



Science

Intent

We aim 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.

Scientific enquiry skills are embedded in each topic the children study and these topics are revisited and developed throughout their time at school. Topics, such as Plants, are taught in Key Stage One and studied again in further detail throughout Key Stage Two. This model allows children to build upon their prior knowledge and increases their enthusiasm for the topics whilst embedding this procedural knowledge into the long-term memory.

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 built up, and effective questioning to communicate ideas is encouraged. Concepts taught should be reinforced by focusing on the key features of working scientifically, so that pupils learn to use a variety of approaches to answer relevant scientific questions.

Implementation:

As it is a core subject and crucial to pupils understanding of the world around them, science is taught every week in Years 1- 6. As science, alongside mathematics and literacy is a subject they must go on and study at secondary school to at least GCSE level we must ensure that they have a good understanding of the subject and its different disciplines.

With this in mind, we have categorized our science topics explicitly into Biology, Chemistry and Physics. In Year 1 pupils have a learning journal for all topics as they are very interlinked and the approach is cross curricular. In Year 2 pupils have a separate science book to their curriculum book. Taking this even further, the pupils in Key Stage 2 have separate books for each of these disciplines to help them identify which area of science they are studying. Having separate books in key stage 2 also allows us to pass them up through the year groups so that we have a continued record of the children's progress and to allow for reference to prior learning. Our pupils need regular signposting to prior learning in order to remind them of what they have learned and help them to retain the information they have learned. We are very much aware that for many of our pupils, school is the only time they ever discuss the phenomenon of the world around them and have opportunities to explore and explain their findings.

Our science curriculum is planned to allow for spiraled learning of topics, with repetition every couple of years to help develop the in-depth knowledge and understanding required. In addition to this, the books can also be used to assist in end of key stage assessment. We record pupil assessment on Educater which allows us to record assessment for each child against the key objectives for each topic. This way we can build a robust idea of the pupils learning and identify any areas of weakness in the curriculum that can be addressed. To aid the use of this assessment platform, we have built assessment for learning in to the teaching sequence to allow for a wide variety of assessment opportunities throughout a unit of work. Each topic has a start point to assess the knowledge pupils have already, a mid-point review to check on learning and an end point assessment. This is to ensure that teachers are providing many varied and active opportunities for the children to show their knowledge and learning in a wide variety of ways and not just an end of topic written test on which historically, our pupils have not fared well. The Early Years Foundation Stage (EYFS) follows the 'Development Matters in the EYFS' guidance which aims for all children in reception to have an 'Understanding of the World; people and communities, the world and technology' by the end of the academic year.

<p>Year Group</p>	<p align="center">What we teach and why Highlight repeats / skills building up</p>			<p>Adaptations and experiences that are specifically chosen for our community and make links to the wider world. What do we hang the learning on to make it exciting?</p> <p>Include a variety of: charity work, cultural links, career opportunities, house competitions, trips, cross curricular links, intervention work, displays, focus on local area, link with external agencies, visitors, themed days etc..</p>
	<p align="center">Autumn</p>	<p align="center">Spring</p>	<p align="center">Summer</p>	
<p>Nursery</p>	<p>Topic Title Aut 1- All About Me Aut 2- Nursery Rhymes and Celebrations</p> <p>Links to DM Birth to Three Repeat actions that have an effect. Explore materials with different properties. Explore natural materials, indoors and outside. Explore and respond to different natural phenomena in their setting and on trips.</p> <p>Three and Four Year Olds Use all their senses in hand-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary. Explore how things work. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things.</p> <p>Key Knowledge & Vocabulary</p>	<p>Topic Title Spr 1- People Who Help Us Spr 2- Patterns</p> <p>Links to DM Three and Four Year Olds Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary. Explore how things work. Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things.</p> <p>Key Knowledge & Vocabulary Wet and dry, hot and cold, opposites, frozen, melting, solid, liquid, winter time, fast, slow, heavy, light</p> <p>Sequence of Lessons Children talk about how to keep their teeth clean and find out about dentists.</p>	<p>Topic Title Sum 1- Bears Sum 2- Seaside</p> <p>Links to DM Three and Four Year Olds Use all their senses in hand-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary. Explore how things work. Plant seeds and care for growing plants. Begin to understand the need to respect and care for the natural environment and all living things. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice.</p> <p>Key Knowledge & Vocabulary Consolidation of opposites, grass, mud, water, moon, flying, high, low, up, down, thick, runny, melting, frozen, wet, dry, cold, hot.</p>	<p>A daily part of registration is talking about the day, week, and month of the year. We also discuss the weather and the season. We talk about the changes outdoors and notice differences to the leaves in the trees and talk about the colours. We also talk about how warm/cold it is in relation to the seasons.</p> <p>Throughout the year the children have free access during child-led learning to the outdoor area and investigation table. There are a variety of resources for the children to explore and learn about the basic properties of objects, materials and living things. Children have open access to the EYFS garden and help to plant and observe vegetables and plants. They get to experience the garden in all weathers and seasons and can see the effect frost, rain, sun has on the things that grow.</p>

