

Common Road Infant and Nursery School

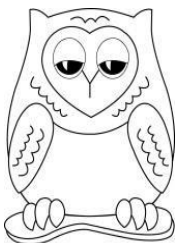
Our Science Curriculum

Our Science curriculum is guided by the National Curriculum (2014) for KS1 Science, and the statutory early years foundation stage and development matters frameworks. Pupils will be taught about:

- Plants
- Animals including humans
- Everyday materials/ Uses of everyday materials
- Living things and their habitats
- Seasonal changes

Intent

Our intent is that Science teaching will help our young children to understand, explain, observe and question the world around them. We teach carefully sequenced, progressive lessons which focus on accurate vocabulary choices and scientific investigation. It is essential that our children have a wide, rich vocabulary in order to explain what they see in the world around them. We aim to provide a hands-on science curriculum which allows children to question and explore through practical experiences. We 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.



Key knowledge/skills overview – Early years

At Common Road Infant School, the children in EYFS experience a rich and interwoven early years curriculum, in which many subject areas overlap during a topic or theme. The following statements, taken from the Statutory Framework and Development Matters, show the key science focus outcomes for EYFS.

Science		
Three and Four-Year-Olds	Communication and Language	<ul style="list-style-type: none"> Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"
	Personal, Social and Emotional Development	<ul style="list-style-type: none"> Make healthy choices about food, drink, activity and toothbrushing.
	Understanding the World	<ul style="list-style-type: none"> Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary. Begin to make sense of their own life-story and family's history. 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. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice.
Reception	Communication and Language	<ul style="list-style-type: none"> Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use new vocabulary in different contexts.

Reception Continued	Personal, Social and Emotional Development		<ul style="list-style-type: none"> • Know and talk about the different factors that support their overall health and wellbeing: <ul style="list-style-type: none"> - regular physical activity - healthy eating - toothbrushing - sensible amounts of 'screen time' - having a good sleep routine - being a safe pedestrian
	Understanding the World		<ul style="list-style-type: none"> • Explore the natural world around them. • Describe what they see, hear and feel while they are outside. • Recognise some environments that are different to the one in which they live. • Understand the effect of changing seasons on the natural world around them.
ELG	Communication and Language	Listening, Attention and Understanding	<ul style="list-style-type: none"> • Make comments about what they have heard and ask questions to clarify their understanding.
	Personal, Social and Emotional Development	Managing Self	<ul style="list-style-type: none"> • Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.
	Understanding the World	The Natural World	<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.

Children in EYFS will learn about some core scientific ideas through many topics throughout the year, including:

- Materials: Children will continuously collect, observe, sort and discuss a range of materials including natural and man-made. Much of this will be through the outdoor environment.
- Habitats / contrasting environments: Children will explore, observe and contrast a range of environments including their own locality. E.g. Learning about forests / woodland in the Traditional Tales topic, and the school grounds in the Marvellous Me topic.

Exploration, observation and discussion of the world around them is central to the EYFS curriculum at Common Road, and our core science topics are continually interwoven throughout the year.

COMMON ROAD INFANT SCHOOL SCIENCE COVERAGE

Early Years					
<i>Marvellous Me</i>	Transport	Spring 1 and 2 People Who Help Us	Summer 1 Traditional Tales	Summer 2 Growing	
<i>Humans (ourselves)</i> <hr/>		Changing states of matter – melting ice <hr/>		Plants and Animals <hr/>	
Seasonal changes - Autumn	Seasonal changes - Autumn	Seasonal changes – Winter / Spring	Seasonal changes - Spring	Seasonal changes - Summer	
Year 1					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Everyday materials <hr/>	Everyday materials	Humans (from the animals including humans unit) <hr/>	Plants <hr/>	Animals (from the animals including humans unit) <hr/>	Animals (from the animals including humans unit) <hr/>
Seasonal changes – Autumn		Seasonal changes – Winter	Seasonal changes – Spring	If possible, continue looking at plants planted in Spring 2.	Seasonal changes – Summer
Year 2					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Uses of everyday materials (Classifying and grouping materials)	Uses of everyday materials (Changing materials)	Living things and their habitats	Animals including humans (food chains and life cycles)	Plants	Humans – focus on sport and exercise linked to sports day <hr/>
					Continue to observe plants

