



Science

Reviewed July 2022

The Science Curriculum at Horndale begins in the EYFS where science is taught by children learning about the world around them in their play. The focus in EYFS is about developing scientific language from an early age with an aim that children can use this scientific language confidently and accurately. They will also have opportunities to investigate independently and as part of adult focussed activities. These investigations will be designed to develop enquiry skills and spark children's interests and to develop their curiosity and to ask questions. As pupils progress into Key Stage 1 more structured Science lessons allow pupils to explore and discover the science in the world around them as they are provided with the opportunities to develop their curiosity and to ask questions fully preparing them for Science in Key Stage 2. We believe we are not just teaching science, but teaching the children how to be scientists, and equipping them with the skills needed to work scientifically to a high standard.

Nursery

Key Knowledge & Skills	Vocab	Opportunities and Experiences	Development Matters /ELG Links
<p>Explore the natural environment.</p> <p>To talk about growth, change and decay with natural materials, eg. plants, fruits.</p> <p>To name and recognise familiar animals.</p> <p>Explore forces that they can feel.</p> <p>To know that some materials change when you heat or cool them.</p> <p>To investigate light and shadows.</p> <p>To identify different types of weather within the different seasons.</p>	<p>Magnifying glasses Bark, leaves, seeds, shell, rocks, pebbles,</p> <p>Rough, smooth, hard, soft</p> <p>Animal names.</p> <p>Grow, change, decay, natural, Egg, caterpillar, cocoon, butterfly</p> <p>Push, pull, float, sink, attract, repel, stretch, snap, bend</p> <p>Melt, heat, cool, cook, freeze</p> <p>Light, shadow</p> <p>Sunny, cloudy, windy, raining, snowing</p>	<p>Encourage children to explore the outdoor environment in Nursery. Collect natural materials to investigate and talk about. eg, leaves, seeds, shells, pebbles.</p> <p>Plant seeds and bulbs for children to observe. Caring for animals eg. Butterfly life cycle Observe an apple core going brown and mouldy over time.</p> <p>Play with and talk about different animals and minibeasts.</p> <p>Play with boats in the water (floating and sinking) Play with magnets (attraction & repulsion) Look at different materials, eg, elastic, twigs, metal rods (stretch, snap, bend)</p> <p>A range of cooking activities, combining different ingredients, then cooling or heating them eg, jelly, ice lollies, cakes, biscuits Melting eg, ice cubes in the sun, what happens when you shake salt onto them.</p> <p>Explore how you can shine light through some materials, but not others and investigate shadows.</p> <p>Daily discussion about the weather.</p>	<p>Use all their senses in hands-on exploration of natural materials.</p> <p>Explore collections of materials with similar and or different properties.</p> <p>Talk about what they see using a wide vocabulary.</p> <p>Plant seeds and care for growing plants.</p> <p>Understand the key features of the life cycle of a plant and animal.</p> <p>Begin to understand the need to respect and care for the natural environment and all living things.</p> <p>Explore and talk about different forces they can feel.</p> <p>Talk about the differences between materials and changes they notice.</p> <p>Explore how things work.</p>



	Spring, Summer, Autumn, Winter	Curriculum enrichment: Walks in the local area to observe changes within each season. Butterflies Trip to sealife centre	
Reception			
Key Knowledge & Skills	Vocab	Opportunities and experience	Development Matters /ELG Links
<p>Use their senses to explore the natural world and the world around them.</p> <p>Know which parts of the body are responsible for their senses.</p> <p>To know names of body parts.</p> <p>Talk about how we care for the natural world around us.</p> <p>Observe and describe animals and plants, spring flowers, chicks etc.</p> <p>Observe natural processes.</p> <p>To take risks.</p> <p>Name and describe some plants and animals they are likely to see.</p> <p>To know that the weather changes according to the season.</p>	<p>Build on Nursery vocabulary.</p> <p>Touch, see, smell, taste, hear</p> <p>Ears, nose, tongue, skin, eyes</p> <p>Body parts</p> <p>Petals, stem, leaves, roots</p> <p>Feather, beak, wings, legs, egg,</p> <p>Vibrate, transparent, opaque, waterproof, magnetic,</p> <p>Sky, foggy, frost, storm, thunder, lightning, weather vane, rain collector</p>	<p>Encourage children to play and explore in the outdoor area within the school grounds.</p> <p>To go for a walk and talk about things around the school grounds and the local area (plants, animals)</p> <p>Go on a sensory walk, e.g. what sounds can you hear in school, tasting different foods, smelling different things, touching different textures, light box, colour exploration</p> <p>Sing songs about the world.</p> <p>Collect and draw pictures of animals and plants, spring flowers, chicks etc.</p> <p>Investigate and observe, ice melting, sound causing vibration, light travelling through transparent material, shadows, magnets, floating and sinking, waterproof.</p> <p>Take supported risks appropriate to themselves and their environment.</p> <p>Talk about the weather and how it changes daily using simple weather symbols.</p> <p>Talk about what happens in different seasons.</p> <p>Curriculum enrichment: Walks in the local area to observe changes within each season. Trip to Hardwick Park Living eggs Hall hill farm</p>	<p>Explore the natural world around them.</p> <p>Describe what they see, hear and feel whilst outside.</p> <p>Understand the effect of changing seasons on the natural world around them.</p> <p>ELG: The Natural World Children at the expected level of development will:</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.
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Year One

