West Earlham Infant & Nursery School

Our Science Curriculum

Intent	Implementation
Science at West Earlham Infant and Nursery School aims to build upon children's natural fascination with the world in which they live, and excite children's curiosity to find out more about the phenomena occurring around them. We understand the importance of intrigue and interest in promoting a love for the natural world, and we use this to foster a mutual respect and care for the environment and the responsibility that we all have to care for and look after our world. Our children's fascination is developed through first hand exploration which fosters curiosity, care, respect, critical reflection, co-operation, problem solving, observation, independent learning, perseverance and open mindedness. We aim to teach our children to think and act as young scientists; carrying out their own experiments, inferring their own conclusions and understanding the relevance of their discoveries to the world in which they live. We believe that Science means exploring, discovering and investigating the world around us and we are committed to providing a stimulating, engaging and challenging learning environment. Our children are supported to develop a sense of awe, wonder and respect for the world around them, whilst using scientific vocabulary and skills to strengthen this understanding. Across the whole school from Nursery to Year 2, children are encouraged to develop and use a range of scientific skills including: questioning, researching and observing for ourselves. These skills are fostered and celebrated in a variety of ways, this could be through, although not limited to: explicit adult-directed teaching; daily routines; child-led continuous provision; reviewing and revisiting learning throughout the	• Wherever possible, Science is linked to class topics. At the start of each topic teachers take time to find out what our children already understand and want to find out. Teachers use this to adapt and extend the curriculum to match children's interests and needs, current events, the use of any support staff and the resources available. • We promote children's awe and wonder through utilising our outdoor environment. We establish strong roots with the outdoors in order to maintain a strong connection and responsibility towards caring for the environment and how we all have a shared responsibility to care for the environment both locally and further afield. • Through teacher modelling and planned questioning we aim to foster our children's awe and wonder for the world around them, and to be amazed and surprised by natural phenomena as we recognise that our children can sometimes lack experiences. • Key scientific language is modelled throughout lessons enabling our children to be familiar with and use vocabulary accurately. • We use Word Aware to support the children to develop their vocabulary by exploring new scientific words and concepts. • Teachers in Reception and Key stage 1 plan and organise scientific trips and visitors to enhance our children's learning experience. • We teach science in a positive, interesting and engaging way for all children. • We provide regular opportunities for children to plan, predict, carry out and evaluate their own investigations when appropriate. • We use practical, hands-on approach wherever possible using everyday materials and daily experiences and routines. • We ensure continuity and progression through adherence to the key objectives outlined for Reception and Key Stage 1. • Provide termly Science Days to enhance children's skills in 'Working Scientifically' and promote a love and curiosity for the subject. • Provide a yearly parent science café so that parents can work with their children to promote scientific wonder and curiosity whilst the teacher can model to parents scientific learning. • Provide opportunities for children to use skills from other curriculum areas e.g. literacy, numeracy and computing. to enhance and extend science • We provide motivating and purposeful classroom and outside environments where children are encouraged to investigate scientific concepts.

school year; consolidation and extension of learning in-the-moment.

Science at West Earlham Infant and Nursery school aims to:

- Foster children's wonder and natural curiosity about the world they are in through active engagement in learning experiences.
- Provide opportunities for children to develop knowledge and understanding of key scientific ideas.
- Develop children's scientific enquiry skills in questioning, predicting, planning, observing, measuring, fair testing, recording, interpreting and working systematically through direct, hands on, physical experience.
- Provide children with the ability to make informed decisions based on evidence and their own experiences and be able to apply scientific knowledge to new situations.
- Teach children how to communicate their ideas effectively.
- Demonstrate interest and enthusiasm for science and to be confident to participate in exploratory and investigative work.
- Develop cross-curricula skills including mathematics, literacy and computing in order to discuss and record work, communicate scientific ideas through diagrams and charts, and to extract and analyse scientific information.
- Develop positive and respectful values and attitudes towards others in order to communicate effectively, by listening and responding appropriately to ideas shared.

- We plan and facilitate British Science Week to foster a whole school love and respect for Science. We use the joy and intrigue that this week develops to engage our children's Scientific thinking further throughout the weeks and months that follow.
- We use routines and contextualised moments and events to promote our children's understanding of Science and the natural world. For example, we discuss how weather and seasons impact upon the clothing we wear; or we make in-the-moment observations about leaves on the trees and how the season impacts upon this.