Progression Overview – Key knowledge and skills in scientific enquiry

Black statements taken from the National Curriculum / Statutory Framework

Green statements are key knowledge and skills to meet these objectives

Plants		
EYFS	Year 1	Year 2
<ul style="list-style-type: none"> Explore the natural world around them – making observations and drawing pictures of animals and plants. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. Children plant seeds and observe over time (linked to Jack and the Beanstalk). Plants sunflowers and vegetables Talk about what plants need (soil, water, sunlight) and try to make sure the plants have these things. Lots of opportunities to plant and observe plant growth. Observational drawing – plants and flowers. Changes in plants growing throughout the seasons. Through observation and discussion, use some simple names for parts of plants (see below). <p>Key Vocabulary: Plant, seeds, roots, soil, sunlight, growing, petals, leaves, stem, water, food</p>	<ul style="list-style-type: none"> Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees Identify the basic structure of a variety of common flowering plants, including trees Observe and describe how seeds and bulbs grow into mature plants I can name common plants – tulip, daisy, dandelion, rose, buttercup. I can name common trees – oak, sycamore, ash, elm, birch, holly I know that plants can grow from seeds or bulbs. Name and label the parts of a plant – petal, stem, leaf, bulb / seed, flower and roots. I know that some plants are flowering plants and some are not. I know that weeds are wild plants that grow in places people don't want them to. Name and label the trunk, branches, roots and leaves of a tree. I know that some trees keep their leaves all year round. These trees are called evergreen. Other trees lose their leaves in the autumn. These are called deciduous. <p>Key Vocabulary: seed (s), petal (s), stem, leaf/leaves, bulb, flower (s), fruit, roots, trunk, branches, deciduous, evergreen, weed, wild plants, garden plants</p> <p>Significant Person: Joseph Banks – English botanist who travelled the world observing and documenting new types of plants.</p>	<ul style="list-style-type: none"> Observe and describe how seeds and bulbs grow into mature plants Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy Identify and <u>describe</u> the basic structure of a variety of common flowering plants I can label and describe the life cycle of a flowering plant. I know that plants grow from seeds or bulbs. I can explain germination. I know that the stem carries water and nutrients around the plant. I know that the leaves help to make food for the plant. I know that the roots collect water and nutrients from the soil. I know that flowers have petals that are usually brightly coloured to attract wildlife. I know that flowers make more seeds to enable more to grow. I can talk about what happens to the seeds made by a flower. I know that plants need air, water, nutrients and sunlight to grow and can talk about what might happen if they didn't get these things. I know that flowering plants do not flower all year round. I know that we can eat many plants, and can name some (through DT). <p>Key Vocabulary: Seed (s), petal (s), stem, leaf/leaves, bulb, flower, fruit, roots, trunk, branches, water, light, temperature, life cycle, reproduction, germination, nutrients</p> <p>Significant Person: Jane Colden – The first woman in America to be described as a botanist.</p>
Investigation		
<p>See above (focus on observing the world around them)</p> <p>Observing closely Observations over time Asking and answering simple questions</p>	<ul style="list-style-type: none"> Observing closely, using simple equipment Identifying and classifying, comparing and contrasting Gathering and recording data to help in answering questions Draw diagrams <i>Observation over time</i> – Planting different varieties, looking after them and keeping records of growth through pictures and notes AND how do trees change through the seasons? <i>Identifying and classifying</i> – Plants in different environments. Naming, grouping and sorting plants, trees and types of leaves. 	<ul style="list-style-type: none"> Asking simple questions and recognising that they can be answered in different ways Observing closely, using simple equipment Performing simple tests Using their observations and ideas to suggest answers to questions Gathering and recording data to help in answering questions <i>Observation over time</i> – Planting different varieties, looking after them and keeping records of growth through pictures and notes. Making conclusions about plant growth differences linked to amounts of sunlight and water. <i>Fair testing</i> – The effects of light on plant growth. <i>Research</i> – How does a cactus survive in the desert?

