



## Limehurst Primary School Whole School Overview

Cycle A		Science				
At Limehurst our EYFS curriculum is designed using Play, Observe & Ask, which is provided by the Primary Science Teaching Trust (PSTT). It is specifically designed to follow the key principles of Understanding The World, allowing pupils to explore science through both structured lessons and independent play opportunities. The curriculum has many cross curricular links and provides a stimulating and sound foundation from which our pupils can develop their scientific knowledge and skills ready for the Key Stage 1 curriculum. Hamilton Trust provides our curriculum coverage from Key Stage 1 through Key Stage 2. It builds upon the prior knowledge and skills learnt in EYFS and provides clear progression in knowledge and skills throughout the different scientific strands. It ensures that the 6 different types of scientific enquiry are consistently revisited and embedded throughout the Key Stages. Throughout the curriculum our pupils explore science through understandable contexts they can relate to. They employ a range of scientific techniques using a variety of different equipment throughout their learning, enabling our pupils to become confident and skilled scientists.						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS Overview	Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children’s personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children’s vocabulary will support later reading comprehension. <u>The World</u> <ul style="list-style-type: none"><li>• Use all their senses in hands-on exploration of natural materials.</li><li>• Talk about the differences between materials and changes they notice.</li><li>• Plant seeds and care for growing plants.</li><li>• Explore the key features of the life cycle of a plant and an animal.</li><li>• Explore collections of materials with similar and/or different properties.</li><li>• Talk about different forces they can feel.</li><li>• Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world including plants and animals.</li><li>• Begin to understand the need to respect and care for the natural environment and all living things.</li><li>• Understand the effect of changing seasons on the natural world around them.</li><li>• Observe and interact with natural processes (melting/floating and sinking/magnetism/light and dark)</li><li>• Talks about materials and their properties.</li><li>• Talk about animals’ and their habitats and lifestyles.</li><li>• Talk about and explore properties.</li></ul>					
Nursery	Within Nursery, Understanding the world is taught through the provision, exploration and some teaching sessions. Our science based tuff spots include: <ul style="list-style-type: none"><li>▪ Exploring magnetism</li><li>▪ Exploring ice</li><li>▪ Exploring different natural materials (magnifying glasses)</li><li>▪ Exploring plants (looking at roots, leaves and different parts of the plant)</li><li>▪ Sorting materials (recycling)</li><li>▪ Gravity tuff spot (rolling balls and tubes)</li><li>▪ What will/will not roll using ramps (making predictions)</li></ul> The children also have a weekly Forest School session where children cover the following: <i>Exploring seasons</i> <ul style="list-style-type: none"><li>▪ Autumn: leaves falling, decaying</li><li>▪ Winter: bare trees, colder weather</li><li>▪ Spring: shoots and buds appearing, spring hunt</li><li>▪ Summer: flowers blooming, trees in full green, butterflies etc</li></ul> <i>Materials:</i> exploring different textures in the natural world <i>Planting:</i> a range of seeds/bulbs for fruit, vegetables and flowers – caring for them as they begin to grow.					