<u>Characteristics of Effective Learning</u>

In EYFS, our teaching and learning is underpinned by the Characteristics of Effective Learning. These are particularly pertinent when supporting our children to think scientifically, these characteristics enable our children to approach their learning in a curious and explorative manner whilst making links between their experiences as they do so.

Playing and exploring – engagement

- Finding out and exploring: We encourage all our children to explore and investigate the world around them. A stimulating and engaging learning environment is integral to ensure this learning is maximised to its full potential. Therefore, we facilitate sensory play, triggering children's senses including: sight; sound; smell; taste and touch. These sensory filled activities support our children to learn more about the world around them in a natural way.
- Playing with what they know: We support our children to repeat actions and practise their skills through following their own interests and playing with what they know and enjoy.
- Being willing to have a go: We support our children at the stage appropriate to their development, in order to foster their confidence to try out new things because although we believe children are naturally curious we acknowledge that some can be reserved and shy when trying out new things. Therefore, we offer support by modelling how to do things, encourage a "have a go" attitude and provide relevant language during our interactions.

Active learning – motivation

- Being involved and concentrating
- Keep trying: We form strong positive relationships with our children, enabling us to understand our children's strengths and interests, in terms of their likes and dislikes. This enables us to tailor our support and learning based upon their interests and learning requirements. Furthermore, we acknowledge that learning new scientific and problem solving skills can be frustrating, thus we intend to help children to keep trying in order to develop skills that are beneficial for their development.

• Develop an awareness and sensitivity to the living and non-living environment through access to the natural environment. • Develop a responsibility for their own health and safety, and that of others, when undertaking scientific activities. • Develop intrigue and interest for the world around them by promoting a love of the natural world. • Alongside promoting a love for the uniqueness and joy that can be provided by the natural world, our children will be taught to show care and respect for the world around them. • Our children will be taught how it is everyone's responsibility to look after our world, and to take pride in caring for, and showing respect for the natural world - this is fostered alongside awe and wonder for the world around us.	• Enjoying achieving what they set out to do: Science can be incredibly fulfilling and inspiring, and as a result we aim to foster our children's positivity towards their learning by offering praise linked with their positive attitude to learning as well as their achievements. **Creating and thinking critically** – thinking The development of creative and critical thinking underpins an incredible part of the Science curriculum and we place great emphasis upon these learning skills in order to support our children's creative, imaginative and open-minded approach to their learning. • Having their own ideas: We provide a plethora of resources for our children to access and engage with, following their own interests and imagination. Our children are encouraged to express themselves with emphasis upon the process rather than the end product. We take this open-ended approach because it enables children to take their learning in the direction that is meaningful to them, and although we could plan an activity with the desired learning in mind, we acknowledge that all children are individuals and their imaginative processes will take their learning in a variety of directions that we cannot always plan for, but we are able to support as they arise. • Making links: We provide learning themes that enable children to make links across their learning, and through careful questioning, commenting, modelling and implementation of appropriate language, we enable children to make relevant links between their knowledge and understanding. E.g. cause and effect • Choosing to do things: We provide as much continuous provision time as possible in order to enable our children to lead their own learning and make their own choices. We provide multiple opportunities for children to try new things, and we openly encourage them to do so. It is during these moments when children develop their confidence and are then able to make links between their learning and progress their skills and ability to explore and question the world around them.

