

Science Progression Plan

Early Years Framework 2021 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 In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our 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.

ELG: The Natural World. Children at the expected level of development at the end of the EYFS 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 natural world around them, including the seasons and changing states of matter.

National Curriculum 2014. What children should be taught in Years 1 and 2?

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.

Year 1. Pupils should be taught to:

Plants	Animals including humans	Everyday materials	Seasonal changes
<ul style="list-style-type: none"> ✓ 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 	<ul style="list-style-type: none"> ✓ 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 	<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, including 	<ul style="list-style-type: none"> ✓ Observe changes across the four seasons ✓ Observe and describe weather associated with the seasons and how day length varies.

<p>common flowering plants, including trees.</p>	<p>carnivores, herbivores and omnivores</p> <ul style="list-style-type: none"> ✓ 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. 	<p>wood, plastic, glass, metal, water and rock</p> <ul style="list-style-type: none"> ✓ 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. 	
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Year 2			
Plants	Animals, including humans	Uses of everyday materials	Living things and their habitats
<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. 	<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. 	<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. 	<ul style="list-style-type: none"> ✓ 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.

This progression plan has considered the building blocks of progress that are required in science and has identified the essential knowledge that pupils will need to be an effective scientist and ensure that they know and remember more in science. Subject specific concepts and vocabulary will be explicitly taught and pupils are expected to use this in their learning.



Key scientific concepts	Early Years Foundation Stage	Year One	Year Two
<p>Research/Seeking answers to questions through collecting and presenting data</p>	<p>In nursery: Pupils begin to use their environment and their senses to ask simple questions including what, who and where. They will then progress to understand why, when and how questions when asked by an adult. Children begin to collect and organise data at a simple level. For example: when investigating autumn, children collect falling leaves and group and organise them by colour, size and shape.</p> <p>In Reception: Pupils will show greater confidence when asking and answering questions with: who, what, when, why and how. Pupils continue to use their environment and the areas of provision to find out more about a given topic. Pupils continue to develop their understanding of collecting data. In groups and with the support of adults, children begin to understand that information can be presented. For example: sharing their findings in circle time, tally charts and observational drawings.</p>	<p>Pupils research using a range of different sources, with support including: books, videos and physical objects. Through educational visits and visitors into school (for example: Zoo Lab) children have the opportunity to ask and answer questions to an expert. They begin to collect and present data at a simple level, by using simple tally charts and drawings.</p>	<p>Pupils research using a range of sources including: books, videos and physical objects to enable them to ask and answer questions. Pupils are given a stimulus to explore with their talk partner and then share their findings with the class. Pupils become more independent in collecting data and presenting this in a range of ways.</p>
<p>Observing over time</p>	<p>In nursery: Children begin to recognise basic changes around them and their environment. For example: the weather getting colder and leaves falling off the trees in autumn.</p>	<p>Pupils continue to observe changes over time. For example: they look at the changes within different seasons. They observe the changes to plants and vegetables that they have grown.</p>	<p>Year 2 pupils build on their learning from Year 1 by looking at changes that occur across several areas of science. They observe changes in the plant world; looking at how seeds and bulbs</p>