Reception	Testing materials for pigs’ houses Waterproof materials Testing materials  Explore how heat/cooking changes materials-Baking bread Dough-malleable -hard  Planting Daffodils	Observe Seasonal change.  Solid/dissolving (linked to GBM)  Explore how heat changes materials.  Explore Woodland habitat/woodland creatures Hibernation	Light and Dark Light sources Shadows Nocturnal  Observe Seasonal change.  Melting  Floating and sinking  Explore animals that live in cold climates.	Recycling Plastic pollution What they can do to help our world.  Planting bulbs/seed Lifecycle of plant  Explore jungle habitat and under the sea haitat and the animals that live there.	Animal Lifecycles (minibeasts)  Caring for our garden	Seasonal Change  Caring for our garden
Year 1/2	<b>Let’s Build</b> <ul style="list-style-type: none"><li>· Understand that objects need to be distinguished from their materials</li><li>· Understand that objects are made of different materials and they have simple properties</li></ul>	<b>Wonderful Weather</b> <ul style="list-style-type: none"><li>· Consider what they already know about weather and generate questions</li><li>· Show their understanding, and ability to use their observations, by devising their own weather forecasts</li></ul>	<b>Materials Matters</b> <ul style="list-style-type: none"><li>· Understand that, if a material does not absorb water, it is said to be waterproof</li><li>· Describe the textures and appearance of the different items</li></ul> Understand the role of wax and its waterproof properties in wax resist art.	<b>Gardens and Allotments</b> <ul style="list-style-type: none"><li>· Create a tub allotment in the playground and plant edible plants</li><li>· Make bird-scaring sculptures with found and recycled materials</li><li>· Understand that allotments are habitats and that they will attract mini-beasts</li></ul>	<b>Ready Steady Grow!</b> <ul style="list-style-type: none"><li>· Understand why it is important for a plant to spread its seeds</li><li>· Understand what is meant by the words 'dispersal/disperse', pollination' and 'seed'</li><li>· Make a seed helicopter and a dandelion seed</li></ul>	<b>Ourselves</b> <ul style="list-style-type: none"><li>· Understand that people change as they get older but often retain recognisable features.</li><li>· Recognise and use the vocabulary: compare, describe, similar, different, baby, adult, changes, growing.</li><li>· Be able to name parts of the body.</li></ul>



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	<ul style="list-style-type: none"><li>· Know that there is a difference between an object and the material from which it is made</li><li>Understand that objects need to be distinguished from their materials</li><li>Revisit materials and their properties through a game</li><li>· Recap learning from previous sessions</li><li>· Apply their recent knowledge to imagine a world where houses were really built out of edible materials</li></ul>	<ul style="list-style-type: none"><li>· Learn about the weather for the season and consider if the weather they are expecting is typical</li><li>· Understand more about the different seasons of the year, including the current season</li><li>· Consider the different elements of summer (current season) and represent in a group collage</li><li>· Understand that the day length changes each day and varies from season to season</li><li>· Consider what life would be like if the sun didn't rise and create daylight</li><li>· Talk about rain and how it affects our lives</li><li>· Design and make a rainfall gauge</li><li>· Use the scientific vocabulary: weather, rainfall, precipitation, data</li><li>· Understand that wind direction is measured using a wind sock</li><li>· Understand that warm and cold weather, including snow, can be specific to different seasons</li><li>· Understand that air temperature changes with the seasons, and that usually summer is hotter than winter</li></ul>	Discuss the importance of recycling materials	<ul style="list-style-type: none"><li>· Understand that growing conditions need to be right for plants to grow</li><li>· Understand that different habitats provide for the basic needs of different kinds of mini-beasts and plants and that they depend on each other</li><li>· Become familiar with a farm near the location of their school</li><li>· Visit a farm or have a farmer visit the school and gain an understanding of farming</li><li>· Understand the role farms play in the food chain and why they are important</li><li>· Undertake several role plays of different jobs associated with farming</li><li>· Understand what is meant by a food chain and that living things need other living things to survive</li><li>· Make a food chain using laminated cards and string. Challenge each other to string