	EYFS/Reception	Year 1	Year 2
Our children will experience: Termly science days Loan a Lamb project Farm visit in Reception Owl visit in Year 1 Norfolk Showground visit in Year 2 Visit from a scientist to do an assembly and class activities Science cafe Year 1 Immersive Science Week in March Green Team approach across every class in school Trip to the zoo in Year 1 Miniature farm visit across all key stages Develop a deep rooted understanding of the environment through: weekly litter picks; termly community litter picks; clothes share & buy stalls; daily recycling differentiated throughout the year groups; relevant planting/maintenance/upkeep of our outdoor area.	**Autumn 1** **Signs of Autumn** *We look closely at the changes that occur during each season. We will discuss the impact this has upon: the environment, what grows and does not grow, what clothes we wear, weather, trees, plants and animals.* **Harvest** *We will discuss harvest and how farmers reap their crops and prepare their fields for sowing seeds etc.*	**Autumn 1** **Big Science Question: How can I identify differences between trees and plants?** **Plants** **- 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.** *The children will plant different flowers and keep a flower diary, documenting the changes as they occur each week throughout the half term. Children will go outside in nature and make observations of the local environment looking carefully at plant life and wildlife. Children will distinguish differences between plants and trees.*	**Autumn 1** **Big Science Question: What do animals and humans need to survive and be healthy?** **Living things and their Habitats** **- explore and compare the differences between living, dead and never 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.** **Animals including Humans** **- find out about and describe the basic needs of humans for survival (water, food and air)** **- describe the importance for humans of hygiene** **- notice that animals, including humans, have offspring which grow into adults** *Children will discover the importance of hygiene for humans, including oral health and will explore what the impact will be for humans if one of their basic needs is not met. Children will develop an understanding of the importance of hygiene, food, shelter, exercise, nurture and care. Finally, as the season changes to Autumn we will explore changing habitats, discovering objects that are dead, alive and never alive. - making comparisons between what we have found. We will make links between animals and the changing habitats and their food chains.*
	Autumn 2	**Autumn 2** **Big Science Question: How do the materials of**	**Autumn 2** **Big question: Which features make each continent**

	Different celebrations and festivals that are celebrated within own culture and other people's e.g. Harvest, Halloween, Bonfire Night, Diwali and Christmas. **Winter** *We look closely at the changes that occur during each season. We will discuss the impact this has upon: the environment, what grows and does not grow, what clothes we wear, weather, trees, plants and animals.*	objects affect their intended use? **Everyday Materials** - 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. *The children will carry out multiple experiments to explore the similarities and differences between everyday materials. Which will in turn support their ability to identify and name multiple materials. Children will design a house that is waterproof and/or fireproof that could have prevented the Great Fire of London.*	unique? Big Science Question: How do the features of plants and animals help them survive in their habitats across different continents? **Living things and their Habitats** - Identify that most living things live in habitats in 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 - 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. **Animals, including humans** - find out about and describe the basic needs of animals for survival (water, food and air) - Identify and name a variety of plants and animals in their habitats, including micro-habitats - Explore basic food chains of plants and animals *The children will be looking at the continents studied in Geography this half term, and think about which notable animals inhabit these places, paying particular attention to what their habitats look like, how they're best suited to each continent's environment and the differing food chains and food sources of the animals.*
	Spring 1 Plant some turnips inside and think about what they need to grow.	**Spring 1** Big Science Question: How do our senses help us find out about the world around us? UEA Biology Scientist Visit - Human Body and	**Spring 1** Big Science Question: What do humans need to survive? UEA Biology Scientist Visit - Gut Biology - Healthy Gut **Animals including Humans**

	Planting and growing As well as a science cafe where the parents are invited in to help plant a bean/ seed, the children will closely/monitor seeds planted in the vegetable garden and around our outdoor area. **Being healthy:** We will look at how we stay healthy through our diet and exercise. How can we spot the signs that we have been exercising, and learning about the importance of a healthy diet and what that looks like. **Spring** *We look closely at the changes that occur during each season. We will discuss the impact this has upon: the environment, what grows and does not grow, what clothes we wear, weather, trees, plants and animals.*	**senses** **Animals including Humans** **- Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.** *The children will explore the five senses and which parts of the body are associated with each sense. They will do this through interactive experiments, open-ended questioning and support to make descriptions and comparisons between each sense. Children will develop an understanding of how different parts of the body interact in order to function.*	**- find out about and describe the basic needs of humans, for survival (water, food and air)** **- describe the importance of exercise and eating the right amounts of different types of food and hygiene** **-Notice that humans have offspring which grow into adults.** *We will be learning about what it means to be a scientist. We will begin by exploring how to think like a scientist. We will be thinking carefully about the basic needs of humans and the impact of a healthy lifestyle upon humans. We will carry out experiments to explore healthy and unhealthy foods, and healthy and unhealthy practices in a practical manner.* **BRITISH SCIENCE WEEK - John Innes Centre Scientist links**
	Spring 2 There will be sheep and lambs staying at school and children will learn about how they are looked after.	**Spring 2** **Big Science Question: What does the impact of the environment have on local plants' survival?** **MARINE SCIENTIST AND DIVER VISIT** **Plants** **- Identify and name a variety of common wild**	**Spring 2** **Big Science Question 1: What do plants need to keep healthy as they grow and change?** **Plants** **- observe and describe how seeds grow and change** **- find out and discover how plants need water, light and**

