

Our curriculum intent: Is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.

EYFS DFE Understanding the world definition: 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.

Aims: Pupils 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.

Skills are dependent on specific knowledge. A skill is the capacity to perform or discuss and in order to do this a deep body knowledge needs to be acquired and retained.

<u>Rationale</u>

Plants:

Substantive

Plant enquiry begins in F1 where children begin exploring their natural environment through planting. They learn to plant their own fruit and vegetables and start to think about taking care of these by watering them daily. When ready, they learn how to harvest their produce and are encouraged to taste what they have grown. Then in F2, children revisit this learning by growing their own beanstalk. They develop their plant knowledge by thinking about what a plant needs to grow., including water and light, and begin to draw simple pictures of plants. In Year 1, plant enquiry is built upon as we look more closely at individual plants. We learn the difference between wild and garden plants including trees and we name a variety of each. We build upon F2's drawing of plants and learn to label plant parts including the stem, petals and roots.

As they move into year 2 children use the school grounds throughout the year to see how plants grow. Children are introduced to the requirements of plants for germination, growth and survival, and look into the processes of reproduction and growth in plants.

Animals including humans: Substantive

In F1 we start our animal learning though songs, stories and first-hand experiences. Children begin by learning basic body parts through songs such as 'head, shoulders, knees and toes and simple stories. In F2 children build on this learning by naming a variety of body parts. Year 1 children know, name and label body parts, and we begin to look at what is underneath our skin. In year 2, we look more closely at humans, as we learn that humans have offspring that grow into adults.

In summer the children in F1 start to look at minibeasts through stories including the very hungry caterpillar and the tall, tall grass. The children have caterpillars in school, which they watch grow, and change into butterflies. They also have opportunities to develop their understanding of other animals in our fantastic school environment. They use the pond to observe frogs and other wildlife nearby. This learning continues into f2 with revisiting learning on caterpillars and frogs and introducing ducks, again using first hand experiences such as having chicks and



caterpillars in school, but this time looking more closely at lifecycles. In year 1, the children are introduced to the different animal types; mammal, reptile, birds, fish and amphibian they look at the structure of these varying animals and can identify what these animals eat, whether they are carnivores, herbivores or omnivrores. This is built on again in year 2 as the children learn to describe the basic needs of animals including humans and learn about the importance of exercise, food and hygiene for humans.

Seasons:

Substantive:

Seasons are first introduced in F1 through stories. These stories explain the basic changes that occur in each season for example the leaves falling off the trees in Autumn. Children in F1 are encouraged to explore seasonal changes through outdoor play and continuous provision throughout the year. This consists of ice exploration, water play and experiencing different weather whilst outside. In F2, the children's knowledge is extended by looking more closely into processes and changes in the natural world. This is again learnt through exploration and play including ice experiments and water play. The children are exposed to seasons again, where they explore the school environment looking at changes that take place. Year 1, revisit seasonal knowledge and explore the changes that occur in the different seasons through visits to the local woods (Hobbucks) Whilst there they look at changes of weather, plants and trees. They adopt a tree for the year, and observe that tree in all 4 seasons. Year 2 continue to look at weather patterns in the 4 seasons and how this differs.

Living things and their habitat:

Substantive:

Living things and their habitats is first introduced in F1 and F2 through meeting animals (pets) and talking about their features and the importance of being kind and caring towards them. In F2 children begin to be able to describe similarities and differences in relation to living things. They look at the habitat of animals (frogs, ducks, caterpillars) and describe these habitats. They also begin to look at animals that hibernate over winter. In the summer term F2 children learn how human actions can impact on the environment. This is done through exploring the school environments such as plants, weeds and through looking at differing environments such as Antarctica. In year 2, the children further this knowledge by comparing the differences between things that are living, dead and have never been alive. They also look more closely at habitats, and describe why they are suited to certain animals and how these habitats provide for the basic needs of animals and plants.

Materials:

Substantive:

Materials are first introduced to children in F1 through a hands-on exploration of natural materials using all of their senses. Children in F2 then explore different materials and talk about what objects are made from. The children, through hands on experiences, learn and comprehend some important changes in the natural world around them. This includes states of matter, which is done through ice exploration. In year 1 this is built upon by the children understanding that an object is different from the material in which it is made. Children will develop their vocabualrly, learning a variety of material names such as; wood, glass, metal, water and rock. Children will explore these materials and be able to describe the physical properties of such materials. In year 2, children will further their knowledge of materials, by thinking about the suitability of a variety of materials for particular uses. They will look further into states of matter, and understand that shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Disciplinary

Working scientifically starts in F1 where children learn to be curious and interested to explore the environment around them. They begin to ask questions about their environment and know how to talk about things that they have observed. In F2 children continue to build on their questioning and discussions on what they have seen and they begin to make observations. Children in year 1 further this by understanding how to ask simple questions and beginning to recognise that they can be answered in different ways. They continue to observe things closely but begin to use equipment such as magnifying glasses to help them. They learn to use their observations and ideas to suggest answers to questions. Throughout the year children learn how to perform simple tests and are able to gather and record data to help in answering questions and begin to identify and classify with support. Year 2 build on this by observing with equipment safely and with reduced support. From their observations they are able to suggest answers to questions and what they could do next. They continue to perform simple tests but now can explain what they have found and how they have found it. They know how to gather and record data in order to help answer questions. Finally, they know how to identify and classify with less support.



