Jennett's Park Science Curriculum

Educating for Wisdom, Knowledge and Skills	To help grow resourceful, resilient and reflective children who are equipped with the skills, knowledge and tenacity empower themselves, their learning throughout their lives.
Educating for Hope and Aspiration	To inspire and enrich lives beyond current opportunities and experiences in order to open minds to the potential their future holds
Educating for Community and Living Well Together	To be a multi-cultural, inclusive community of individuals loved by God who feel valued and involved where we create qualities of character to enable people to flourish.
Educating for Dignity and Respect	That children might know how much that they are loved and valued by so that they might show dignity and respect for themselves and others by carefully and safely thinking through their actions.

Intent

At our school, we want to inspire and excite our children's natural curiosity about the universe around them, developing an understanding of the impact science has. We want the experience of exploring and investigating scientifically, in a range of contexts, in order to create a continually evolving knowledge and understanding. We will enable pupils to work scientifically, to encourage enquiry, ask questions, take risks and to investigate. Through this, pupils will acquire and apply core skills and knowledge to equip them with resilience for an ever-changing future. These skills are embedded in each aspect of the programme of study, from EYFS to Year 6 and beyond. Topics are revisited, with a sequence of knowledge and concepts, giving pupils the opportunity to further develop their skills and build on prior knowledge. All of our pupils are given opportunities to ask questions, make predictions, investigate and be able to reflect and reach conclusions. The curriculum is designed to ensure that children are able to acquire key scientific knowledge through practical experiences; using equipment, conducting experiments, building arguments and explaining concepts confidently. Technical vocabulary for the disciplines of chemistry, biology and physics is taught across the school; key skills are mapped for each year group and are progressive throughout the key stages. These ensure systematic progression in accordance with the Working Scientifically skills expectations of the National Curriculum. Cross-curricular opportunities are also identified and planned to ensure contextual relevance.

Implementation

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all pupils are capable of achieving high standards in science. In EYFS, science is predominately delivered as part of continuous provision, through high-quality learning environments including access to the outdoors. Where appropriate, adult-led science inputs are delivered to inspire our pupils. Within KS1 and KS2, science planning is based on the National Curriculum content for each year group. Teachers are aware of the knowledge and skill development of the previous years to ensure that new learning builds on prior experiences. Additionally, as the children's knowledge and understanding increases, they become more proficient in selecting, using scientific equipment, collating and interpreting results; they become increasingly confident in their growing ability to come to conclusions based on real evidence. The oracy skills displayed by our pupils will embed the technical skills and knowledge further, and will increase the level of knowledge displayed in a variety of formats; our pupils are constantly asked

why, what if, explain and build on, as well as being encouraged to challenge and question each other. This display of skills and knowledge can be collated through diagrams, descriptions, discussions, quizzes, formal write-ups and physical investigations developed over time from EYFS through to the end of KS2.

Science is taught in planned and arranged blocks by the class teacher, with a discrete approach, following the scheme 'Developing Experts'. This sets out a clear progression of skills from EYFS to Year 6, building on prior learning at each key stage. Knowledge organisers enable children to learn and retain key information; achieving a deeper knowledge and understanding of science. Working Scientifically skills are embedded into lessons to ensure that skills are systematically developed throughout the children's school career; new vocabulary (introduced as rocket words in each lesson) and challenging concepts are introduced through direct teaching and assessed through the use of quizzes. This is developed through the years, in-keeping with the programme of study. At the end of each unit, key knowledge is reviewed by the children through assessment and consolidated as necessary.

We encourage further interest in science through our annual science week, which is accessible to all years from nursery through to year 6.

Impact

Pupils will talk positively about science and themselves as scientists, feeling empowered to ask questions and investigate. Pupils will be able to articulate ways in which they can answer questions using the five key methods of scientific enquiry: comparative and fair testing; observation over time; research; classifying and observing changes over time and pattern seeking. Our pupils will leave our school with an avid interest, knowledge and the skills required to enable them to further develop as scientists and pursue further education with a view to future employment in the science industry. This variety of teaching, learning and reviewing of knowledge and skills enables all our pupils to achieve the best possible outcomes.

Our pupils show excellent progress in scientific knowledge, understanding and skills with an eagerness to explore and learn. By providing a well-structured, engaging and inclusive curriculum, we empower our pupils to develop scientific knowledge, enquiry skills and a passion for life-long learning in science.