	Learn about the signs of Spring and the changes that are happening in the natural world around them. Farming- linked with T4W, we will explore how a farm operates and the animals that you might find there (farm trip).	and garden plants, including deciduous and evergreen trees. - Identify and describe the basic structure of a variety of common flowering plants, including trees. *The children will build upon their understanding developed in Autumn 1. Children will make comparisons between the different types of plants and trees that grow during different seasons. Children will develop an understanding of the importance of native plants and flowers in supporting local wildlife both insects and mammals. Children will recognise local plants, trees and wildlife and compare with plants found around the world.*	a suitable temperature to grow and stay healthy *Children will plant fruit and vegetables and observe how they change and grow, taking measurements, making observational drawings and making comparisons between how the plants grow and change.* Big Science Question 2: How do minibeasts and plants in microhabitats work together? Living things and their Habitats - Identify that most living things live in habitats in 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 *The children will look again at animal groups, before taking a deeper look into their diets, and other aspects which contribute to their survival. The children will be thinking about bees, following on from their knowledge of plants. We will be thinking about how bees have an impact on other animals and also thinking about minibeasts and their habitats in our outdoor environments and beyond.* BRITISH SCIENCE WEEK - John Innes Centre Scientist links
	Summer 1 Different life-cycles (butterfly, frogs) and changes in the natural environment. Importance of looking after our local environment and about	Summer 1 Big Science Question: Why are some materials more useful for particular purposes? Everyday Materials - Distinguish between an objects and the material from which it is made - Identify and name a variety of everyday	Summer 1 Big Science Question: How can climate change affect land and ocean animals and plants? MARINE SCIENTIST AND DIVER VISIT - care for our oceans - local sea links with Cromer Living things and their Habitats

	the importance of recycling materials to take care of our planet. How life is different in other countries. Life cycles- exploring the life cycles of animals including chickens, butterflies and frogs. Summer *We look closely at the changes that occur during each season. We will discuss the impact this has upon: the environment, what grows and does not grow, what clothes we wear, weather, trees, plants and animals.*	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 *The children will consolidate and extend understanding developed in Autumn. Children will carry out experiments to sort different types of materials using their understanding of the different properties of the materials to support their experiments. Children will develop an understanding of the different types of clothing worn in different climates and how and why the material type differs. Children will explore the impact that humans have upon the environment and how it is the responsibility of everyone to care for our world. Children will participate in a trip to local beach - discuss the materials that are found at or washed up at the beach. Discussing what they are/were used for and how they can be reused/recycled responsibly.*	- explore and compare the differences between living, dead and never 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. Animals, including humans - find out about and describe the basic needs of animals for survival (water, food and air) - Identify and name a variety of plants and animals in their habitats, including micro-habitats - Explore basic food chains of plants and animals *Children will develop an understanding of the impact that humans have on wildlife and the environment. Children will develop an understanding of marine wildlife, how they feed and the impact climate change has upon different animals in different environments.* Plants - observe and describe how seeds grow and change - find out and discover how plants need water, light and a suitable temperature to grow and stay healthy *The children will observe the changes that occur as the seeds planted last half term grow and change into a flower etc. We will be watching these changes closely, and discuss what these plants need to thrive. The children will be thinking about the seeds that they planted and are still growing. We will be reflecting on what they needed to grow into strong and healthy plants.*
	Summer 2 Plant seeds, make observations of plants and talk about the changes they see. Explore changing states of matter looking at what happens to solids when they are heated.	Summer 2 Big Question: When I go to the coast, what will I find? Big Science Question: What animals can be found around the UK? Animals, including humans - Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals	Summer 2 Big Science Question: How can we change everyday materials to improve their suitability for different uses? Everyday Materials - Identify and compare the suitability of a variety of everyday material including: wood; metal; plastic; glass; brick; rock; paper; cardboard for particular uses - Find out how the shapes of solid objects made from

		- 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). *The children will develop an understanding of the different types of animals through first-hand observations during a zoo trip and a visit to the local pond or/and marshland. Children will research the different animal types in greater detail using the internet and non-fiction books. Children will learn about and describe different animals that live in environments that differ in extremities.* <u>Seasonal changes</u> - observing changes across the four seasons, describing weather and noticing how day length changes. Through the daily routine, and as it occurs, the children will explore the changing seasons and the weather that accompanies it. This allows for there to be a clear understanding of what each season ushers in and what can be expected/ seen.	some materials can be changed by squashing, bending, twisting and stretching. *The children will be looking once more at materials they are familiar with, and encounter most days. We will be spending each week conducting a new experiment linked to a material, to support the children in developing a clear understanding of their properties.* ART AND SCIENCE PROJECT - collaboration with Sainsbury's Centre
	<u>In the Moment Planning</u>: we support, extend, enhance and enrich our children's learning in the moment when they are following their own interests, whilst engaging in the indoor and outdoor learning environment. During these moments, we teach and support		

	children's scientific learning (see above re. Characteristics of Effective Learning), this could occur in all areas of our provision including (although not limited to): -**Sand and water area:** floating and sinking, simple experiments, capacity, predictions, testing out simple theories, exploring the properties of materials (waterproof/water resistant/porous etc) - **Mud kitchen**: make observations of properties of materials, explore what happens when you manipulate resources -**Water garden**: floating and sinking, exploring simple predictions, what would happen if...?, rerouting water, exploring plants that grow near/apart from the water, different seasons when we can/cannot go in the water area -Outdoor classroom: using our senses to explore the outdoor environment, what can we see, feel, smell? Encouraging		

	children to describe these senses using open ended questioning, enabling children to use descriptive language and encouraging and inquisitive approach to their learning experiences. -**Construction**: what materials are most effective for building towers/models etc. Magnetic construction to explore magnets. Children explore cause and effect as they test out their ideas and problem solve as they build and create. Thinking about what works well, what doesn't work, improvements that can be made as well as conclusions can be formed. **-Outdoor area:** children have daily access to the outdoor area where they are supported to make observations; comparisons; question; make links; understand change that occurs e.g. seasonal changes; minibeasts habits and habitats changing; weather changes;		

	environmental changes e.g. wet/dry and the consequences; plant growth and change.		

Plants				
	Nursery	**Reception**	**Year One**	**Year Two**
Progression of skills	**0-3 year olds will learn to:** - Explore and respond to different natural phenomena in their setting and on trips. - Children are encouraged to be curious and show interest in the world around them, particularly when seasons change and plants/trees adapt as this occurs naturally.	**ELG: The Natural World** Children at the expected level of development will: - 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	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. *Pupils should use the local environment throughout the year to explore and answer questions about plants growing in their habitat.*	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. *Pupils should use the local environment throughout the year to observe how plants grow. Pupils should be introduced to the requirements of plants for germination, growth and survival, as*

	- show natural intrigue for exploration, curiosity, appreciation and respect for living things. - Explore natural materials, indoors and outside. **3-4 year olds will learn to:** - 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. - Use all their senses in hands on exploration of natural materials.	experiences and what has been read in class; Development Matters: Children will be encouraged to describe what they see, hear and feel whilst outside, utilising all of their senses to develop a love for the natural world and plant life within it.	*Where possible, they should observe the growth of flowers and vegetables that they have planted.* *They should become familiar with common names of flowers, examples of deciduous and evergreen trees, and plant structures (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, and stem).* *Pupils might work scientifically by: observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees. Pupils might keep records of how plants have changed over time, for example, the leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants.*	*well as the processes of reproduction and growth in plants.* *Note: seeds and bulbs need water to grow but most do not need light; seeds and bulbs have a store of food inside them.* *Pupils might work scientifically by: observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or observing similar plants at different stages of growth; setting up a comparative test to show that plants need light and water to stay healthy.*
Key vocabulary	Leaf, plant, flower, grow, water, sun, live, die, see, what	Change, live, grow, die, similar, same, different, patterns, notice, what, when, where, why	Wild plants, garden plants, deciduous, evergreen, leaf, root, leaves, bud, flowers, blossom, petals, root, stem, trunk, branches, fruit, vegetable, bulb, seeds	Grow, healthy, water, light, suitable temperature, germination, reproduction, environment.

Animals including humans				
	Nursery	Reception	Year One	Year Two
Progression of skills	**0-3 year olds will learn to:** - Explore and respond to different natural phenomena in their setting and on trips. - show natural intrigue for exploration, curiosity, appreciation and respect for living things. - to show curiosity for the natural world around them, exploring minibeasts; seasonal changes and how	**ELG: The Natural World** Children at the expected level of development will: - 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;	Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals identify and name a variety of common animals Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common	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. *Pupils should be introduced to the basic needs of animals for survival, as well as the*

	this affects wildlife and where they are located **3 and 4 year olds will learn to:** - understand the key features of the life cycle of a plant and an animal - Talk about what they see, using a wide vocabulary.	**ELG: Managing Self** Children know the importance for good health, of physical exercise and a healthy diet, and talk about ways to keep healthy and safe.	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?. *Pupils should use the local environment throughout the year. They should understand how to take care of animals taken from their local environment and the need to return them safely after study. Pupils should know the common names of some fish, amphibians, reptiles, birds and mammals, including pets.* *Pupils should have plenty of opportunities to learn the names of the main body parts (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) through games, actions, songs and rhymes.* *Pupils might work scientifically by: using their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them; grouping animals according to what they eat; and using their senses to compare different textures, sounds and smells.*	*importance of exercise and nutrition for humans. They should also be introduced to the processes of reproduction and growth in animals. The focus at this stage should be on questions that help pupils to recognise growth; they should not be expected to understand how reproduction occurs.* *The following examples might be used: egg, chick, chicken; egg, caterpillar, pupa, butterfly; spawn, tadpole, frog; lamb, sheep. Growing into adults can include reference to baby, toddler, child, teenager, adult.* *Pupils might work scientifically by: observing, through video or first-hand observation and measurement, how different animals, including humans, grow; asking questions about what things animals need for survival and what humans need to stay healthy; and suggesting ways to find answers to their questions.*

Key vocabulary	Healthy, water, food, hot, exercise, fruit, vegetables Caterpillar-butterfly tadpole-frog Egg, hatch, bird Baby, adult nose-smell ears-listen, hear eyes-see/look	Healthy, exercise, safe, live, grow, die, change, similar, different, fruit, vegetables, balanced, diet. Egg, chick, chicken Lamb, sheep Caterpillar, pupa, butterfly frogspawn, tadpole, froglet, frog	Fish, amphibians, reptiles, birds, mammals, pets, head, legs, eyes, neck, knees, hair, arms, face, mouth, elbows, ear, teeth. Senses, tongue-taste, nose-smell, eyes-vision, skin-touch, ears-hearing.Omnivores, carnivores, herbivores	Offspring, grow, adults Survival – water, food, air, exercise, hygiene Nutrition, reproduce Egg, chick, chicken Caterpillar, pupa, butterfly Spawn, tadpole, frog Baby, toddler, child, teenager, adult

Living things and habitats				
	Nursery	**Reception**	**Year One**	**Year Two**
Progression of skills	**0-3 year olds will learn to:** - Explore natural materials, indoors and outside. - Explore and respond to different natural phenomena in their setting and on trips. **3 and 4 year olds will learn to:** - 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	<u>ELG: The Natural World</u> Children at the expected level of development will: - 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	- 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 <u>(1-Plants)</u> - identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals <u>(1-Animals including Humans)</u> - identify and name a variety of common animals that are	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.

	environment and all living things. - Use all their senses in hands-on exploration of natural materials.	natural world around them, including the seasons and changing states of matter.	carnivores, herbivores and omnivores (1-Animals including Humans) - describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) (1-Animals including Humans) - observe changes across the four seasons	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. *Pupils should be introduced to the idea that all living things have certain characteristics that are essential for keeping them alive and healthy. They should raise and answer questions that help them to become familiar with the life processes that are common to all living things. Pupils should be introduced to the terms 'habitat' (a natural environment or home of a variety of plants and animals) and 'microhabitat' (a very small habitat, for example for woodlice under stones, logs or leaf litter). They should raise and answer questions about the local environment that help them to identify and study a variety of plants and animals within their habitat and observe how living things depend on each other, for example, plants serving as a source of food and shelter for animals. Pupils should compare animals in familiar habitats with animals found in less familiar habitats, for example, on the seashore, in woodland, in the ocean, in the rainforest. Pupils might work scientifically by: sorting and classifying things according to whether they are living, dead or were never alive, and recording their findings using charts. They should describe how they decided where to place things, exploring questions like: 'Is a flame alive? Is a deciduous tree dead in winter?' and talk*

				about ways of answering their questions. They could construct a simple food chain that includes humans (e.g. grass, cow, human). They could describe the conditions in different habitats and microhabitats (under log, on stony path, under bushes); and find out how the conditions affect the number and type(s) of plants and animals that live there
Key vocabulary	Hard, soft, cold, Trees, leaves, flowers, grow, die, insects (living things observed in our nursery environment)	Change, live, grow, die, similar, different, living things, environment		Living, dead, never alive, habitats, micro-habitats, food chain, alive, healthy, leaf litter, stony path, under bushes, shelter, seashore, woodland, ocean, rainforest, conditions, hot/warm/cold dry/damp/wet bright/shade/dark

Everyday materials				
	Nursery	**Reception**	**Year One**	**Year Two**
Progression of skills	**Birth to 3 year olds:** - Repeat actions that have an effect. - Explore materials with different properties. - Explore natural materials, indoors and outside. Children will experience this in a hands-on fashion exploring different textures; sounds; smells and tastes. Children will be	**ELG: The Natural World** Children at the expected level of development will: - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. Children will experience the natural world in a hands-on and practical manner. Children will observe	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.	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.

	supported to explore their bodies movement and the effect this has. **3 and 4 year olds:** - 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. - Explore and talk about different forces they can feel. e.g. water; elastic; twig vs metal rod; magnet attraction and repulsion - Talk about the differences between materials and changes they notice. - Explore how things work.	changes within the natural world and be encouraged to question and develop an understanding of the reasons why as they explore. E.g. ice melting/freezing, an object casting a shadow, how a magnet attracts an object and why, floating/sinking etc. Children will be taught how to manipulate resources to create a desired effect. Through hands-on creative play children will develop an understanding of how the properties of objects impact how they can be manipulated e.g. paper can be scrunched/cut/twisted to make or improve a model.	Compare and group together a variety of everyday materials on the basis of their simple physical properties. *Pupils should explore, name, discuss and raise and answer questions about everyday materials so that they become familiar with the names of materials and properties such as: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent. Pupils should explore and experiment with a wide variety of materials, not only those listed in the programme of study, but including for example: brick, paper, fabrics, elastic, and foil.* *Pupils might work scientifically by: performing simple tests to explore questions, for example: 'What is the best material for an umbrella? … For lining a dog basket? … For curtains? … For a bookshelf? … For a gymnast's leotard?'*	*Pupils should identify and discuss the uses of different everyday materials so that they become familiar with how some materials are used for more than one thing (metal can be used for coins, cans, cars and table legs; wood can be used for matches, floors, and telegraph poles) or different materials are used for the same thing (spoons can be made from plastic, wood, metal, but not normally from glass). They should think about the properties of materials that make them suitable or unsuitable for particular purposes and they should be encouraged to think about unusual and creative uses for everyday materials. Pupils might find out about people who have developed useful new materials, for example John Dunlop, Charles Macintosh or John McAdam.* *Pupils might work scientifically by: comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs); observing closely, identifying and classifying the uses of different materials, and recording their observations.*

Key vocabulary	Properties - smooth/rough, soft/hard, spiky, Glass, wood, paper Senses- smell, taste, touch, feel, hear Body parts: nose, tongue, hands, fingers, ears	Similar, same, different, material, wood, metal, glass, brick, rock, paper, cardboard Properties – hard/soft stretchy/stiff shiny/dull rough/smooth bendy/not bendy waterproof/not waterproof	Material - wood, metal, plastic, glass, brick, rock, water, paper, fabrics, elastic, foil. Properties – hard/soft stretchy/stiff shiny/dull rough/smooth bendy/not bendy waterproof/not waterproof absorbent/not absorbent opaque/transparent.	Material – wood, metal, plastic, glass, brick, rock, water, paper, fabrics, elastic, foil, rubber, cardboard. Suitable, unsuitable Squashing, bending, twisting, stretching

