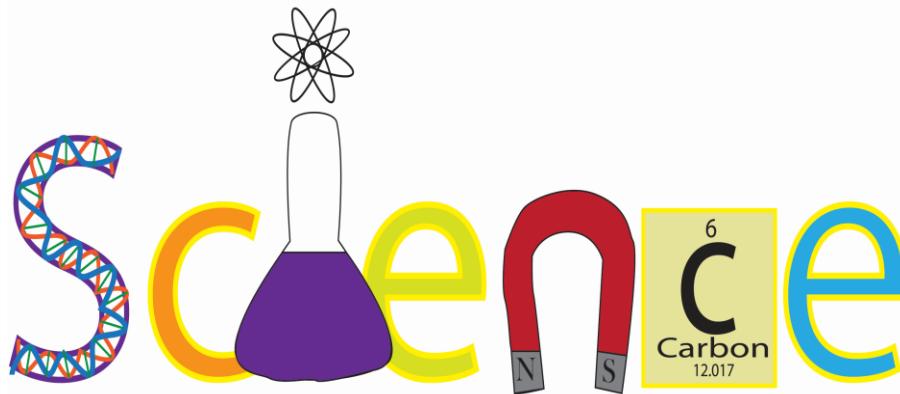


Limitless Dreams,
Endless Opportunities



**Manor Park School
& Nursery**

Science Curriculum September 2022



Subject Leader: James Wilde

Science Intent

Science teaching at Manor Park, aims to give all children a strong understanding of the world around them, whilst acquiring specific skills and knowledge to help them to think scientifically, to gain an understanding of scientific processes and also an understanding of the uses and implications of Science - today and for the future. All children are encouraged to develop and use a range of skills including: observations, planning and investigations, as well as being encouraged to question the world around them and become independent learners in exploring possible answers for their scientific based questions. Specialist vocabulary for topics is taught and effective questioning to communicate ideas is encouraged. Concepts taught should be reinforced by focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions.

Science Implementation

In ensuring high standards of teaching and learning in science, we implement a curriculum that is progressive throughout the whole school. Where possible, Science is linked to class topics or a high quality text, however it is also taught as discrete units and lessons where needed to ensure coverage. We ensure that all children are provided with rich learning experiences that aim to prepare our children for life in an increasingly scientific and technological world. Throughout Science lessons at Manor Park, we want children to acquire a growing understanding of the nature, processes and methods of scientific ideas. We aim to build on natural curiosity and develop a scientific approach to problems; encouraging open-mindedness, self-assessment, perseverance and developing the skills of investigation.

Science Impact

The impact and measure of this, is to ensure children not only acquire the appropriate age related knowledge linked to the Science curriculum, but also skills which equip them to progress from their starting points and build links on previously acquired learning. Children at Manor Park, will have a wider variety of skills linked to both scientific knowledge/understanding, and scientific enquiry. Children are consulted about the delivery of Science through a regular pupil voice, as we want children to enjoy and be enthusiastic about Science in our school. We have a robust, annual monitoring schedule in place, which includes learning walks and book scrutiny – with meaningful feedback provided. Our SLT are kept up to date with developments in the way Science is run in our school, with monitoring updates and evaluated action plans.

Science Curriculum Progression Skills and Knowledge – **Cycle A**

Overall Aims of the National Curriculum	<ol style="list-style-type: none"> 1. Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics 2. Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them 3. The children are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future. 				
Focus of Study	Understanding of the World All About Me Seasonal Changes Festivals The Natural World Food	Animals including humans Everyday Materials Plants/Seasonal Changes	Everyday Materials Animals including humans Plants/Living things and their habitats	Animals including humans Electricity States of Matter Sound	Electricity Light Animals including humans Evolution and Inheritance
Subject	Reception	Year 1	Year 2	Year 3/4	Year 5/6
Planning and predicting	Articulate their ideas and thoughts in well-formed sentences. Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen	Suggest what might happen and ways to suggest ideas	With help, suggest some ideas and questions. Think about what to collect as evidence. Talk about whether comparisons and tests are fair or unfair.	Respond appropriately to suggestions made. With help, put forward ideas about testing. Make sensible predictions With help, consider what makes a fair test. With help. Plan and carry out a fair test.	Recognise that scientific ideas are based on evidence and creative thinking. Make predictions based on scientific knowledge. Suggest methods of testing, including a fair test. Suggest how to collect evidence Select suitable equipment