them up in the right order</li><li>· Understand that the sun's energy travels through a food chain and that this is called a 'transfer of energy'</li><li>· Interpret the transfer of energy in a food chain through a dance, using masks and torches</li><li>· Perform the food chain dance to an audience</li><li>· Articulate their understanding of energy, food chains and the co-dependence of plants and animals</li><li>· Harvest the edible foods they have grown, eat and review their gardening skills</li></ul>	<ul style="list-style-type: none"><li>· Understand that plants disperse their seeds in different ways</li><li>· Understand that the design of a seed is crucial to the way it is dispersed</li><li>· Make large seeds, talking about what designs they need to incorporate and writing facts about how they could be dispersed</li><li>· Understand what beans need to grow and discuss the concept of hydroponics.</li><li>· Understand what plants need to be healthy</li><li>· Know that cress seeds need water and the right temperature to germinate and grow</li><li>· Understand that there are differences between the bean grown in the classroom and the one grown in the cupboard</li><li>· Begin to explain why those differences have occurred</li><li>· Begin to talk about the various functions of the parts of the plant and their importance</li><li>· Working in effective teams, make a hydroponically grown bean out of craft and junk materials</li><li>· Boil eggs and butter sandwiches and make egg and cress sandwiches</li></ul>	<ul style="list-style-type: none"><li>· Understand that we hear sounds with our ears and that hearing is one of our senses</li><li>· Be aware of the meaning of the scientific language: classify, identify, group, tongue and taste.</li><li>· Recognise and use the vocabulary: classify, identify, tongue and taste.</li><li>· Understand that we need our senses to help us explore the world and that often our senses work together to make that possible.</li><li>· Be aware of the meaning of the scientific language concerning senses (including touch, sight, smell, taste, hear, sense).</li><li>· Understand that we have five senses and that we rely on these to make sense of the world.</li><li>· Recognise and use the vocabulary: touch, sight, smell, taste, hear, sensory.</li><li><b>Our pets</b></li><li>· Understand that there are special places (habitats) where mini-beasts (invertebrates) live</li><li>· Begin to understand what they need to be healthy and happy</li><li>· Understand that pets need similar and different things to keep them happy and healthy</li><li>· Understand there are key differences between birds, fish, amphibians, reptiles, mammals and invertebrates</li><li>· Understand why some animals make good pets and others may not</li><li>· Be aware of the meaning of the scientific language: birds, fish, amphibians, reptiles, mammals and invertebrates</li> <li>· Consider what is involved in keeping a real pet happy and healthy</li><li>· Draw up a list: 'Looking after my Pet'</li><li>· Make a pet based on their design</li><li>· Understand that there are many different types of pets</li></ul>
<b>Year 3/4</b>	<b>Excuse Me are these your teeth?</b> <ul style="list-style-type: none"><li>· Listen to an expert talk about teeth and how/why to look after them</li><li>· Discuss what they know about how to keep our teeth healthy</li><li>· Consider why our teeth are different shapes and understand that they have different functions</li><li>· Think about what they know about our digestive systems, and will consider what they want to know</li><li>· Know the basic parts of the digestive system</li><li>· Begin to understand the simple functions of the basic parts of the digestive system</li><li>· Know the basic parts of the digestive system</li><li>· Begin to know what our digestive system might or might not do when we are unwell</li></ul>	<b>Listen up!</b> <ul style="list-style-type: none"><li>· Consider which areas of the school will be quiet, which will be loud, which will have no sound at all</li><li>· Understand the term 'noise pollution'</li><li>· Learn that there are many kinds of sound and that there are many ways of making sound</li><li>· Understand that sound is made by vibration from a source</li><li>· Research how sound travels</li><li>· Know that sound travels through different mediums, including air, water and solids.</li><li>· Recognise that sounds get fainter as the distance from the sound source increases</li><li>· Understand that sound is a form of energy and know that the more energy that is put into creating a sound, the louder the sound that is made</li><li>· Begin to understand some of the workings of the human ear</li></ul>	<b>Rocks &amp; Fossils</b> <ul style="list-style-type: none"><li>· Learn the names of 6 common rocks whilst playing an active game – Rock Stars!