproductive growth. Through tadpoles, caterpillars etc. Children must have the chance to record this over the next few months through chrysalis nets etc.</p> <p>Work scientifically by recording, measuring and predicting growth. Arrange a visit to Chester Zoo to explore different groups of animals and growth (butterfly house and other enclosures). Also link back to earlier work on how habitats are adapted. Revisit class mini beast hotel.</p>	<p><b>Reproductive Cycle of Plants</b></p> <ul style="list-style-type: none"> <li>Recap name and functions of parts of plants.</li> <li>Learn the ways in which water, nutrients and oxygen are transported within plants.</li> <li>Investigate what different plants need to grow. How do they adapt to their environment? (for example cacti, fir trees, plants in the rainforest floor).</li> <li>Learn how plants differ in the use of their parts (e.g stem ,roots etc). Relate this to how plants differ by how they reproduce. For example seed dispersal, pollination.</li> </ul> <p>Work scientifically through recording. Conduct a test on how water is transported within</p>	<p><b>Sound</b></p> <ul style="list-style-type: none"> <li>Explore different sounds through musical instruments. Investigate pitch and classify instruments. Compare different sounds and how they can alter the sound (for example on an elastic band or ukulele string)</li> <li>Learn difference between pitch and volume and how these can be altered.</li> <li>Learn how sound travels by vibrations and enters the ear.</li> </ul> <p>Investigate how sound can travel through working scientifically to investigate volume and distance. Also investigate insulation against sound.</p>	<p><b>Forces</b></p> <ul style="list-style-type: none"> <li>Recap previous work.</li> <li>Investigate force of gravity. What is gravity? How does gravity affect how we live on the earth?</li> <li>Investigate what affects gravity? Look at the effects of air resistance, water resistance and friction.</li> <li>Investigate friction and how it affects moving objects.</li> <li>Working scientifically to constantly design fair tests and make predictions.</li> <li>Link to DT work on effect of levers and simple machines on movement.</li> </ul>	<p><b>Light</b></p> <ul style="list-style-type: none"> <li>Recap learning on light/shadows/earth etc.</li> <li>Understand that light travels in straight lines and understand how we see objects through reflection into our eye.</li> <li>Journey of light from source/object/eyes (through reflection)</li> <li>Investigate shadow formation and how shadows mirror the shape of the objects.</li> <li>Investigate phenomena of light in spectrums through rainbows, coloured filters etc.</li> </ul> <p>Work scientifically by making a periscope and explaining how they work. Link this to other optical instruments (telescope, mirror, magnifying glass etc).</p>
<b>Half Term Four</b>		<p><b>Investigate Plants and How they Grow</b> <b>Including seasonal patterns 3</b></p> <ul style="list-style-type: none"> <li>Recap previous learning.</li> <li>What makes plants unique?</li> <li>Update E-diaries on local plants.</li> <li>Explore allotment work for that period. What needs to be done? Why?</li> <li>Plant flower bulbs and record growth against different conditions. Water, light, temp. Develop a comparative test.</li> <li>Use I-pads to record growth and</li> </ul>	<p><b>Understanding Animals and Humans 2</b></p> <ul style="list-style-type: none"> <li><b>Must</b> complete work on reproduction and growth with Chrysalis, chick incubator etc.</li> <li>Revisit and complete work on mini beast hotel. Any growth in numbers? How has habitat helped?</li> </ul>	<p><b>Animals and Humans</b></p> <ul style="list-style-type: none"> <li>Recap KS1 learning.</li> <li>What makes us different as human beings? Can we all run as fast as Usain Bolt? Who is fastest; Usain Bolt or a Cheetah? Why?</li> <li>Learn about different skeletal features and muscles. Which parts of our body are important? Why?</li> <li>Link to the importance of nutrition and exercise on the human body.</li> <li>Compare human diet with other animals.</li> <li>Classify other animals with and without skeletons.</li> </ul> <p>Design healthy meals based on food groups.</p>	<p><b>Electricity</b></p> <ul style="list-style-type: none"> <li>Identify sources of electricity and primary uses (sound, movement, light, heat etc).</li> <li>Work scientifically to construct and draw simple circuits (pictorially). Label key components.</li> <li>Understand the need for complete circuits (loop) and test this in different circuit models.</li> <li>Make predictions whether particular circuits will work.</li> </ul> <p>Investigate switches using open and <b>closed circuits</b>.</p>	<p><b>Properties and Changes of Materials</b></p> <ul style="list-style-type: none"> <li>Recap previous work.</li> <li>Working scientifically, explore materials against scientific properties.</li> <li>Investigate how materials change state in solutions when they are dissolved and how evaporation can recover the original material.