Year Group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	Our Body The Senses	Weather and the seasons Forces Materials	Weather and the seasons The Senses	Weather and the seasons Food	Plants Our Body	Animals Food
Reception	The Senses	My body	Materials	Forces Space	Insects and Invertebrates Plants	Animals Health and Safety
Year 1	Seasonal Changes	Animals including Humans 1 – All about Me	Every day materials - exploring	Everyday materials - building	Plants	Animals including humans 2 – All about animals
Year 2	Uses of everyday materials	Living things and their habitats	Living things and their habitats – Habitats from around the world	Animals including humans 1 - Growth	Animals including humans 2 – Life cycles	Plants
Year 3	Rocks	Light	Forces	Animals including humans	Plants	Scientific Enquiry
Year 4	States of matter	Electricity	Living things and their habitats	Animals including humans – Digestive systema and food chains	Sound	Living things and their habitats
Year 5	Earth and Space	Forces	Animals including humans – Life cycles	Properties of materials	Living things and their habitats	Changes of materials
Year 6	Evolution and Inheritance	Light	Animals including humans – Circulatory system	Living things and their habitats - classification	Electricity	Looking after the environment

EYFS - Nursery						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Science Curriculum Theme – Understanding the world	**Our Body** **The Senses**	**Weather & Seasons** **Forces** **Materials**	**Weather & Seasons** **The Senses**	**Weather & Seasons** **Food**	**Plants** **Our Body**	**Animals** **Food**
Understanding the World	**Our Body** Learn about your body parts: -arms, legs, and chest -hands and feet -eyes and nose -ears, mouth and hair **The Senses** Learn about senses, sight and touch Explore ways to make sound	**Weather and Seasons** Learn about rain, ice, and water Learn about the seasonal changes that happen in Autumn and Winter **Forces** Understand what happens when you push or pull something. Explore objects that sink and float. **Materials** Discover that some things can change shape Explore the process of melting	**Weather and Seasons** Describe why the air moves Explore snow and melting **The Senses** Discover the senses of hearing and sight Explore the senses of smell and touch Learn about your sense of taste	**Weather and Seasons** Discover how rainbows are formed Learn about the seasonal changes that happen in Springing and Summer **Food** Learn about chicken and eggs. Discover that cows produce milk. Examine different ingredients, then weigh them to make a mixture (Shrove Tuesday)	**Plants** Discover that plants are living things Explain why a plant is a living thing and what it needs to live Describe the features of a living thing Know the difference between a living and a non-living thing **Our body** Discover how our bodies change Explore our similarities and differences and how we are all unique	**Animals** Learn that animals are living things Learn about farm animals **Food** Learn about your diet and how to stay healthy. Explore different types of vegetables. Discover different types of fruit.

EYFS - Reception						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Science Curriculum Theme	**The Senses**	**My Body**	**Materials**	**Forces** **Space**	**Insects and Invertebrates** **Plants**	**Animals** **Health and Safety**
Understanding the World	**The Senses** Learn about senses, sight and touch Explore ways to make sound Discover the senses of hearing and sight Explore the senses of smell and touch Learn about your sense of taste	**Our Body** Learn about your body parts and label a diagram. Discover how our bodies change. Explore our similarities and differences and how we are all unique.	**Materials** Learn about living and non-living things. Discover that some things can change shape. Explore the process of melting. Learn about different materials. Discover how to make a mixture.	**Forces** Explore objects that sink and float. **Space** Explore outer space. Discover why rockets are important.	**Insects and Invertebrates** Learn about insects and invertebrates. Discover where insects and invertebrates live. Explore more about insects and invertebrates. **Plants** Discover that plants are living things Learn about plants and where they come from Explore how to look after plants	**Animals** Learn that animals are living things. Discover where animals live and what they need to survive. **Health and Safety** Learn how to stay safe when using electricity Explore different homes and the things we need in our home Discover First Aid and what to do in an emergency
Working scientifically skills: • show curiosity and ask questions • make observations using their senses and simple equipment • make direct comparisons • use equipment to measure			• record their observations by drawing, taking photographs, using sorting rings or boxes and, in Reception, on simple tick sheets • use their observations to help them to answer their questions • talk about what they are doing and have found out • identify, sort and group			

Year 1						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Science Curriculum theme	**Animals including Humans 1 – All about Me**	**Seasonal Changes**	**Every day materials - exploring**	**Plants**	**Everyday materials - building**	**Animals including humans 2 – All about animals**
Comparative and fair testing			Predict and identify if an object will float or sink Explore which materials are best for different objects		Build a structure strong enough to withstand wind Build a waterproof structure	
Observation over time		Understand there are four seasons How do the seasons effect the weather? What changes can we see around us as the seasons change? How does day length vary throughout the year?		Understand that seeds grow into plants Record the growth of a plant		
Research	Explore the tongue and taste			Know the difference between deciduous and evergreen trees		Explore the differences between wild animals and pets
Pattern seeking	Learn about your eyes and sight Discover how your nose smells	Understand that changes take place across the seasons Investigate how to measure rainfall				