	<p>Eyes, nose, mouth, ears, cheek, chin, head, shoulders, knees, toes, arms, elbows, legs, fingers, ankles, hair</p> <p>Autumn, change, leaves, red, orange, yellow, wind, falling, hot, cold, harvest, trees, plants, conkers, pine cones, hard, soft.</p> <p><u>Sequence of Lessons</u></p> <p>Children explore cause and effect with items in Nursery such as ramps, tubes, blocks and sliding toys.</p> <p>Children name the parts of the body including features of the face and talk about what we use each body part for.</p> <p>Children explore ways of moving using their bodies and talk about how it makes them feel.</p> <p>Children talk about what their different body parts do in reference to senses- what do we hear with, what do we see with?</p> <p>Children mould with different materials.</p> <p>Children explore different materials when making items in junk modelling and have support to talk about their properties.</p>	<p>Children talk about doctors and how to keep our bodies healthy.</p> <p>Children learn about vets and how to look after living things.</p> <p>Children explore melting and freezing when observing what happens to winter ice cubes in the frozen scene.</p> <p>Children explore patterns in the world around us, looking at patterns in nature.</p> <p>Children explore life cycles of plants and animals, talking about changes they observe.</p> <p>Children grow a plant from a seed.</p>	<p><u>Sequence of Lessons</u></p> <p>Children explore textures they encounter when going on a bear hunt.</p> <p>Children explore different textures and consistencies of porridge for Bears by adding different ingredients.</p> <p>Children make and talk about bear habitats for different species of bears.</p> <p>Children make a hat for a teddy to keep him dry, exploring what materials keep a teddy dry and discussing which materials are best from their observations.</p> <p>Children make and taste holiday foods.</p> <p>Children make lollies and explore melting.</p>	<p>The children have access to a variety of different mediums- such as- cornflour (Oobleck), shaving foam, jelly, paint, mud, etc. They discuss how they feel and their consistency and how they can change.</p> <p>During the Spring term the animal lady visits to show us some animals from around the world and what they eat, how they move and the sounds they make.</p> <p>The children will explore life cycles in the Spring term when we talk about seasonal changes for animals, using stories to support this, and also plant a seed and observe what happens to it as it grows.</p> <p><u>WORKING SCIENTIFICALLY</u></p> <p>Plan To ask simple questions and recognise that they can be answered in different ways</p> <p>Do To observe closely, using simple equipment</p> <p>To perform simple tests</p> <p>To identify and classify</p> <p>Review To use their observations and ideas to suggest answers to questions</p>
<p>Reception</p>	<p><u>Topic Title</u> Aut 1- Local Environment Aut 2- Up in the Air</p>	<p><u>Topic Title</u> Spr 1- Changes Spr 2- Tea Party</p>	<p><u>Topic Title</u> Sum 1- Water and Under the Sea Sum 2- Cooking and Growing</p>	<p>A daily part of registration is talking about the day, week, and month of the year. We also discuss the weather and the season.</p>