Topic/Unit of Work	Key Vocabulary	Key Knowledge/ Skills
<p>Autumn Term 1: My Body</p> <p>Builds On: EYFS- use their senses to explore the natural world around them Prepares for: Y2- Growth and Survival and knowing what living things need to survive</p> <p>Key Questions: 1. What are the names of our body parts? 2. What can our bodies do and what are our senses? 3. How do we see? 4. How do we hear sounds? 5. How do we taste? 6. How do we smell? 7. How do we feel? 8. How do our senses help us to explore the world around us? 9. Who was Helen Keller?</p> <p>Famous Scientist Link: Linda Buck (discovered how our sense of smell works)</p>	<p>Our bodies- eyes, ears, nose, mouth, arms, legs, head, hands, feet, fingers, toes, etc</p> <p>Sight- eye, iris, eyelid, eyelash, pupil, vision, glasses, telescope, microscope, blindness.</p> <p>Hearing- ears, eardrum, deaf, hearing aid, vibration, sound wave, speaker, microphone.</p> <p>Touch- skin, sense receptors, temperature, pressure, pain.</p> <p>Taste- tongue, tastebuds, sweet, salty, savoury, sour, bitter</p> <p>Smell- nose, nostrils, scent, mucus (snot)</p>	<p>NC Objective/s:</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 - identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense
<p>Autumn Term 2: Identifying Animals</p> <p>Builds On: EYFS- Observing and describing animals Prepares for: Y2 Living in Habitats and knowing why different animals are suited to different habitats</p> <p>Key Questions:</p>	<p>Animal, mammal, backbone, warm blooded, bird, reptile, fish, amphibian, carnivore, herbivore, omnivore</p>	<p>NC Objective/s:</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 - identifying and classifying - identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals



<p>1. How are animals different? 2. What is a mammal? 3. How can we compare birds and reptiles? 4. How can we compare fish and amphibians? 5. What makes an animal a carnivore, herbivore or an omnivore? 6. Who is Sir David Attenborough? 7. What have we learned about different animals?</p> <p>Famous Scientist Link: David Attenborough (Animal conservationist)</p>		<ul style="list-style-type: none"> - identify and name a variety of common animals that are carnivores, herbivores and omnivores - describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)
<p>Spring Term: Everyday materials Builds On: EYFS- Investigating and observing ice melting, floating and sinking, waterproof etc Prepares for: Y2 Everyday Materials- Changing Materials and natural and man made</p> <p>Key Questions: 1. What are the names of common materials? 3. What are the properties of this material? 4. What are the similarities and differences between different materials? 5. Why is it important to recycle? (Scientist Link Rachel Carson- Marine Pollution)</p>	<p>Wood, plastic, metal, glass, stone, fabric, material, object, properties,</p>	<p>NC Objective/s:</p> <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 - distinguish between an object and the material from which it is made - identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock - 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
<p>Summer Term: Identifying Plants Builds On: EYFS- Describing Plants and the Natural world around them Prepares for: Y2- Growing Plants and life cycle of a plant Key Questions</p> <p>1. What plants grow in my school? 2. What plants can I find in different places? 3. What trees are there? (walk) 4. What is a plant made up of? 5. Who was Alexander von Humboldt?</p> <p>Famous Scientist Link: Charles Darwin</p>	<p>Water, air, sunlight, seed, flower, wild flower, garden, tree, deciduous, evergreen, leaves, roots, petal, flower, stem, trunk, branches,</p>	<p>NC Objective/s:</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 - identifying and classifying - using their observations and ideas to suggest answers to questions - gathering and recording data to help in answering questions - identify and name a variety of common wild and garden plants, including deciduous and evergreen trees - identify and describe the basic structure of a variety of common flowering plants, including trees