</li><li>· Take part in an active quiz game to assess and reinforce prior learning on rocks</li><li>· Engage (through roleplay) with the great fossil hunter Mary Anning and ask questions to discover her story</li><li>· Learn how fossils are made and record by writing and illustrating the stages or through sequencing a text</li><li>· Make their own "fossil" of a shell using a Plasticine™ mould and plaster of Paris</li><li>· Handle real fossils and rehearse the stages of fossil formation through oral retelling</li><li>· Play a guessing game to learn some amazing facts about soil and the crucial role it plays in supporting life</li></ul>	<b>States of Matter</b> <ul style="list-style-type: none"><li>· Identify what they know and what they want to know about states of matter</li><li>· Discuss the properties that make a material a solid or a liquid</li><li>· Use scientific language to describe to another what happens to the particles when a substance changes state</li><li>· Understand that liquids have a solidifying point (to become solid) and a boiling point (to change to gas)</li><li>· Begin to learn about elements of the water cycle</li><li>· Ask questions and begin to answer them when there is evidence that evaporation and condensation has occurred</li><li>· Use scientific language to explain evaporation and condensation to others</li><li>· Using scientific language, explain the change to water during the evaporation and condensation process</li></ul>	<b>Artful Flowers, Fruits &amp; Seeds</b> <ul style="list-style-type: none"><li>· Play a guessing game to introduce the new topic and help them understand why flowers are so amazing</li><li>· Find out some interesting facts about flowers and the people who have hunted, studied and painted them</li><li>· Learn about the work of the artist Georgia O'Keeffe</li><li>· Closely observe a variety of flowers with magnifiers and record this in the form of a watercolour painting</li><li>· Press flowers to preserve them</li><li>· Create a model flower and begin to know and label the male and female parts within it</li><li>· Discover the role played by insects in pollination</li><li>· Learn to do a bee Waggle Dance and know this is how they communicate with other bees</li><li>· Create 3D models of either flowers or bees</li></ul>	<b>Help our Habitats</b> <ul style="list-style-type: none"><li>· Take part in a class debate about a proposed change to an area in the school environment</li><li>· Think about regular changes such as tides and seasons</li><li>· Consider if the changes are natural or man-made</li><li>· Design a living thing that could withstand a huge range of changes to their environment</li><li>· Begin to think about some big changes such as climate change</li><li>· Look in more detail at climate change</li><li>· Explain what they already know about it</li><li>· Explore what the impact of some environmental changes are, both positive and negative</li><li>· Learn about bumblebees and what the impact of their declining numbers are</li><li>· Look at the potential impact of deforestation</li><li>· Understand what they</li></ul>



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	<ul style="list-style-type: none"><li>· Demonstrate an understanding of the functions of each part of the digestive system</li><li>· Begin to understand why scientists can use poo to tell them more about an animal</li><li>· Define 'predator', 'prey' and 'producer'</li><li>· Make links between plants and animals in the form of food chains</li><li>· Discuss with others the impact a break in the food chain may have</li><li>· Begin to understand that humans have a responsibility to care about their impact on food chains</li><li>· Plan and perform a 'Healthy Teeth' assembly for the school</li><li>· Include scientific language when taking on the role of a dental expert</li><li>· Explain why teeth are an important part of our digestive system and demonstrate an understanding of the rest of the digestive system</li><li>· Explore PowerPoint and try to identify how to change the slide transitions, background design and include images, text boxes and hyperlinks</li></ul>	<ul style="list-style-type: none"><li>· Consider some of the ways we try to reduce the sounds that we hear</li><li>· Understand that we hear because sound waves (vibrations) enter our ears</li><li>· Explain why we see lightning before we hear thunder.</li><li>· Consider reasons needed to reduce sounds and reasons for not reducing sounds.</li><li>· Describe their product to others</li><li>· Demonstrate their understanding of sound by explaining why their product is the best</li><li>· Present their findings to a panel of judges</li><li>· Evaluate their product against the original criteria</li></ul>	<ul style="list-style-type: none"><li>· Recap on or assess all the learning in this block by doing a Rock, Fossil and Soil Quiz (see Teachers' Notes)</li><li>· Work in a team to plan and prepare a display of exhibits and activities for visitors to the Amazing Rock and Fossil Museum</li><li>· Share learning through written and oral presentations to a real audience</li></ul>	<ul style="list-style-type: none"><li>· Use scientific language to explain the water cycle to others</li><li>· Demonstrate their scientific expertise about states of matter to visitors</li></ul>	<ul style="list-style-type: none"><li>· Play a waggle dance game to communicate the location of a target "flower"</li><li>· Consolidate knowledge on pollination by doing a sequencing puzzle in pairs</li><li>· Play a team game to reinforce the link between flowers and fruits and the huge variety that exists</li><li>· Consolidate the learning of scientific vocabulary by playing a word matching game in teams</li><li>· Undertake a quiz to assess knowledge and understanding of flowers, fruits and seeds</li><li>· Make bunting for the exhibition using the pressed flowers from Session 1</li><li>· Undertake a group activity in preparation for the Artful Flowers, Fruits and Seeds Exhibition, e.g. a bee dance or puppet display, labels and explanations, quizzes and competitions, posters and invitations</li></ul>	<ul style="list-style-type: none"><li>can do to help minimise the impact of climate change</li><li>· Understand some of the changes that have caused the number of hedgehogs to decline</li><li>· Work in a group to plan how to make positive changes to a small local area (school based or wider community if possible)</li><li>· Consider the people who may use the area and think about out how they might use it</li><li>· Consider the other living things, including bees and hedgehogs, who may use the area when planning</li><li>· Draw a plan of how they would change a local environment for the better</li><li>· Put their positive plan for a local area into action</li><li>· Be able to describe the changes they are making</li><li>· Explain to others which living things will benefit from the changes they are making</li></ul>
<b>Year 5/6</b>	<b>Life Explorers</b> <ul style="list-style-type: none"><li>· Complete online research to find out the gestation periods of a range of animals (including humans)</li><li>· Create a visual comparison of gestation periods (including humans)</li><li>· Look for patterns in gestation periods</li><li>· Explore the key stages of human foetal development</li><li>· Create a scientific diagram for the key stages of foetal development and an accompanying growth graph</li><li>· Describe the process of foetal development within a scientific diagram</li><li>· Complete online research and write fact-files based on growth data and research findings</li><li>· Explore the key physical and emotional changes during puberty in both boys and girls</li><li>· Create a Q&amp;A book section and glossary for puberty</li><li>· Explore the physical and mental changes to the human body as it ages</li><li>· Create a 'things to expect in old age' section for their book</li><li>· Discuss how elderly people are cared for and how they could support people in the community</li><li>· Create a visual timeline of key events in a human life</li><li>· Use a graphics program to create a visual representation of human growth</li><li>· Publish their non-fiction book on the human lifecycle</li></ul>	<b>The Art of Being Human</b> <ul style="list-style-type: none"><li>· Identify and describe components of blood and their respective functions, noting the different blood groups</li><li>· Sketch and paint magnified blood cells, using texture and form</li><li>· Be able to name the three types of blood vessel: arteries, veins and capillaries</li><li>· Explore the structure and function of the human heart</li><li>· Create anatomically correct sculptures of a heart</li><li>· Explain how nutrients and water are transported through the body</li><li>· Investigate diffusion and osmosis</li><li>· Create a dye art work</li><li>· Explore how the circulatory system works and be able to identify the role blood has within this</li><li>· Accurately dramatise the processes of the circulatory system</li><li>· Record and edit their dramatization</li><li>· Examine the impact of a healthy or unhealthy diet on the human body</li><li>· Examine the impact of exercise and lifestyle choices on the human body</li><li>· Create a TV advert that explores the impact of diet, exercise and lifestyle on the body</li><li>· Identify the effects of drugs on the human body</li><li>· Create a print advert that explores the impact of drugs and alcohol on the human body</li><li>· Exhibit all art from the block in a 'human body' exhibition</li></ul>	