		Science Know	ledge Progression Over		
Coverage &	F1	F2	Y1	Y2	Y2 exceeding
Coverage & Progression Working Scientificall y	F1 Know how to be curious and interested to explore new and familiar experiences in nature: grass, mud, puddles, plants, animal life Know how to ask questions about aspects of my familiar world such as the place where I live or the natural world. Know how to talk about some of the things I have observed such as plants, animals, natural and found objects.			Y2 Know how to ask questions and recognising that they can be answered in different ways Know how to observe closely, using equipment safely with reduced support Know how to perform simple tests know how to use their observations and ideas to suggest answers to questions and what they could do next know how to explain what they have found and how they found it Know how to Identify and classify with less support Know how to gather and record data to help in answering questions.	Y2 exceeding Know how to set up simple practical enquiries, comparative and fair tests Know how to mke systematic and careful observations and, where appropriate, taking accurate measurements using standard units, Know how to gather, record, classify and present data in a variety of ways to help in answering questions Know how to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Know how to report on findings from enquiries, including oral and written explanations of results and conclusions Know how to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
VOCAB Working scientifically				Ind contrast, classify sort a describe changes over time able	
Coverage &	F1	F2	Y1	Y2	Y2 exceeding
Progression Plants Key Skills BIOLOGY	Know how to plant seeds and care for growing plants Know how to show care and concern for living things and the environment	Know what a plant needs to grow Know and understand the key features of the life cycle of a plant Know and start to develop an understanding of growth, decay and changes over time. Know how to show care and concern for living things and the environment Draw pictures of plants	Know and name a variety of common wild and garden plants, including deciduous and evergreen trees – Know and describe the basic structure of a variety of common flowering plants, including trees e.g. petals, flowers, stem, leaves, root, trunk).	Know and describe how seeds and bulbs grow into mature plants Know and describe how plants need water, light and a suitable temperature to grow and stay healthy.	Know and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers Know the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant Know the way in which water is transported within plants Know the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

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Science Knowledge Progression Overview					
VOCAB Plants		Plant, grow, soil, water, tree, leaf, flower, stem, seed	deciduous, evergreen, leaves, flowers, petals, fruit, roots, seed, trunk/stem, branch, wild, garden, oak, species	Bulbs and seeds, flower, germination, seed dispersal, sprout, shoot, temperature, nutrition	
NC:			Pupils should use the local environment throughout the year to explore and answer questions about plants growing in their habitat. 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, 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.	Pupils should use the local environment throughout the year to observe how different plants grow. Pupils should be introduced to the requirements of plants for germination, growth and survival, as well as to 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.	
Coverage &	FI	F2	Y1	Y2	Y2 exceeding
Progression Animals including humans Key Skills BIOLOGY	Know how to sing songs that relate to me body eg: head, shoulders knees and toes Know how to talk about what I see and hear around me, using a wide vocabulary. Know how to show care and concern for living things and the environment	Know and name body parts Know how to describe what I see, hear and feel whilst outside. Know and understand the key features of the life cycle of an animal. Know and start to develop an understanding of growth, decay and changes over time. Know how to show care and concern for living things and the environment Draw pictures of animals	Know and name a variety of common animals including fish, amphibians, reptiles, birds and mammals Know and name a variety of common animals that are carnivores, herbivores and omnivores know the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) by describing and comparing know, name, draw and label basic parts of the human body which can be seen know the five senses and which part of the body is associated with each one	Know that animals, including humans, have offspring which grow into adults Know and describe the basic needs of animals, including humans, for survival (water, food and air) Know the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	Know that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat Know that humans and some other animals have skeletons and muscles for support, protection and movement.
VOCAB Animals including humans		Head, eyes, nose, mouth, ears, human, animal, fish, bird	herbivore, omnivore, carnivore, fish, reptiles, mammals, birds, amphibians, sense, touch, smell, taste, hear	Adult, child, diet, germ, growth, hygienic, life cycle, offspring reproduce, pulse, teenager, toddler, survaival, air, food	