Identifying, classifying and grouping	Learn about your ears and hearing Explore your sense of touch	Understand the changes that occur in different seasons	Identify and name a variety of everyday materials Distinguish between an object and the material it is made from Describe the properties of everyday materials Identify objects that are natural and manmade	Identify the basic parts of a plant and tree Understand that different plants can grow in the same environment Know that fruit trees and vegetables are varieties of plants	the properties of glass and its uses Understand that materials are used to create a variety of furniture Explore different fabrics and their properties Explain the uses of materials and why they are suitable	Discover animal families Learn about the differences between mammals and birds Learn about the differences between amphibians, reptiles and fish Discover the type of food living things eat Explore where animals live

Working scientifically skills

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

Year 2						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Science Curriculum theme	**Uses of everyday materials**	**Living things and their habitats**	**Living things and their habitats – Habitats from around the world**	**Animals including humans 1 – Growth, health and survival**	**Animals including humans 2 – Life cycles**	**Plants**
Comparative and fair testing	Understand how to select the right materials to build a bridge Explore and test the stretchiness of materials Understand that materials can change their shape by twisting, bending, squashing or stretching Find out about Charles Macintosh and explore how materials are suitable for different purposes Discover which materials change shape when making			Investigate the impact of exercise on our bodies Investigate the importance of hygiene		Design an experiment to find out what plants need to grow

	a road with John McAdam					
Observation over time						Observe and record the growth of plants over time
Research		Identify and name a variety of plants and animals in a microhabitat Design a suitable microhabitat where living things could survive Find out what animals eat to survive in their habitats Understand food chains	Appreciate that environments are constantly changing Explore the rainforest and its problems Create a model of a habitat	Describe the needs of animals for survival	Describe the stages of life from adulthood to old age Describe the life cycle of a butterfly Explore the life cycle of a frog Explore the life cycle of a chicken	Know the difference between seeds and bulbs Describe what plants need to grow and stay healthy Describe the life cycle of a plant
Pattern seeking					Explore the life cycle of a chicken Explore the life cycle of a frog	Observe and record the growth of plants over time
Identifying, classifying and grouping	Identify different materials and their uses	Explore and compare the differences between things that are living, dead, and	Learn about habitats Describe life in the ocean	Describe what a healthy, balanced diet looks like	Ordering the stages of a human life cycle	Understand that plants adapt to suit their environment

		things that have never been alive Understand the journey food makes from the farm to the supermarket	Discover the Arctic and Antarctic habitat	Describe the needs of humans for survival Explore the importance of eating the right food	Learn how to match offspring to their parent	

Working scientifically skills

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

Year 3						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Science Curriculum theme	**Rocks**	**Light**	**Forces and magnets**	**Animals including humans**	**Plants**	**Scientific Enquiry**
Comparative and fair testing	Explore the formation and properties of sedimentary rocks and metamorphic rocks Explore how water contributes to the weathering of rocks Explore different types of soil	Explore the light that comes from the sun and how to stay safe	Explore contact and non-contact forces Compare how things move on different surfaces Explore different types of magnets Understand that magnetic forces can act at a distance		Compare the effect of different factors on plant growth	How a solar oven can be made more effective: posing questions and writing predictions Cleaning coins: writing a method and carrying out a practical test Making a cake: fair testing, controls and variables Making a cake: scientific enquiry
Observation over time		Investigate how shadows change throughout the day				How a solar oven can be made more effective: recording and presenting results Cleaning coins: writing a conclusion
Research	Explore the formation and properties of igneous rocks			Learn about the nutrition in the food we eat	Identify and describe the functions of different parts of a flowering plant and how they are used in photosynthesis	

	Understand how fossils are formed			Learn about the different types of skeletons Explore the role of muscles	Explore the part that flowers play in the life cycle of flowering plants Understand the pollination process and the ways in which seeds are dispersed	
Pattern seeking	Weathering and the suitability of rocks for different purposes		Explore the everyday uses of magnets	Learn about animals and their skeletons	Compare the effect of different factors on plant growth	Discover how shadows are formed Investigate how you can change the size of a shadow
Identifying, classifying and grouping		Identify the difference between light sources and non-light sources	Explore the properties of magnets and everyday objects that are magnetic	Explore the 5 key food groups Learn about the human skeleton		