<b>Game of Survival</b> <ul style="list-style-type: none"><li>· Play class Guess Who and note characteristics that are inherited</li><li>· Identify variations between themselves and a classmate</li><li>· Create dog breed Top Trumps™ cards, noting variation across breeds</li><li>· Use observed characteristics and simple dominant and recessive genes model to 'breed' dogs</li><li>· Investigate variation across specific animals and plants</li><li>· Identify subtle adaptations to environments in the animal and plant world</li><li>· Identify advantages and disadvantages of certain characteristics</li><li>· Play 'Extreme Survivor' to see which creatures and plants survive in given environments</li><li>· Suggest how animals and plants are adapted to extreme environments</li><li>· Design an animal and a plant that should thrive and survive in a given environment</li><li>· Research the life and work of Anning, Darwin or Wallace and share as a presentation</li><li>· Use given evidence to attempt to back up evolutionary ideas, presenting logical findings</li><li>· Play fossil 'what if'</li><li>· Explore online the evolution of flight in birds through the fossil record</li><li>· Create a cladogram using modern animal</li><li>· Write a 'Just So' story about a living creature and a distinguishing characteristic</li><li>· Explain scientifically how a given creature has evolved in terms of a specific characteristic</li></ul>	<b>May the Forces be With You</b> <ul style="list-style-type: none"><li>· Recognise Sir Isaac Newton and his third Law of Motion</li><li>· Identify and label gravity and resistance forces, identifying balanced and unbalanced forces</li><li>· Compose forces scientific enquiry questions based on observations of the world around them</li><li>· Calculate the area of the parachute and its scaled up speed</li><li>· Video recommendations for the best parachute design and materials for the job, based on findings</li><li>· Investigate how levers work and how the position of the fulcrum impacts on its effectiveness</li><li>· Scale weights and lengths</li><li>· Set out instructions for forces on the ground to help them implement findings from investigations</li><li>· Explore gears noting how they help cyclists ride</li><li>· Calculate gear ratios</li><li>· Recommend gear combinations that relate to specific terrains</li></ul>	<b>Earth Presenters</b> <ul style="list-style-type: none"><li>· Use fruit to create a model of the solar system</li><li>· Research, collate &amp; create graphs for data about the planets</li><li>· Paint the planets from known images and the nature of the planets</li><li>· Know the difference between geo and heliocentric solar system and how views have evolved</li><li>· Build an model of our solar system</li><li>· Create episode one of Stargazing which explains how the solar system works and what is in it</li><li>· Explore time zones and relate this to the movement of the Earth</li><li>· Use scientific logic and knowledge to solve time problems</li><li>· Look at photos of the moon and identify key features</li><li>· Match lunar phases to relative positions of the Moon, Sun and Earth</li></ul>	<b>The Science of Sport</b> <ul style="list-style-type: none"><li>· Identify characteristics of grass and create their own classification key for given grasses</li><li>· Recommend a seed mix for sports pitch turf</li><li>· Set up an investigation to determine the best methods for turf maintenance</li><li>· Identify and compare the properties of sports top materials</li><li>· Investigate the properties of modern football shirt material in comparison to cotton shirts</li><li>· Identify the properties of Paralympian biomechanics materials and understand the positive impact they have on disability sport</li><li>· Identify the forces that can impact on a sports game</li><li>· Suggest how friction, air resistance and gravity can be exploited in sports</li><li>· Try and control the level of a force exerted on a ball in order to successfully score a goal</li><li>· Investigate the impact of exercise on the human body</li><li>· Investigate the impact of nutrition on sports performance</li><li>· Make recommendations for protecting against and treating sports injuries</li><li>· Identify the influence of inheritance and environmental factors on sports performance</li><li>· Create a sports information leaflet on factors that impact on sports talent</li><li>· Identify some inherited personal traits that may impact on sports performance</li><li>· Investigate and suggest effective positioning of stadium floodlights for a night time game</li><li>· Design and create circuits to ensure floodlights in a stadium are bright enough</li><li>· Research and outline viable</li></ul>



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