Animals, including humans

EYFS	Year 1	Year 2
<p>Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.</p> <p><i>In Jigsaw lessons, children explore healthy eating, exercise and good hygiene. Children are encouraged and supported in developing independence e.g. in maintaining good hygiene each day. Children will learn about parts of the body, including head, shoulders, knees, toes, eyes, ears, mouth, nose, hands, legs, arms</i></p> <p>Key Vocabulary: head, shoulders, knees, toes, eyes, ears, mouth, nose, hands, legs, arms, body</p>	<ul style="list-style-type: none"> • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • Notice that animals, including humans, have offspring which grow into adults • Identify and name a variety of common animals that are carnivores, herbivores and omnivores • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense • <i>I can identify the five senses and the associated body part.</i> • <i>I can name and locate my head, shoulders, neck, arms, legs, knees, feet, hands, ankles, elbows, waist and hips.</i> • <i>I can describe some simple features of animals e.g. birds have wings, fish have fins and gills.</i> • <i>I can match animals with their offspring.</i> • <i>I know that a herbivore only eats plants, a carnivore only eats animals and an omnivore eats both plants and animals.</i> • <i>I know that most humans are omnivores.</i> • <i>I understand the terms vertebrate and invertebrate, and can identify animals of each group.</i> <p>Key Vocabulary: Humans– head, neck, arms, legs, knees, elbows. Senses – sight, touch, smell, taste, hearing Animals – fish amphibians, reptiles, birds and mammals Features—Trunk, gills, wings, paws, claws, fangs, fur, tail, fins, shell (etc) Offspring Diet - carnivore, herbivore, omnivore, meat (animals) Significant Person (animals): David Attenborough</p>	<ul style="list-style-type: none"> • Notice that animals, including humans, have offspring which grow into adults • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene • Explore and compare the differences between things that are living, dead, and things that have never been alive • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) • <i>I can talk about how I know if something is alive, dead or non-living.</i> • <i>I can put together and explain a simple food chain using the words predator and prey.</i> • <i>I can talk about the human life cycle, including the words baby, child, teenager, adult and elderly.</i> • <i>I can talk about how we change as we grow.</i> • <i>I can put together, label and describe the life cycle of a butterfly.</i> • <i>I can classify animals into those that are fish, reptiles, mammals, birds and amphibians, and can explain how I know.</i> • <i>I know that humans need water, food and air to survive. They also need shelter, a good diet, exercise and good hygiene to stay healthy.</i> • <i>I can talk about why exercise is important and what it does to our bodies</i> • <i>I can explain why a balanced diet is important.</i> • <i>I can name healthy and unhealthy foods.</i> • <i>I understand what good hygiene means, and can talk about hand washing, taking bath or showers, brushing my teeth, wearing clean clothes and protecting others from my coughs and sneezes.</i> <p>Key Vocabulary: Offspring, life cycle, egg, caterpillar, chrysalis, butterfly, metamorphosis, fish, amphibians, reptiles, birds, mammals, hygiene, exercise, diet, health</p> <p>Significant Person (humans): Joseph Lister – British doctor who believed that germs from dirty hands caused infections in patients in hospital.</p>

Investigation

<p>Identifying – linked to parts of the body</p>	<ul style="list-style-type: none"> • Observe/ compare/ contrast • Identifying and classifying • <i>Identifying and classifying - Grouping animals into appropriate categories based on diet.</i> 	<ul style="list-style-type: none"> • 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 • <i>Fair testing – Investigating the effects of good / poor hygiene (hand washing).</i> • <i>Observations over time – Observing the life cycle of a butterfly</i> • <i>Identifying and classifying – Alive / dead / non-living, grouping animals according to type</i>
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Living Things and Their Habitats

EYFS	Year 1	Year 2
<p>**Contrasting environments** 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.</p> <p>Looking at a range of habitats / environments through the 'Traditional Tales' topic. Visit to the farm in the summer term. Discussion about differences between places in books and their local area. Discussions about visits they may have been e.g. seaside etc (visits in the school holidays)</p> <p>Key Vocabulary: Farm, forest, woods, seaside, beach</p>	<p style="text-align: center;">–</p>	<ul style="list-style-type: none"> • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • Identify and name a variety of plants and animals in their habitats, including microhabitats • I know that a habitat is a place where a plant or animal lives. • I know that a habitat provides plants / animals with food, water and shelter. • I can identify different types of habitat around the world – desert, polar, woodland, ocean, rainforest. • I can explain how animals have adapted to suit their environments. • I know that a microhabitat is a small habitat within a larger habitat. • I can identify microhabitats within the school grounds. • I know that because resources like water and food may be limited, plants and animals often compete with each other for food and water. <p>Key Vocabulary: Living, dead, non-living, habitat, micro-habitat, food chain, predator, prey, survival, adaptations, seashore, desert, polar, woodland, ocean, rainforest</p> <p>Significant Person: Charles Darwin – Evolution (animals best suited to their environments are most likely to survive).</p>
<h3>Investigation</h3>		
<p>See above (focus on observing the world around them)</p> <p>Observing closely Asking and answering simple questions</p>		<ul style="list-style-type: none"> • Gathering and recording data to help in answering questions • <i>Research – Researching different habitats around the world</i> • <i>Record through drawing a simple food chain</i> • <i>Sorting and classifying things that are alive, dead, were never alive</i>