Seasonal changes				
	Nursery	**Reception**	**Year One**	**Year Two**
Progression of skills	**Birth to 3 year olds will learn to:** - Explore and respond to different natural phenomena in their setting and on trips. All children will be supported to explore the natural world physically and be encouraged to develop a natural curiosity and intrigue for the natural world alongside respect for living things. **3-4 year olds will learn to:** - Plant seeds and care for growing plants and when is the best time of year to do this. - Understand the key features of the life cycle of a plant and an animal	**ELG: The Natural World** Children at the expected level of development will: - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. - 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; We do this by closely observing the natural world and making observational drawings of animals and plants.	Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies. *Pupils should observe and talk about changes in the weather and the seasons.* *Note: pupils should be warned that it is not safe to look directly at the sun, even when wearing dark glasses.* *Pupils might work scientifically by: making tables and charts about the weather; and making displays of what happens in the world around them,*	- find out and describe how plants need water, light and a suitable temperature to grow and stay healthy (2-Plants)

	and how this changes/occurs during different seasons. - Begin to understand the need to respect and care for the natural environment and all living things and how seasons can impact upon how we care for wildlife e.g. feed the birds during winter if there is no other natural food available. All children will be supported to show a natural intrigue, exploration and wonder for the natural world and how it changes as the seasons change. Through daily routines children will learn how to dress appropriately in different weathers. Children will be taught how to make simple observations about the natural world around them.	Through daily routines children will be supported to understand how seasons change and the impact this has on weather and how this can impact clothing choices. Children are taught that seasons are cyclical and the impact this has on humans, plants and animals. Children are encouraged to make observations of how animals, plants and trees change and/or behave differently between different seasons. Children are supported to make comparisons between the different seasons and describe and question the changes.	*including day length, as the seasons change.*	
Key vocabulary	Day, night, Summer, Winter, Autumn, Spring. Weather - hot/sunny, cold, windy, rain, clouds, snow, ice.	Season, spring, summer, autumn, winter. Day, daytime, night, night time. Weather, wind, windy, rain, snow, cloudy, sun, hot, warm, cold.	Season, spring, summer, autumn, winter. Day, daytime, night, night time. Weather, wind, rain, snow, hail, sleet, cloudy, stormy, fog, sun, hot, warm, cold.	

Working scientifically			
	Nursery	Reception	Year One and Year Two
Progression	In EYFS, our teaching and learning is underpinned by the Characteristics of Effective Learning. These characteristics enable our children to think scientifically; approach their learning in a curious and explorative manner and to make links between their experiences as they do so. **Playing and exploring** – engagement ● Finding out and exploring ● Playing with what they know ● Being willing to have a go **Active learning** – motivation ● Being involved and concentrating ● Keeping trying ● Enjoying achieving what they set out to do **Creating and thinking critically** – thinking The development of creative and critical thinking underpins our approach to the Science curriculum and we place great emphasis upon these learning skills in order to support our children's creative, imaginative and open-minded approach to their learning. ● Having their own ideas ● Making links ● Choosing to do things (For more information see Implementation: pages 2 and 3)		During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: ● 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 Additional Guidance: Pupils in years 1 and 2 should explore the world around them and raise their own questions. They should experience different types of scientific enquiries, including practical activities, and begin to recognise ways in which they might answer scientific questions. They should use simple features to compare objects, materials and living things and, with help, decide how to sort and group them, observe changes over time, and, with guidance, they should begin to notice patterns and relationships.

			They should ask people questions and use simple secondary sources to find answers. They should use simple measurements and equipment (for example, hand lenses, egg timers) to gather data, carry out simple tests, record simple data, and talk about what they have found out and how they found it out. With help, they should record and communicate their findings in a range of ways and begin to use simple scientific language. These opportunities for working scientifically should be provided across years 1 and 2 so that the expectations in the programme of study can be met by the end of year 2. Pupils are not expected to cover each aspect for every area of study.
Key vocabulary	Guess, try, have a go, look, keep trying, test, same, different,	predict, wonder, question, what, why, when, watch, persevere, test, experiment, compare, same, different, similar, change, before, after, first, second	Method, observe, question, equipment, tests, identify, classify, gather, record, compare, patterns