Working scientifically skills

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings

Year 4						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Science Curriculum theme	**States of matter**	**Electricity**	**Living things and their habitats**	**Animals including humans – Digestive system and food chains**	**Sound**	**Living things and their habitats - Conservation**
Comparative and fair testing	Explore evaporation and condensation	Explore conductors and insulators Investigate how electrical components can change within a circuit		Investigate the effects of different liquids on the teeth	Exploring sounds from near and from far	
Observation over time	Investigate melting points					Explore air pollution Understand water pollution Explore methods that can be used to conserve water
Research	Explore freezing and boiling points		Research a habitat Explore and classify pond plants	Explore food webs		Describe ecosystems and how they are affected by changes in the seasons
Pattern seeking	Explore how particles behave in solids, liquids and gases	Explore electrical appliances and electrical safety	Adaptations and classification within species	Understand food chains	Explore how vibrations from sounds travel through a medium to the ear	Understand human impact on the environment through deforestation

	Understand the water cycle	Learn about electrical components in a series circuit Investigate electrical circuits Learn about electrical switches			Exploring sound insulation Exploring volume Explore pitch	Understand that humans can have a positive impact on nature
Identifying, classifying and grouping	Compare and group the 3 states of matter		Explore different habitats Explore how animals can be classified Create a classification key	Identify the organs in the digestive system Describe the functions of the main organs in the digestive system Identify the types of human teeth and their functions	Identify how sounds are made	

Working scientifically skills

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

Year 5						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Science Curriculum theme	**Earth and Space**	**Forces**	**Animals including humans**	**Properties of materials**	**Living things and their habitats**	**Change of materials**
Comparative and fair testing		Explore gravity and the life and work of Isaac Newton Explore factors which affect an object's ability to resist water Investigate the effects of friction on different surfaces	Investigate the hand span of different ages of children	Exploring properties of materials Discover materials that become soluble in water Investigate the solubility of materials		Investigate rusting reactions Investigate chemical reactions - acids and bicarbonate of soda
Observation over time	Explain the Earth's rotation and night and day Understand the phases of the moon.		Identify the key stages of a mammal's life cycle		Compare the life cycles of insects and amphibians.	Use evaporation to recover the solute from a solution Observe chemical reactions and describe how we know new materials are made
Research	Understand the Heliocentric model of the solar system.	Planetarium visit: planet features, our solar system construction and the rotation of the Earth affecting day and night	Explore the gestation periods of mammals		Know about the life and work of Jane Goodall and David Attenborough.	

Pattern seeking	Explain the Earth's movement in Space. Explain the movement of the Moon. Design a planet using knowledge gained	Examine the connection between air resistance and parachutes Investigate mechanisms - levers and pulleys Investigate mechanisms - gears	Learn about foetal development Describe the changes humans may experience during adulthood and old age	Explore thermal conductors and thermal insulators Explore the hardness of materials Explore how mixtures could be separated by filtering, sieving, evaporating or magnets	Understand the life processes of a plant. Research and present the life cycle of a creature.	Recognise and describe reversible changes Investigate burning reactions
Identifying, classifying and grouping	Explore the solar system and its planets.		Learn about the changes experienced during puberty		Understand the life cycles of mammals. Understand the life cycle of birds and reptiles.	

Working scientifically skills

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments

Year 6						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Science Curriculum theme	**Evolution and Inheritance**	**Light**	**Animals including humans – the circulatory system**	**Living things and their habitats**	**Electricity**	**Looking after the environment**
Comparative and fair testing	Which bird 'beak' has adapted best for which type of bird food?	Explore reflection Investigate how shadows can change	Identify and compare blood vessels Learn how the body transports water and nutrients Investigate what affects your heart rate	Identify the characteristics of different type of microorganisms	Explore voltage and its effect on an electrical circuit Apply knowledge of conductors and insulators	
Observation over time	How did the dominant species of moths change in the 1800s?			Investigate asexual reproduction through spore dispersal. What conditions are needed for bread to go mouldy?		Learn about climate change Compare data associated with the weather
Research	How have animals adapted to live in their habitat? Who was Charles Darwin?			Understand the kingdoms of life. Classify living things using the Linnaean system.		Explore ways to reduce how much rubbish is sent to landfill

	Explore human evolution Learn about animal adaptations Learn about plant adaptations					Explore what happens when fuels are burnt
Pattern seeking	Are all animals/plants adapted to their environment? Understand how offspring vary and are not identical to their parents Explore what we can learn from fossils Explore the theory of evolution by natural selection	Explore reflection and explain how it can be used to help us see What is the link between an object's distance from a light source and its shadow? Investigate how we can show why shadows have the same shape as the object that casts them Investigate how we see objects	Do energy drinks impact exercise endurance?	Classify and describe a living organism.	Apply knowledge to identify and correct problems in a circuit Investigate what effects the output of a circuit Build a set of traffic lights	Explore ways to reduce energy consumption Explore the outcomes of COP26
Identifying, classifying and grouping		Explore how light travels	Understand the function of the heart and its role in the circulatory system Explore blood Learn about the impact of drugs and alcohol on the body	Classify living things	Describe the parts of an electric circuit	

Working scientifically skills

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments