Ashbrook Infant and Nursery School.

Progression in Science.

Aims:

The national curriculum for science aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Statutory requirements:

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

Science Early Years Curriculum

Nursery

Objectives	Activities	Language
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.	Provide interesting natural environments for children to explore freely outdoors. Make collections of natural materials to investigate and talk about. Suggestions: • contrasting pieces of bark • different types of leaves and seeds • different types of rocks • different shells and pebbles from the beach Provide equipment to support these investigations. Suggestions: magnifying glasses or a tablet with a magnifying app. Encourage children to talk about what they see. Model observational and investigational skills. Ask out loud: "I wonder if…?" Plan and introduce new vocabulary, encouraging children to use it to discuss their findings and ideas.	Outdoors, indoors Natural features – tree, leaves, branches, bark, grass, plants, sticks, logs, stones, rocks, mud, sand, shells, weeds etc. Magnifying glasses, binoculars, camera I wonder if.. Descriptive vocabulary - hard, soft, rough, smooth, cold, hot, wet, dry Size vocabulary – long, short, fat, thin etc. Explore, investigate Why
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.	Show and explain the concepts of growth, change and decay with natural materials. Suggestions: • plant seeds and bulbs so children observe growth and decay over time	Grow, change, die, mouldy, shrink Taller, shorter, bigger, smaller Colour names Food, soil, water, warmth, light

	• observe an apple core going brown and mouldy over time • help children to care for animals and take part in first-hand scientific explorations of animal life cycles, such as caterpillars or chick eggs. Plan and introduce new vocabulary related to the exploration. Encourage children to use it in their discussions, as they care for living things. Encourage children to refer to books, wall displays and online resources. This will support their investigations and extend their knowledge and ways of thinking.	Seeds, bulb, leaves, flowers, petals, stem,
Explore and talk about different forces they can feel.	Draw children's attention to forces. Suggestions: • how the water pushes up when they try to push a plastic boat under it • how they can stretch elastic, snap a twig, but cannot bend a metal rod • magnetic attraction and repulsion Plan and introduce new vocabulary related to the exploration and encourage children to use it.	Push, pull, stretch, bend, snap, break, twist Hard, soft, bendy, stiff Magnet, sticks, pushes away
Talk about the differences between materials and changes they notice.	Provide children with opportunities to change materials from one state to another. Suggestions: • cooking – combining different ingredients, and then cooling or heating (cooking) them	Cook, heat, cool, bake, hotter, soften Ice, melt, cold, cooler, hard, wet Float, sink, heavy, light Light, shine, shadow, reflect Feel,

	• melting – leave ice cubes out in the sun, see what happens when you shake salt onto them (children should not touch to avoid danger of frostbite) Explore how different materials sink and float. Explore how you can shine light through some materials, but not others. Investigate shadows. Plan and introduce new vocabulary related to the exploration and encourage children to use it.	Names of common materials

Reception

Objectives	Activities	Language
Explore the natural world around them.	Provide children with frequent opportunities for outdoor play and exploration. Encourage interactions with the outdoors to foster curiosity and give children freedom to touch, smell and hear the natural world around them during hands-on experiences. Create opportunities to discuss how we care for the natural world around us. Offer opportunities to sing songs and join in with rhymes and poems about the natural world. After close observation, draw pictures of the natural world, including animals and plants.	Vocabulary from Nursery plus: Touch, smell, listen, taste, see Care, protect Observe, observation What, how, why, where, when

	Observe and interact with natural processes, such as ice melting, a sound causing a vibration, light travelling through transparent material, an object casting a shadow, a magnet attracting an object and a boat floating on water.	
Describe what they see, hear and feel whilst outside.	Encourage focused observation of the natural world. Listen to children describing and commenting on things they have seen whilst outside, including plants and animals. Encourage positive interaction with the outside world, offering children a chance to take supported risks, appropriate to themselves and the environment within which they are in. Name and describe some plants and animals children are likely to see, encouraging children to recognise familiar plants and animals whilst outside	As above plus: Names of plants and animals within the environment e.g. plants in the gardens and birds and minibeasts that can be found
Understand the effect of changing seasons on the natural world around them.	Guide children's understanding by draw children's attention to the weather and seasonal features. Provide opportunities for children to note and record the weather. Select texts to share with the children about the changing seasons. Throughout the year, take children outside to observe the natural world and encourage children to observe how animals behave differently as the seasons change. Look for children incorporating their understanding of the seasons and weather in their play.	As above plus: Weather – hot, cold, warm, sun, rain, snow, wind, hail, ice, frost, fog, stormy Seasons – Winter, Spring, Summer, Autumn Hibernate, migrate, bury, dig, nest, eggs etc.

	Year 1	Year 2	Year 3
Seasonal changes:	• observe changes across the four seasons • observe and describe weather associated with the seasons and how day length varies		

	Year 1	Year 2	Year 3
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.	• 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.	• identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • explore 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 • investigate the way in which water is transported within plants • explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

	Year 1	Year 2	Year 3
Animals including humans:	• 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	• notice that animals, including humans, have offspring which grow into adults • find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	• identify 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 • identify that humans and some other animals have skeletons and muscles for support, protection and movement.

	Year 1	Year 2	Year 3
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.	• 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.	

	Year 1	Year 2	Year 3	Year 4
Living things and their habitats:		• explore and compare the differences between things that are living, dead, and things that have never been alive • identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • identify and name a variety of plants and animals in their habitats, including microhabitats • describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.		• recognise that living things can be grouped in a variety of ways • explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • recognise that environments can change and that this can sometimes pose dangers to living things.