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	<p>In Reception: Pupils begin to observe seasonal changes over time for example: visiting Hawhill park at different times of the year to compare the changes that they can see. Pupils begin to observe, talk about and record simple life cycles for example: frogs and caterpillars.</p>		<p>develop into mature plants, as well as learning about the plant life cycle including how seeds are dispersed to begin the growth cycle again. Children look at the changes to bodies, including the effects of diet and exercise.</p>
<p>Identifying grouping, and classifying</p>	<p>In nursery: Pupils identify simple, familiar animals for example pets in their home and farm animals. They identify common parts of their own body, through rhymes and songs. Within provision, animals are grouped according to their habitat to support their understanding of where animals live.</p> <p>In Reception: Pupils identify a range of living things for example common animals and plants. Pupils are able to talk about specific parts of a plant. They understand many parts of the body and build upon this knowledge and begin to compare similarities and differences to animals.</p>	<p>Pupils begin to use the correct terminology to identify. For example: materials (glass, metal, plastic) parts of a plants (roots, leaves, stem etc) and common animals (squirrel, rabbit, dog). They begin to group by similarities. Children use the knowledge of what they have been taught to classify. For example: classifying animals into animal groups eg: mammals, birds and reptiles etc.</p>	<p>Pupils continue to develop the correct terminology to identify a range of living things and objects. For example: materials, plants and animals. They continue to group living things and objects in further depth. For example:grouping materials based on their properties. Pupils use more formal ways of classifying, for example recording their findings using charts and venn diagrams.</p>
<p>Pattern seeking</p>	<p>In nursery:Pupils being to look at seasonal patterns for example: when they go on a nature walk in Autumn they will see brown/yellow/red leaves and conkers. Children have the opportunity to observe different patterns in life cycles. For example: chicks in spring and caterpillars and butterflies in summer.</p> <p>In Reception:Pupils observe patterns in the weather during outside provision time. In reception, children build upon the learning of life cyles from nursery by observing tadpoles in the pond. They use their knowledge of life cycles to compare similarities and differences. For example: that both caterpillars and chicks start with an egg.</p>	<p>Whilst looking at different weathers they will observe patterns for example: that there are more plants growing when they are exposed to rain and sunlight. After completing experiments, children are able to observe patterns. For example: children recognise that plants need certain conditions to survive.</p>	<p>After experiments, children draw conclusions based on the patterns they have observed, for example when collecting seeds in the local area to discover how seeds are dispersed, we find out that the seeds in our local area are mostly dispersed by birds and flying as opposed to by floating as we don't live near a water source. During studies of habitats and microhabitats children investigate why some animals have evolved in certain ways to adapt to their habitats, for example looking at ho bird's beaks differ dependigon the food source in their habitat.</p>

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Using equipment and fair testing	<p>In nursery: Pupils look at simple ways of using equipment to take part in scientific tests. For example: they build boats and test them out in the water tray. With support from an adult children are asked why they think their boat has stayed afloat or sunk. When children are exploring nursery rhymes they take part in the big egg drop. This involves the children using a range of equipment to build a safe home around Humpty Dumpty and then they drop him and with support talk about the best materials to use.</p> <p>In Reception: Pupils begin to look at which materials will work best when using them to create models in the junk area. With support they talk about which materials are best and how they know this. They begin to look at the concept of fair testing. For example: using the ice experiment, they understand that they all need to start with the same size piece of ice to make it fair and then look at the different ways of helping the ice to melt for example, in warm water and using salt.</p>	Pupils use simple equipment, such as magnifying glasses to observe closely. They begin to understand the concept of fair testing through investigations within topics. For example: carrying out an experiment to find out about the best conditions for plants to grow.	Children take part in experiments to develop their scientific understanding. Children test materials against properties for example experimenting to find out which materials are waterproof/rigid/opaque. Children use their findings to choose materials to best suit a purpose e.g. making a bomb shelter during the WW2 topic. During the plant topic children develop their skills of fair testing when growing the same amount of cress seeds in different environments whilst keeping the amount of seeds and water consistent.
Transferable scientific vocabulary	<p>Nursery – same, different, light, dark, hot, cold, animal, plant, grow</p> <p>Reception – same, different, light, dark, hot, cold, animal, plant, world, pattern, alive, living, dead, season, object, group, weather, seasons, think, name, suited, depend, fair test, record</p>	Year 1 – plan, design, question, measure, environment, describe, temperature, diagram, sense, explore, material, investigate	Year 2 – plan, design, question, measure, environment, describe, temperature, diagram, sense, explore, material, investigate, predict, observe, experiment, judge, identify, compare, suitable, properties, structure, conclusion
Substantive concepts	<p>Living things: There are seven characteristics of living things: movement, breathing or respiration, excretion, growth, sensitivity and reproduction.</p> <p>Evolution: Evolution is defined as the process of growth and development or the theory that organisms have grown and developed from past organisms. This term now includes things that are living but also things which are not, for example the evolution of the computer.</p>		

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	<p>Variation: Variation refers to the differences or deviations from the recognised norm or standard. It may be a modification in structure, form or function in an organism, deviating from other organisms of the same species or group</p> <p>Diversity: the condition of having or being composed of differing elements.</p>		