Materials

EYFS	Year 1	Year 2
<ul style="list-style-type: none"> • Explore the natural world around them – making observations and drawing pictures • Explore collections of materials with similar and / or different properties. (Development Matters) • <i>Make collections of natural materials to investigate and talk about (linked to seasons / when storytelling in nursery / objects found in the local area).</i> • <i>Encourage children to talk about what they see / use their senses.</i> • <i>Use magnifying glasses to observe closely.</i> <p>Key Vocabulary (reception): Material, wood, metal, plastic, glass, paper</p>	<ul style="list-style-type: none"> • Distinguish between an object and the material from which it is made • Identify and name a variety of everyday materials • Describe the simple physical properties of a variety of everyday materials • Compare and group together a variety of everyday materials on the basis of their simple physical properties • <i>I can talk about which material(s) common objects are made from.</i> • <i>I can identify materials – wood, glass, plastic, metal, fabric, brick, paper.</i> • <i>I know that objects can be made from more than one material.</i> • <i>I can describe some materials using my senses.</i> • <i>I can identify some simple properties – hard, rough, smooth, soft, stretchy, shiny, dull, strong, flexible.</i> <p>Key Vocabulary: Materials – wood, metal, plastic, glass, water, rock, fabric Properties – hard, soft, smooth, rough, shiny, dull, stretchy, stiff object, material, property, flexible</p> <p>Significant Person: Leo Baekeland – invented Bakelite (the first fully synthetic plastic)</p>	<ul style="list-style-type: none"> • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching • <i>I know that some materials can be changed by physical force (twisting, bending, stretching and squashing).</i> • <i>I know that materials can be used for more than one thing e.g. metal can be used for coins, cars, table legs. I can begin to suggest why.</i> • <i>I know that different materials can be used for the same thing. E.g. a wooden spoon, a plastic spoon. I can suggest when a particular type is the most suitable.</i> • <i>I can describe properties of materials - hard, soft, stretchy, strong, flexible, transparent, translucent, opaque, waterproof, absorbent.</i> • <i>I can suggest why different materials have different uses, based on their properties.</i> <p>Key Vocabulary: Materials – wood, metal, plastic, glass, water, rock, fabric Properties – hard, soft, smooth, rough, shiny, dull, stretchy, stiff object, material, property, bendy, not bendy, waterproof, not waterproof, absorbent, not absorbent, opaque, transparent Object, material, property, suitable</p> <p>Significant Person: Charles Macintosh – invented waterproof fabric</p>

Investigation

<p>See above (focus on observing the world around them)</p> <p>Observing closely Asking and answering simple questions</p>	<ul style="list-style-type: none"> • 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 • <i>Identifying and classifying – Sorting objects in the classroom into groups according to materials they are made from.</i> • <i>Fair testing – What is the strongest material to use to make a bridge over a moat?</i> • <i>Fair testing – Which materials are the most flexible?</i> 	<ul style="list-style-type: none"> • 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 • <i>Identifying and classifying – Sorting materials according to their properties.</i> • <i>Fair testing – Investigating the best materials to use for different purposes (material for a coal cart / the best material to soak up liquid).</i>
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Seasons

EYFS	Year 1	Year 2
<ul style="list-style-type: none"> • Explore the natural world around them – making observations and drawing pictures of animals and plants. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. • Use talking tubs with items linked to the seasons. • Read non-fiction texts / stories linked to the seasons. • Seasons walks. • Observational drawing – inside and out. • Talk about the weather. • Take and describe what they can see in photographs and the outdoor environment. • Collect items to use / display in the classroom. • Look at and discuss different clothing appropriate for each season. • Nursery – Children to observe a tree throughout the year – how do the leaves change? <p>Key Vocabulary: Season, autumn, spring, summer, winter, weather, windy, rain, sunny, cloudy, snow, hot, cold</p>	<ul style="list-style-type: none"> • Observe changes across the 4 seasons • Observe and describe weather associated with the seasons and how day length varies • I can explain some of the characteristics of the four seasons – weather, daylight, plant life, animals. • I know that the weather can change from day to day and hour to hour. • I know that there are typical types of weather patterns for the four seasons. • I can talk about the temperature and weather outside today. • I know that the amount of daylight changes with the seasons. <p>Key Vocabulary: autumn, winter, spring, summer, weather, rain, drizzle, hail, snow, sunny, windy, cloudy, stormy, cold, warm, hot, dry, wet, season</p>	<p>**Seasons revisited in Geography – linked to climate and weather patterns around the world.</p>

Investigation

<p>See above (focus on observing the world around them)</p> <p>Observing closely Observations over time Asking and answering simple questions</p>	<ul style="list-style-type: none"> • Observing closely, using simple equipment • Using their observations and ideas to suggest answers to questions • Gathering and recording data to help in answering questions • <i>Pattern seeking</i> – Looking at similarities between seasons. • <i>Observations over time</i> – Seasons walks, observe the weather and environment throughout the half term AND how does a tree change over a year? <i>Observe differences in temperature throughout the seasons by recording data as a class.</i> 	
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