<p>Links to DM Children in Reception</p> <ul style="list-style-type: none"> - Explore the natural world around them. - Describe what they see, hear and feel whilst outside. - Understand the effect of changing seasons on the natural world around them. - Explore and talk about different forces they can feel (N) <p>Key Knowledge & Vocabulary Autumn, change, leaves, space, planets, moon, harvest, trees, plants, conkers, pine cones, hibernation</p> <p>Sequence of Lessons The children will go on an Autumn walk and talk about the changes that are occurring to most of the trees and how some are staying the same. To observe closely, using simple equipment The children make hedgehog habitats after learning about hibernation. They will learn about Harvest and then make bread, discussing the changes that occur when it is cooked. To observe closely, using simple equipment When we read the story- Whatever Next we looked at the moon and the different planets and how they are different. We will explore gravity and humans in space.</p> <p>How does this link build on previous learning? Use all their senses in hands-on exploration of natural materials. (Nursery - Materials, including changing materials)</p> <p>Explore collections of materials with similar and/or different properties. (Nursery - Materials, including changing materials)</p> <p>Talk about the differences between materials and changes they notice. (Nursery - Materials, including changing materials)</p>	<p>Links to DM and ELG Children in Reception</p> <ul style="list-style-type: none"> - Understand the effect of changing seasons on the natural world around them. <p>ELG</p> <ul style="list-style-type: none"> - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. - Explore the natural world around them, making observations and drawing pictures of animals and plants; <p>Key Knowledge & Vocabulary Changes, states of matter, predict, solid, liquid, ice, grow, plants, seasons, reversible, irreversible, seeds, root, stem, leaves, flower, lifecycle</p> <p>Sequence of Lessons We explore how water can change. We, as a class, think decide where the ice can go and predict what we think will happen to it. To perform simple tests. To use their observations and ideas to suggest answers to questions. We plant seeds and discuss how they have changed and what plants need to be able to grow. To observe closely, using simple equipment and to identify and classify. We look at the lifecycle of a frog through the story- Growing Frogs. To identify and classify. We discuss Spring and how the trees are changing again, comparing them to how they were in both winter and autumn. To observe closely, using simple equipment) We then go on to look at baby animals and their parents and human lifecycles/how they have changed since they were babies. To ask simple questions and recognise that they can be answered in different ways.</p> <p>How does this link build on previous learning?</p>	<p>Links to ELG</p> <ul style="list-style-type: none"> - Explore the natural world around them, making observations and drawing pictures of animals and plants; - Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class; - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. <p>Key Knowledge & Vocabulary Creatures, shark, dolphin, crab, lobster, habitat, ocean, water, similarities and differences, recycling, predict, investigate, experiment, stem, flower, root, leaf, floating, sinking, vegetables</p> <p>Sequence of Lessons Throughout the topic the children learn about different sea creatures/animals and where they live. To ask simple questions and recognise that they can be answered in different ways We discuss how we can save water and learn about recycling/protecting the planet. We do a milk and skittle experiment and discuss the changes that are occurring. To ask simple questions and recognise that they can be answered in different ways. During cooking and growing we grow different fruits and vegetables in the garden. We discuss how they are changing and all help to water and look after them. We talk about the parts of the plant and what they are for. To identify and classify We learn about floating and sinking and perform a simple experiment, predicting what will float or sink. To perform simple tests.</p> <p>How does this link build on previous learning?</p>	<p>We talk about the changes outside and notice differences to the leaves in the trees and talk about the colours. We also talk about how warm/cold it is in relation to the seasons.</p> <p>Throughout the year the children have free access during child-led learning to the outdoor area and investigation table. There are a variety of resources for the children to explore and learn about the basic properties of objects, materials and living things. Children have open access to the EYFS garden and help to plant and observe vegetables and plants. They get to experience the garden in all weathers and seasons and can see the effect frost, rain, sun has on the things that grow.</p> <p>The children have access to a variety of different mediums- such as- cornflour (Oobleck), shaving foam, jelly, paint, mud, etc. They discuss how they feel and their consistency and how they can change.</p> <p>During the Spring term the animal lady visits to show us some animals from around the world and what they eat, how they move and the sounds they make.</p> <p>Trip to a fruit and vegetable farm to see them growing and pick some.</p> <p>During the summer term there is an INSPIRE workshop with the parents to plant their own plants to take home and help to grow.</p> <p>WORKING SCIENTIFICALLY</p>
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