



Limehurst Primary School Whole School Overview

Cycle B		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> ▪ Use all their senses in hands-on exploration of natural materials. ▪ Talk about the differences between materials and changes they notice. ▪ Plant seeds and care for growing plants. ▪ Explore the key features of the life cycle of a plant and an animal. ▪ Explore collections of materials with similar and/or different properties. ▪ Talk about different forces they can feel. ▪ 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. ▪ Begin to understand the need to respect and care for the natural environment and all living things. ▪ Understand the effect of changing seasons on the natural world around them. ▪ Observe and interact with natural processes (melting/floating and sinking/magnetism/light and dark) ▪ Talks about materials and their properties. ▪ Talk about animals’ and their habitats and lifestyles. ▪ Talk about and explore properties.					
Nursery	Within Nursery, Understanding the world is taught through the provision, exploration and some teaching sessions. Our science based tuff spots include: ▪ Exploring magnetism ▪ Exploring ice ▪ Exploring different natural materials (magnifying glasses) ▪ Exploring plants (looking at roots, leaves and different parts of the plant) ▪ Sorting materials (recycling) ▪ Gravity tuff spot (rolling balls and tubes) ▪ What will/will not roll using ramps (making predictions) The children also have a weekly Forest School session where children cover the following: <i>Exploring seasons</i> ▪ Autumn: leaves falling, decaying ▪ Winter: bare trees, colder weather ▪ Spring: shoots and buds appearing, spring hunt ▪ Summer: flowers blooming, trees in full green, butterflies etc <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	Marvellous Materials · Understand some materials may be suitable whilst others are not, using the language of useful properties · Understand that water is a material and ice is water in a different state · Understand that water is a material and ice is water in a different state · Understand that water is a material	Our pets · Understand that there are special places (habitats) where mini-beasts (invertebrates) live · Begin to understand what they need to be healthy and happy · Understand that pets need similar and different things to keep them happy and healthy	Squash, Bend, Twist, Stretch · Consider: what does 'bounciest' mean? Is it the ball that bounces the highest or for the longest time? · Look at a selection of fabric and understand why stretchy fabric is sometimes used in clothing · Understand that some materials need to be able to 'give' a little and not break	What’s growing in our garden? · Share what they already know about potatoes, including how they are grown and in what forms we can eat them · Consider the different types of potato, including their similarities and differences. · Understand what a garden is and how varied they are	Habitats · Understand the differences between things that are living, dead, and things that have never been alive · Understand the key features of things that are living, as opposed to dead · Understand that different habitats provide for the basic needs of different kinds of living things	Healthy Animals · Understand the development of a chick in an egg and then how a chick grows into a hen · Understand that babies can be similar or different to the adults and that humans are animals that produce offspring



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	· Represent their observations and understanding through dances and role-play and through speaking to an audience about what they have learned	· Understand there are key differences between birds, fish, amphibians, reptiles, mammals and invertebrates · Understand why some animals make good pets and others may not · Be aware of the meaning of the scientific language: birds, fish, amphibians, reptiles, mammals and invertebrates · Consider what is involved in keeping a real pet happy and healthy · Draw up a list: 'Looking after my Pet' · Make a pet based on their design · Understand that there are many different types of pets	(for bridges carrying heavy traffic, for example) · Articulate their learning about materials and their properties	· Understand what pollen is and the role it plays in helping to make new plants · Appreciate the wide variety of pollen grain designs and create large pollen sculptures out of clay · Make a large model of the inside of a flower using junk modelling materials · Understand the basic structure of a flowering plant and the basic function of the main parts · Discuss and become familiar with the similarities and differences between evergreen and deciduous trees. Represent a tree through playground art, using cloths, chalk and found materials · Show an awareness of the role of the roots, bark, trunk, branches and leaves of a tree	· Understand that there are a varied amount of microhabitats with different features and conditions · Understand that habitats can be small and local but also very extensive · Understand that creatures are adapted for their own habitats · Research and consider a specific habitat and recreate it in a shoebox diorama · Understand what is meant by a food chain · Understand that living things need other living things to survive · Understand that creating different microhabitats will encourage a variety of creatures · Understand that microhabitats need to vary according to their inhabitants' needs · Design a 'room' (microhabitat) of the bug hotel · Build a bug hotel according to the group designs	· Understand what they need to survive and what else they might need to be comfortable and happy · Understand that what animals need for survival might be similar or different to humans, depending on the animal · Discuss why they need certain things for survival, including food and water · Begin to understand what is meant by a balanced lunch · Design a lunch box sheet or mat (to laminate and place in the bottom of the lunch box) to serve as a reminder of how much of each food group is required for a balance lunch · Understand the role of hygiene in food preparation · Understand which foods to select for a picnic in order to create balanced, healthy sandwiches