Investigating and Observing	<p>Ask questions to find out more and to check what has been said to them.</p> <p>Describe events in some detail.</p> <p>Make comments about what they have heard and ask questions to clarify their understanding.</p> <p>Exploring school's grounds / 'Bug Hotel' and observing seasonal changes in the Autumn.</p> <p>Exploring natural autumnal resources in a Tuff Tray, asking questions and making observations.</p> <p>Observe seasonal weather changes and longer nights in the autumn compared to the summer.</p> <p>Observe changes – light, dark, colour</p> <p>Observe and discuss spring plants/spring growth.</p> <p>Explore natural spring resources in Tuff Tray / asking questions and making observations.</p> <p>Spring walk around School grounds describing and discussing what is found.</p> <p>Describe what they see, hear and feel whilst outside.</p>	<p>Make observations using their senses.</p> <p>Make simple comparisons and groupings</p>	<p>Make observations and comparisons using simple equipment.</p> <p>Follow basic instructions.</p> <p>Use first hand experiences and simple information sources to answer questions.</p>	<p>Make observations and comparisons.</p> <p>Measure length, volume of liquid and time using measuring equipment.</p> <p>Use first hand experiences and simple information sources to answer questions.</p>	<p>Carry out a fair test, explaining why it is fair.</p> <p>Understand why observations and why measurements should be repeated.</p> <p>With support Select information from provided sources.</p>
Recording, analysing and evaluating	<p>Use talk to work out problems and organise thinking and activities.</p> <p>Explain how things work and why they might happen</p>	<p>Communicate findings in simple ways.</p> <p>Try to answer questions posed.</p> <p>Record findings in simple ways including tables, graphs etc.</p> <p>Say whether what happened was expected.</p> <p>Draw simple conclusions</p>	<p>Communicate findings in simple ways.</p> <p>Try to answer questions posed.</p> <p>Record findings in simple ways including tables, graphs etc.</p> <p>Say whether what happened was expected.</p> <p>Draw simple conclusions</p>	<p>Communicate findings in a variety of ways.</p> <p>Say whether what happened was what was expected.</p> <p>With help, identify simple patterns and explanations</p>	<p>Communicate findings in a variety of ways.</p> <p>Identify simple trends and patterns.</p> <p>Create tables, bar charts and line graphs, whilst making appropriate use of ICT.</p> <p>Draw conclusions and communicate them using appropriate scientific language.</p> <p>Suggest improvements to their work giving reasons.</p>

Biology	<ul style="list-style-type: none"> Plant seeds, care for growing plants. Understand key features of the life cycle of a plant and an animal. Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding importance of healthy food choices. Naming body parts through songs: if you're happy and you know it and head, shoulders, knees and toes... I know some body parts and can say what they do. I know the difference between animals and plants. Explore the life cycle of plants / animals Explore, observe and identify UK minibeasts. Discussions around snack time and lunch time - healthy eating choices. Discussions around healthy living choices including: washing hands, brushing teeth, eating and exercise. Story time and circle time to explore books focusing on staying healthy and the human body. I know that a plant needs light, soil and water to grow. I know that plants die if they don't have enough water. I know that some food grows on trees and some comes from plants on and under the ground 	<p>Identify and name a variety of common wild and garden plants.</p> <p>Identify and describe the basic structure of common flowering plants, including trees.</p> <p>Identify and name a variety of animals including fish, amphibians, reptiles, birds and mammals.</p> <p>Use the terminology carnivores, herbivores and omnivores.</p> <p>Name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</p> <p>Observe changes across the four seasons.</p> <p>Describe weather associated with the seasons and how day length varies.</p>	<p>Explore and compare the differences between things that are living, dead, and things that have never been alive.</p> <p>Identify that most living things live in habitats to which they are suited.</p> <p>Describe how different habitats provide for the basic needs of animals and plants, and how they depend on each other, using the idea of a simple food chain, and identify and name different sources of food.</p> <p>Be aware that animals, including humans, have offspring which grow into adults.</p> <p>Describe the basic needs of animals, including humans, for survival.</p> <p>Discuss the importance for humans of exercise, food, and hygiene.</p> <p>Observe and describe how seeds and bulbs grow into mature plants.</p> <p>Discuss how plants need water, light and a suitable temperature to grow and stay healthy.</p>	<p>Identify that animals, including humans, need the right types and amount of nutrition.</p> <p>Know that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>Describe the simple functions of the basic parts of the digestive system in humans.</p> <p>Identify the different types of teeth in humans and their functions.</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p>Describe the changes as humans develop to old age.</p> <p>Identify and name the main parts of the human circulatory system.</p> <p>Describe the functions of the heart, blood vessels and blood</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>Explain how nutrients and water are transported within animals, including humans.</p> <p>Recognise that living things have changed over time</p> <p>Understand that living things produce offspring of the same kind, but they are not identical to their parents</p> <p>Identify how animals and plants are adapted to suit their environment and that adaptation may lead to evolution.</p>
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Chemistry	<p>I know that ice melts when it gets hot.</p> <p>I know that water turns into ice when it freezes.</p> <p>Talk about differences between materials and changes they notice.</p> <p>Materials – what is the best material for the Three Pigs to build a house out of?</p> <p>I know that some materials float and some sink.</p> <p>I know that some materials are more suited to jobs than others.</p>	<p>Distinguish between an object and the material from which it is made.</p> <p>Identify and name a variety of everyday materials.</p> <p>Describe the simple physical properties of a variety of everyday materials.</p> <p>Compare and group together a variety of everyday materials on the basis of their simple physical properties.</p>	<p>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</p> <p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</p>	<p>Compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>Explain that some materials change state when they are heated or cooled.</p> <p>Describe the part played by evaporation and condensation in the water cycle.</p> <p>Link the rate of evaporation with temperature.</p>	
Physics	<p>Explore/talk about different forces they can feel.</p> <p>I know the difference between light and dark.</p>			<p>Understand the link between sounds and vibration.</p> <p>Recognise that vibrations from sounds travel through a medium to the ear.</p> <p>Find patterns between the volume of a sound and the strength of the vibrations that produced it.</p> <p>Explain why sounds get fainter as the distance from the sound source increases.</p> <p>Identify common appliances which run on electricity.</p>	<p>Use the idea that light travels in straight lines to explain how we see things.</p> <p>Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.</p> <p>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p> <p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p>