<p>Across the year: Seasonal Changes</p> <p>Builds On: EYFS- Changes in the natural world around them</p> <p>Prepares for: Living in Habitats- knowing environmental factors that make an animal suited for their habitat</p> <p>Key Questions:</p> <p>Recap prior learning from EYFS and move on:</p> <p>AUTUMN SPRING SUMMER WINTER</p> <p>*Taught across the year throughout a range of different subjects. English links where children will look at and create their own pieces of Non-Fiction writing throughout the year around the different seasons.</p> <ol style="list-style-type: none"> 1. What are the different seasons and how are they different? 2. What is the weather like in each season? (Use a weather station/thermometer) 3. What happens during Autumn? 4. What happens during Winter? 5. What happens during Spring? 6. What happens during Summer? <p>Famous Scientist Link: Dr Steve Lyons (Extreme weather) Christopher Wren (Inventor of the rain Gauge)</p>	<p>Weather, sun, cloud, rain, snow, winter, spring, summer, autumn, temperature, season, hibernate, adapt,</p>	<p>NC Objective/s:</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 - gathering and recording data to help in answering questions - observe changes across the four seasons - observe and describe weather associated with the seasons and how day length varies
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Year Two		
Topic/Unit of Work	Key Vocabulary	Key Knowledge/ Skills
<p>Autumn Term 1: Exploring Everyday Materials</p> <p>Builds On: Y1- Naming common materials and what they are used for</p> <p>Prepares for: Y3- Rocks</p> <p>Key Questions:</p> <ol style="list-style-type: none"> 1. Why have I sorted this material into different criteria? 2. What is the difference between natural and manmade materials? 3. What different ways can some materials change shape? 4. What do I use this material for? 5. Which material is most suitable? 6. What would this material be suitable for?- Charles Mackintosh 	<p>Wood, metal, leather, glass, flexible, rigid, smooth, rough, natural, man-made, stretch, bend, squash, twist, inventor</p>	<p>NC Objective/s:</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 - 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



<p>Famous Scientist Link: Charles Mackintosh</p>		
<p>Autumn Term 2: Growth & Survival</p> <p>Builds On: Y1 My Body- knowing the different senses and their purpose Prepares for: Y2- Growing Plants- what makes something living and how the best environment for plants to grow Key Questions:</p> <ol style="list-style-type: none"> 1. Whose baby is this? 2. What different ways do animals including humans have babies? 3. How do I change when I get older? 4. What do living things need to survive? 5. What is the best environment for survival? 6. What food will keep my body healthy? 7. What effect does exercise have on our heart? 8. Why is exercise important? 9. Who was Louis Pasteur? <p>Famous Scientist Link: Louis Pasteur(Developed the first vaccines) Katalin Kariko (Covid vaccine development)</p>	<p>Offspring, change, eggs, young, survival, diet, health, exercise, growth, child, adult, elderly</p>	<p>NC Objective/s:</p> <ul style="list-style-type: none"> - asking simple questions and recognising that they can be answered in different ways • 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 - 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
<p>Spring Term: Living in Habitats</p> <p>Builds On: Y1- Identifying Animals Prepares for: KS2 Animal Including humans- identifying nutrition</p> <ol style="list-style-type: none"> 1. How do I know if something is alive or dead? 2. What is a habitat and what different habitats are there? 3. What eats what? 4. How do polar bears survive in cold places? 5. Why do different animals live in different places? 6. What is a microhabitat? Why do they live there? 7. What lives in the Byerley Park Nature Reserve and why? 8. Who was Charles Darwin? <p>Famous Scientist Link: Charles Darwin</p>	<p>Energy, respire, reproduce, grow, move, waste, living, alive, non-living, habitat, shelter, woodland, pond, ocean, mountain, rainforest, desert, arctic, invertebrates, minibeast, arachnid</p>	<p>NC Objective/s:</p> <ul style="list-style-type: none"> - observing closely, using simple equipment - identifying and classifying - using their observations and ideas to suggest answers to questions - explore and compare the differences between things that are living, dead, and things that have never been alive - 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 micro-habitats - 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



<p>Summer Term: Growing Plants</p> <p>Builds On: Y1- Identifying Plants Prepares for: Y3- Function of different parts of plants</p> <p>Key Questions:</p> <ol style="list-style-type: none"> 1. What do plants need to grow? 2. What is inside a seed? 3. What do plants need to be healthy? 4. How do plants grow in different climates? 5. What is the life cycle of a plant? <p>Famous Scientist Link: Marie Clark-Taylor(Botanist who studied the effect of light on plant growth)</p>	<p>Seed, dispersed, germinate, sprouting</p>	<p>NC Objective/s:</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 - gathering and recording data to help in answering questions - explore and compare the differences between things that are living, dead, and things that have never been alive - 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 micro-habitats - 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
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Science Objectives – Key Stage 1

Year 1 Objectives	Schemes of Work				
	My Body	Identifying Animals	Everyday Materials	Identifying Plants	Seasonal Changes
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					
identify and name a variety of common wild and garden plants, including deciduous and evergreen trees					
identify and describe the basic structure of a variety of common flowering plants, including trees					
identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals					
identify and name a variety of common animals that are carnivores, herbivores and omnivores					
describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)					
identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense					
distinguish between an object and the material from which it is made					
identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock					
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					
observe changes across the four seasons					
observe and describe weather associated with the seasons and how day length varies					



Year 2 Objectives	Schemes of Work				
	Growth and Survival	Living in Habitats	Exploring Everyday Materials	Growing Plants	Investigations
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					
explore and compare the differences between things that are living, dead, and things that have never been alive					
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					
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					
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					
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					



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					