Year 3/4	Name that living thing! · Understand the 7 characteristics of a living thing · Explain one of the characteristics in more detail to someone else · Discuss which living things they would expect to find in their local environment · Consider which living things they would definitely not find locally, and why · Begin to understand that living things can be grouped in a variety of ways · Ask relevant questions about living things and their habitat · Understand why it is useful to classify living things · Start to understand a dichotomous classification key · Answer questions about the features of insects, arachnids and plants etc found in the local area · Use a branching database/dichotomous classification key · Look at the photographs by artist Levon Biss · Discuss the photographs and consider whether or not they like them and why · Collaborate with others to contribute to a large-scale drawing of an insect · Understand that it is the tiny details that will help scientists further classify living things · Complete their independent drawing · Test their knowledge of the classification of living things by playing a game	Keeping Healthy · Play an active game to reinforce vocabulary, knowledge and understanding of animal feeding categories · Use knowledge of nutrition to answer client's dietary questions and design and model a balanced meal · Create a model of a balanced meal for a paper plate · Play another game called 5 Lives that will increase children's knowledge of skeletons and bones whilst having fun · Make a skeleton string puppet that has moving joints · Reinforce knowledge by naming parts and functions on the puppets · Puppeteer a skeleton dance · Undertake a quiz that assesses all their knowledge and understanding on the block · Reflect on their own life and consider positive changes they could make to improve their health and fitness	It's Electric · Consider what they already know about electricity · Understand that electrical items in our homes are powered from mains electricity or batteries and identify some of these appliances and device · Understand the dangers of electricity · Create safety posters to highlight the dangers to others · Begin to understand that electrical dangers are often associated with materials that are good conductors · See a diagram of an electrical circuit and identify what the symbols represent · Predict which materials will be good at conducting electricity using their knowledge of the world around them · With a partner, use their knowledge and understanding of electrical circuits to build a circuit with a buzzer and a switch · Draw a scientific diagram of their circuit · Work in a team to design and build a buzz wire game · Use their understanding of electrical circuits to consider how electrical games work · Demonstrate their buzz wire game · Explain the scientific rationale behind their circuits · Identify how they have developed their electrical knowledge and skills from the outset of the block · Challenge others to compete against them in an 'it's electric' quiz and buzzer game	Amazing Magnets · Play a game in teams to explore all the different ways forces can act on a variety of everyday objects · Classify each action as either a push, a pull or both · Play a game in teams to explore and show the different ways forces can act in different sports · Play a guessing game to encourage theories and predictions on which items will be magnetic · Play a game to revise and reinforce prior learning on magnetic forces · Explore how magnets behave towards one another in a wide variety of different situations · Form theories and seek to explain findings · Learn that magnets have 2 poles and that same poles repel whilst opposite poles attract · Consider and explain their exploratory findings in terms of this scientific knowledge · Play a game to revise and reinforce their knowledge of how magnets attract and repel depending on which poles are facing · Work in a group to devise a magnetic game or challenge for visitors to a science fair · Assemble and make resources to run their activity including signs to introduce the challenge · Consider what each activity will teach visitors about magnetism · Take part in a quiz to assess their knowledge and understanding of magnetism (learnt through this block) · Ask questions that encourage participants at the science fair to think about magnetism and its effects · Write explanations to answer these questions · Quality test each other's exhibits and pass on advice and praise using 2 stars and a wish	Roots and shoots · Become Planet Earth plant research experts for an alien called Zinnia · Discuss and decide all the requirements we think plants need to grow strong and healthy · Research some interesting plant facts from books and the Internet · Create a display of "Did you know ...?" facts · Play a game to recap on plant knowledge and teach some new concepts · Play a game to reinforce the various parts of a plant and their functions · Play a team game to discover the huge variety of plants in their diet and create a list of them · Play a team game to recap on knowledge gained so far and introduce a few new concepts · Begin to learn about the 7 life processes common to all living things and tackle a class challenge to match scientific terms to pictures of each process · Review their knowledge and understanding by taking part in a quiz/assessment task · Recap on all the requirements of plants for health and growth · Design a space farm for plants with labels and annotations that meets all their requirements for life · Receive a final message of thanks from Zinnia for all their help and research	Light and Shadow · Design a stage front for their shadow puppet theatre to use in the coming sessions · Recap on prior knowledge by playing an active quiz game · Paint their shadow puppet theatre to make it attractive and exciting for audiences · Test their knowledge of light and learn some exciting new light facts by playing an active team game · Create jointed shadow puppets controlled with a flexible stick connection · Make and attach a tissue paper screen to their puppet theatre in groups · Undertake a quiz on all their learning on light and shadows covered in this block of sessions · Work on producing their own shadow puppet play with puppets they have made and all the knowledge and skills they have gained



