

Science Foundation Knowledge

Big Ideas

1. To know that there are many different kinds of animals and plants, they are all living things that grow and need care.
2. To understand important processes and changes in the natural world.
3. To actively engage in scientific enquiry.

Continuous Provision



I

Ice melting

Floating sinking

Forces

Magnets

Push and pull

Elastic

Materials- exploring materials

Key Vocabulary

Nursery

Body parts: head, eyes, nose, mouth, ears

Hands, fingers, feet, toes, arms, legs

hair: a thin strand that grows from the skin

animal: a living thing that is not a plant

insect: a small creature with 6 legs

spider: a small creature with 8 legs

fish: an animal that lives in water and has fins

birds: an animal that has 2 wings and 2 feet

that can usually fly

flower: part of a plant that has petals

leaf: a part of a plant or tree

roots: a part of a plant or tree that grows under the soil

tree: a woody plant that has a long trunk and many branches

stem: the part of a plant that supports the leaves and flowers

seed: the small part of a plant that can grow into another plant

freeze: when water becomes very cold and turns to a solid

ice: solid, frozen water

fire: when fuel e.g. wood, burns

wood: a material from tree trunks

glass: a clear material that breaks easily

paper: a thin material from wood used to write on

hard: not soft

soft: easy to bend or to shape

Reception

conker: a round, brown seed that falls from a horse chestnut tree in Autumn

acorn: the seed of an oak tree



pine cone: the woody fruit of a pine tree stem: the part of a plant that supports the leaves and flowers seed: the small part of a plant that can grow into another plant deciduous: a tree that drops its leaves each year. evergreen A tree that has green leaves that stay on throughout the year. garden plants: plants that someone has decided to plant and grow in a garden. pollen: powder made by some plants. petal: colourful leaves around the outside of a flower fruit: the part of a plant that has seeds bulb: a plant bud that grows underground branch: a woody part of a tree that grows out from the trunk trunk: the main stem of a tree Materials absorb: take in or soak up. compare: to see what is similar and what is different. transparent: see through shiny: reflecting or glowing with light metal: minerals found underground that are strong rock: a solid mineral that makes up the earth's outer layer fabric: cloth smooth: not rough rough: having an uneven surface, not smooth Seasonal Changes compare: to see what is similar and what is different. dark: having little or no light light: what allows us to see		
Nursery- non negotiable		
Seasonal Change	Plants	Animals, including humans
To observe and describe the weather and changes in the natural world using their senses.	To observe plants in our environment Plant seeds and care for them	To observe a life cycle (Butterfly) To comment on changes  To identify and name some common and familiar animals (local and city farm)

		To begin to describe the features of the animals.
Reception- non negotiable		
Seasonal Change	Plants	Animals, including humans
To understand the effects of changing seasons on the world around them Compare and contrast the different seasons (trees, weather, clothing, growing and activities)	Comment about what growing things can be seen in the environment Plant and Compare different plants (edible and non edible) - Bulbs, seeds and features	To notice and discuss stages of life cycles (duck) To compare life cycles  To identify a range of animals including those living in different habitats. To begin to describe the features of the animals, including animals that are nocturnal and those that hibernate.
Scientific Enquiry Asking Questions: Comment and ask questions about their experiences. Setting up tests: Find ways to solve problems or new ways to do things, and be able to test their ideas. Choose resources they need for chosen activities, and learn by trial and error. What is the best material for a boat? Observing and Measuring: Closely observe what animals and people do Recording Data: Make simple representations of events, people and objects.		

Programmes of Study - Understanding the World

Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them - from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.

What Science might look like in EYFS, including indoor and outdoor provision

What you might see children doing

- Sharing knowledge linked to scientific interests.
- Sharing books about the world, weather, the environment, growing, the human body etc.
- Talking about how we can look after our planet.
- Investigating how different materials can be used and changed.
- Growing plants from seeds and caring for plants.
- Talking about how we can look after our planet.
- Exploring how materials can be changed through cooking activities.
- Closely observing minibeasts and animals.
- Noticing and talking about the changing seasons.
- Investigating objects which float and sink during water play.
- Using basic scientific vocabulary.
- Explaining how things will work or what will happen
- Investigating and talking about how things change over time, for

What you should see practitioners doing

- Introducing basic scientific vocabulary.
- Teaching children how to keep themselves safe whilst exploring scientific ideas.
- Asking appropriate questions and providing answers so children develop knowledge of the world around them.
- Inspiring children to be curious about the world around them.
- Teaching early skills of scientific enquiry and investigation.
- Promoting a sense of awe and wonder in relation to the natural world. Providing a science rich environment with lots of different resources to explore.
- Considering prior learning when planning opportunities.
- Considering children's interests
- Using the local environment as a teaching resource.

- example, as ice melts. - Showing interest in and learning about life cycles - Recording the local weather. - Recreates animal habitats through creative activities or role play. - Representing science based learning in writing and creative and digital mediums. - Starting to record scientific data using tallies and numerical/pictorial representations. - Exploring how their body works during exercise. - Investigating how magnets work by using magnetic construction kits. - Using all their senses to explore food.	- Sharing knowledge about things we can do to protect our planet. - Encouraging children to say what they think and give their ideas. - Providing opportunities for simple field work skills to be taught and applied. - Providing opportunities to help care for the local environment. - Specifically teaching early scientific concepts. - Providing opportunities to complete simple experiments and record results.
---	---

Early Years Links - Development Matters

3 and 4 years olds will be learning to:

Understanding the world

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 how things work.

Plant seeds and care for growing plants.

Understand the key features of the life cycle of a plant and an animal.

Explore and talk about different forces they can feel.

Talk about the differences between materials and changes they notice.

Communication and language

Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"

Be able to express a point of view and to debate when they disagree with an adult or a friend, using words as well as actions.

Children in Reception will be learning to:

Understanding the world

Explore the natural world around them.

Describe what they see, hear and feel whilst outside.

Understand the effect of changing seasons on the natural world around them.

Communication and language

Learn new vocabulary.

Ask questions to find out more and to check they understand what has been said to them.

Articulate their ideas and thoughts in well-formed sentences.

Engage in non-fiction books.

Listen to and talk about selected non-fiction to develop a deep familiarity with new knowledge and vocabulary.

Describe events in some detail.

Use talk to help work out problems and organise thinking and activities to explain how things work and why they might happen.

Early Learning Goal

The Natural World

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.

Communication and Language: Listening, Attention and Understanding

Make comments about what they have heard and ask questions to clarify their understanding.

Characteristics of Effective Learning - support future learning in Science

Playing and Exploring	Active Learning	Creating and thinking critically
Reach for and accept objects.		Know more, so feel confident about coming

Make choices and explore different resources and materials. Bring their own interests and fascinations into early years settings. This helps them to develop their learning. Respond to new experiences that you bring to their attention.	up with their own ideas. Make more links between those ideas.
--	---

KS1 National Curriculum (Statutory requirements)

Working Scientifically

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.

Plants

Year 1

Pupils should be taught to:

- 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.

Year 2

Pupils should be taught to:

- 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.

Animals, including humans

Year 1

Pupils should be taught to:

- 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.

Year 2

Pupils should be taught to:

- 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.

Everyday Materials

Year 1

Pupils should be taught to:

- 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.

Year 2

Pupils should be taught to:

- 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.

Seasonal Changes

Year 1

Pupils should be taught to:

- observe changes across the four seasons
- observe and describe weather associated with the seasons and how day length varies.

Living things and their habitats

Year 2

Pupils should be taught to:

- 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.