	Science Knowledge Progression Overview				
NC:			Pupils should use the local environment throughout the year to explore and answer questions about animals in their habitat. 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 become familiar with the common names of some fish, amphibians, reptiles, birds and mammals, including those that are kept as 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.	Pupils should be introduced to the basic needs of animals for survival, as well as the 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.	Pupils should continue to learn about the importance of nutrition and should be introduced to the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions. Pupils might work scientifically by: identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons. They might compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat. They might research different food groups and how they keep us healthy and design meals based on what they find out.
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Coverage &	F1	F2	¥1	Υ2	Y2 exceeding
Progression Everyday materials Key skills CHEMISTRY	Know and notice features of objects in the environment Know how to use all my senses in hands-on exploration of natural materials. Know how to talk about the differences between materials and changes I notice.	Know how to explore different materials and talk about what they are made from Know and understand some important processes and changes in the natural world around them, including changing states of matter	Know that an object is different from the material from which it is made – Know and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock Know the simple physical properties of a variety of everyday materials Know how to compare and group together a variety of everyday materials on the basis of their simple physical properties.	Know and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses Know how the shapes of soli d objects made from some materials can be changed by squashing, bending, twisting and stretching.	Know how to compare and group materials together, according to whether they are solids, liquids or gases Know that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)
VOCAB Materials		Material, wood, glass, paper, hard, soft	Materials, properties, opaque, waterproof, plastic, wood, metal, glass, shiny, hard, soft, fabric, rough, smooth, clay, wool, bendy, brittle, stiff, rigid, transparent	Absorbent, man-made, material, natural, opaque, properties, suitability, translucent, transparent, waterproof.	
NC:			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	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	Pupils should explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container). Pupils should observe water as a solid, a liquid and a gas and should note the changes to water when it is heated or cooled.

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		Science Know	ledge Progression Over		
			listed in the programme of study, but including for example: brick, paper, fabrics, elastic, 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?'	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.	Note: Teachers should avoid using materials where heating is associated with chemical change, for example, through baking or burning. Pupils might work scientifically by: grouping and classifying a variety of different materials; exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party). They could research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. They might observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting.
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Coverage & Progression	F1	F2	Y1	Y1 EXCEEDING	
Seasonal changes EYFS and YEAR 1 ONLY PHYSICS	Know that weather can change	Know and start to develop an understanding of growth, decay and changes over time. Know and understand some important processes and changes in the natural world around them, including the seasons	Know how to observe changes across the four seasons Know and describe weather associated with the seasons Know how day length varies.	Know how to describe the weather with an increased vocabulary	
	VOCAB seasons	Summer, spring, autumn, winter, season, night, day, light, dark, moon	Weather, season, sunset, sunrise, deciduous, evergreen, winter, summer, spring, autumn, hibernation, migration, hedgehog, bat		
NC:	Pupils should observe an the weather and the seas Note: Pupils should be w to look directly at the Su dark glasses. Pupils might work scient tables and charts about making displays of what around them, including seasons change.	sons. arned that it is not safe in, even when wearing tifically by: making the weather; and : happens in the world day length, as the	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, including day length, as the seasons change.	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, including day length, as the seasons change.	
Coverage & Progression	F1	F2	Y2 EMERGING	Y2	Y2 exceeding
Living Things & Habitat YEAR 2 ONLY BIOLOGY	know the name of some living things that are within the immediate natural environment know how to care for living things and the environment	know and describe similarities and differences in relation to living things know and describe the habitat of familiar animals	With support, begin to Know and compare the differences between things that are living, dead, and things that have never been alive Know that most living things live in habitats to which they	Know and compare the differences between things that are living, dead, and things that have never been alive Know that most living things live in habitats to which they are suited and describe how	Know that living things can be grouped in a variety of ways Know and use classification keys to help group, identify and name a variety of living things in their local and wider environment



	Science Know	ledge Progression Over		
	actions impact on the environment.	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 Know and name some plants and animals in their habitats, including micro-habitats Know 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.	different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other Know and name a variety of plants and animals in their habitats, including micro- habitats Know 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.	Know that environments can change and that this can sometimes pose dangers to living things.
VOCAB Living things and their habitats	Life cycle, grow		Carnivore, depend, food chain, habitat, herbivore, omnivore, organism, micro habitat, prey, predator. Woodland, seashore, ocean, pond, desert, rainforest, energy	
NC:			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 'micro-habitat' (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 for example: '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 micro-habitats (under log, on	Pupils should use the local environment throughout the year to raise and answer questions that help them to identify and study plants and animals in their habitat. They should identify how the habitat changes throughout the year. Pupils should explore possible ways of grouping a wide selection of living things that include animals and flowering plants and non-flowering plants. Pupils could begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects. Note: Plants can be grouped into categories such as flowering plants (including grasses) and non-flowering plants, such as ferns and mosses. Pupils should explore examples of human impact (both positive and negative) on environments, for example, the positive effects of population and development, litter or deforestation. Pupils might work scientifically by: using and making simple guides or keys to explore and identify local plants and animals; making a guide to local living things; raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.

Science knowledge Progression Overview			
stony path, under bushes) and			
find out how the conditions			
affect the number and type(s)			
of plants and animals that			
live there.			

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