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Year 5/6	Crime Lab Investigation · Demonstrate and conclude that light travels in a straight line · Know that a light source is needed in order to see · Convert feet and inches to cm · Make viable suggestions for given angles · Be able to explain that a human shadow has the same shape as the person casting it · Explain and demonstrate that light can be bent when it is slowed down · Split white light into rainbow colour	Electric Celebrations · Identify current electrical knowledge and areas to explore further · Create success criteria for their Dragons' Den electrical challenge · Look at examples of festive lights and list key features · Create annotated drawings to represent their design idea · Draw a circuit diagram with a summary of the brightness, volume and speed of components within it · Annotate their circuit diagram with explanations of the role of resistance in making components work · Feedback on others' designs · Use feedback to improve their design · Create a working electrical prototype and identify possible improvements · Effectively use appropriate materials, tools and equipment · Explain clearly how components work · Explain clearly the effect that different voltages have on components in a circuit · Demonstrate how their decoration works and to link their circuits to their diagrams · Link findings from previous electrical investigations to their circuits · Outline how their design meets all success criteria · Demonstrate electrical knowledge and skills through presentation	Life Explorers · Complete online research to find out the gestation periods of a range of animals (including humans) · Create a visual comparison of gestation periods (including humans) · Look for patterns in gestation periods · Explore the key stages of human foetal development · Create a scientific diagram for the key stages of foetal development and an accompanying growth graph · Describe the process of foetal development within a scientific diagram · Complete online research and write fact-files based on growth data and research findings · Explore the key physical and emotional changes during puberty in both boys and girls · Create a Q&A book section and glossary for puberty · Explore the physical and mental changes to the human body as it ages · Create a 'things to expect in old age' section for their book · Discuss how elderly people are cared for and how they could support people in the community · Create a visual timeline of key events in a human life · Use a graphics program to create a visual representation of human growth · Publish their non-fiction book on the human lifecycle	The Art of Being Human · Identify and describe components of blood and their respective functions, noting the different blood groups · Sketch and paint magnified blood cells, using texture and form · Be able to name the three types of blood vessel: arteries, veins and capillaries · Explore the structure and function of the human heart · Create anatomically correct sculptures of a heart · Explain how nutrients and water are transported through the body · Investigate diffusion and osmosis · Create a dye art work · Explore how the circulatory system works and be able to identify the role blood has within this · Accurately dramatise the processes of the circulatory system · Record and edit their dramatization · Examine the impact of a healthy or unhealthy diet on the human body · Examine the impact of exercise and lifestyle choices on the human body · Create a TV advert that explores the impact of diet, exercise and lifestyle on the body · Identify the effects of drugs on the human body · Create a print advert that explores the impact of drugs and alcohol on the human body · Exhibit all art from the block in a 'human body' exhibition	Earth Presenters · Use fruit to create a model of the solar system · Research, collate & create graphs for data about the planets · Paint the planets from known images and the nature of the planets · Know the difference between geo and heliocentric solar system and how views have evolved · Build an model of our solar system · Create episode one of Stargazing which explains how the solar system works and what is in it · Explore time zones and relate this to the movement of the Earth · Use scientific logic and knowledge to solve time problems · Look at photos of the moon and identify key features · Match lunar phases to relative positions of the Moon, Sun and Earth	The Science of Sport · Identify characteristics of grass and create their own classification key for given grasses · Recommend a seed mix for sports pitch turf · Set up an investigation to determine the best methods for turf maintenance · Identify and compare the properties of sports top materials · Investigate the properties of modern football shirt material in comparison to cotton shirts · Identify the properties of Paralympian biomechanics materials and understand the positive impact they have on disability sport · Identify the forces that can impact on a sports game · Suggest how friction, air resistance and gravity can be exploited in sports · Try and control the level of a force exerted on a ball in order to successfully score a goal · Investigate the impact of exercise on the human body · Investigate the impact of nutrition on sports performance · Make recommendations for protecting against and treating sports injuries · Identify the influence of inheritance and environmental factors on sports performance · Create a sports information leaflet on factors that impact on sports talent · Identify some inherited personal traits that may impact on sports performance · Investigate and suggest effective positioning of stadium floodlights for a night time game · Design and create circuits to ensure floodlights in a stadium are bright enough · Research and outline viable alternative energy sources for sports stadiums
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