				<p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p> <p>Identify whether or not a lamp will light in a simple series circuit.</p> <p>Recognise that a switch opens and closes a <u>circuit</u>.</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors.</p>	<p>Compare and give reasons for variations in how components function.</p> <p>Use recognised symbols when representing a simple circuit in a diagram</p>
Golden Threads	Living things	Materials Around US	Our Planet	Changes Over Time	

Year One

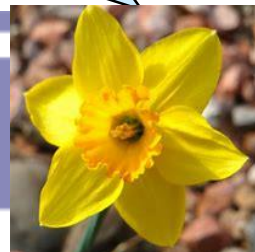
Animals including humans: Let's go on an animal adventure: Make observations using their senses. Identify and name a variety of animals.



Everyday Materials: Is your home a sweet home? Distinguish between an object and the material from which it is made.



Plants – seasonal changes: How does your garden grow? Identify and name a variety of common wild and garden plants.



Year Two

Everyday Materials: London's Burning! Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.



Animals including humans: Ready, steady, go! Investigate animals including humans – baby to adult, basic needs to survive, exercise, food and hygiene.



Plants, living things & their habitats/ Remarkable Rainforest! Investigate living things and habitats in the Spinney and rainforest. Compare living and non-living habitats.

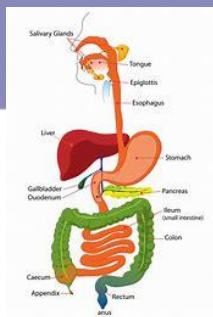


The national curriculum for science aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future

Year 3/4

Animals including humans: Going, going, gone! Identify that humans need the right type of nutrition. Describe the simple functions of the basic parts of the digestive system in humans.



Sound: Crash, Bang, What's that sound? Identify how sounds are made and vibrations from sounds travel through a medium to the ear.



Electricity: Charging about! Identify common appliances which run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts.



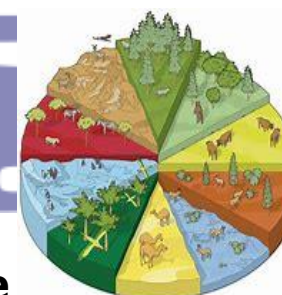
Electricity & Light: Bright Sparks! Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.



Animals including humans: The Wonder of it all: Describe the changes as humans develop to old age. Name & label the main parts of the human circulatory system.



Evolution & Inheritance: Are you a survivor? Describe how living things are classified into broad groups according to common observable characteristics



Year 5/6

States of Matter: Where will the river take you? Compare and group materials together, according to whether they are solids, liquids or gases.