</li> <li>Work scientifically to explore states of matter to separate solids, liquids and gases. Are dissolving, mixing and changes of states reversible changes?</li> <li>Explore chemical changes that are non-reversible (burning, baking, acid on bic soda). Learn about chemists and new materials.</li> </ul>	<p><b>Evolution and Inheritance</b></p> <ul style="list-style-type: none"> <li>Evolution will be taught as a scientific fact.</li> <li>Recap previous learning on animal reproduction and how fossils give us information about animals that lived millions of years ago.</li> <li>Introduced to that idea that parents produces off spring that are similar but not identical (change and evolution). This will be explained through cross breeds of dogs for examples.</li> <li>How animals have evolved t their environment and habitat.</li> <li>Investigate the work of palaeontologists such as Mary Anning, Charles Darwin etc.</li> <li>Work scientifically by being able to investigate plants and animals in different habitats. What makes them adaptable? What are the advantages/disadvantages etc?</li> </ul> <p>More able children can begin to explore simple DNA.</p>
<b>Half Term Five</b>	<b>Floating and Sinking</b>			<p><b>Forces and Magnets</b></p> <ul style="list-style-type: none"> <li>What changes how things move (faster, slower etc?). What forces are these (push, pull and friction)</li> <li>How are forces useful. Where do they affect how we live (friction for wheel travel, aeroplanes etc).</li> <li>Understand that forces need contact between objects (except magnetism). Test this (cars travelling using elastic band pull back on different surfaces etc).</li> <li>Work scientifically to organise fair test and label diagrams.</li> <li>How do magnets work? Develop</li> </ul>	<p><b>Living Things and Their Environments</b></p> <ul style="list-style-type: none"> <li>Recap KS1 and Cycle A knowledge on functions of plants and habitats.</li> <li>What plants and animals thrive in our local locality? Would they thrive in another locality? Link to previous geography work on locations and habitats.</li> <li>Visit Ness Gardens to explore different plants and habitats.</li> <li>Learn to classify using keys (plants, vertebrates, invertebrates. Compare to other groups including under the sea and prehistoric animals and plants.</li> </ul>	<p><b>All Living Things</b></p> <ul style="list-style-type: none"> <li>Recap Previous learning on animals and reproduction (all adults have off springs).</li> <li>Learn about work on naturalists and how they observe life cycles for animals and plants (David Attenborough).</li> <li>Learn about reproduction in plants and animals and have chance to observe this. Learn about different types of plant reproduction.</li> <li>Life cycles of an amphibian, an insect and a bird. Where possible build in first hand observations for this.</li> </ul>	



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<b>Half Term Six</b>		<p>concept of germination.</p> <ul style="list-style-type: none"> <li>Explore and compare things that are living, dead or have never been alive.</li> <li>Use local environment to develop understanding of simple food chains. How important are these linked to the habitat? What other food chains can they explore?</li> <li>Explore local environment changes using e-diaries.</li> <li>Go on field study to contrasting localities with encyclopedias (Wirral Country Park). What did we find? What was different?</li> <li>Link to geography work on local habitat and seasonal differences.</li> </ul>	<p><b>Uses of Everyday Materials</b></p> <ul style="list-style-type: none"> <li>Link materials to mini beast hotel. What has been used? Why are they good materials?</li> <li>What other materials do we use? Identify and compare common materials for uses.</li> <li>How are they suitable for different purposes?</li> <li>Explore how different materials can be changed (squashed, twisted, melted etc).</li> <li>Investigate where different materials can be found and their different uses (metal, plastic etc).</li> <li>Famous person study on Charles Macintosh.</li> </ul> <p>Link materials to known studies. Example What should the three little pigs have used to build their house?</p>	<ul style="list-style-type: none"> <li>How do magnets work? Develop understanding of magnetism.</li> <li>Sort materials that are magnetic.</li> <li>Devise fair test to investigate strengths of different magnets.</li> <li>Learn about poles of magnets and attract and repel forces.</li> </ul> <p>Learn how magnetism is used everyday .</p>	<ul style="list-style-type: none"> <li>Develop understanding of food chains and their links to environments.</li> <li>Name and groups animals according to their function in food chains (producer, consumer, predator, prey, herbivore, carnivore, omnivore etc). How are they relate to their environment.</li> <li>Explore impact of environmental change on food chains (flooding, climate, pollution, economic development etc). How do they pose dangers to living things?</li> <li>Work scientifically to record food chains. Produce classification keys. Also group data on local studies (types of plants etc).</li> </ul>	
	<b>Science Project</b>					