Science

Progression Map

Alumwell Infant School Science whole school curriculum progression map

Level Expected at the End of EYFS

We have selected the Early Learning Goals that link most closely to the Science National Curriculum.

Understanding the World (Animals Including Humans)

Children make observations of animals and explain why some things occur and talk about changes.

Understanding the World (Plants)

Children make observations of plants and explain why some things occur and talk about changes.

Understanding the World (Living things and their habitats)

Children talk about the features of their own immediate environment and how environments might vary from one another

Understanding the World (Seasonal change)

Children make observations of plants and explain why some things occur and talk about changes.

Understanding the World (Materials)

Children know about similarities and differences in relation to places, objects, materials

Key Stage 1 National Curriculum Expectations

Working Scientifically

Years 1 and 2

- 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.

Animals including humans

Year 1

- 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

- 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.

Plants

Year 1

- 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

- 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.

Everyday materials

Year 1

- 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

- 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

- 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

- 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.

Lower Key Stage 2 National Curriculum Expectations

Working scientifically

Years 3 and 4

- Asking relevant questions and using different types of scientific enquiries to answer them
- Setting up simple practical enquiries, comparative and fair tests
- Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- Using results to draw simple conclusions, make predictions for new values, suggest
- Improvements and raise further questions identifying differences, similarities or changes related to simple scientific ideas and processes
- Using straightforward scientific evidence to answer questions or to support their findings.

Plants

Year 3

- 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.

Animals including humans

Year 3

- 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.

Rocks

Year 3

- Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
- Describe in simple terms how fossils are formed when things that have lived are trapped within rock
- recognise that soils are made from rocks and organic matter

Light

Year 3

- Recognise that they need light in order to see things and that dark is the absence of light
- Notice that light is reflected from surfaces
- Recognise that light from the sun can be dangerous and that there are ways to protect their eyes
- Recognise that shadows are formed when the light from a light source is blocked by an opaque object
- Find patterns in the way that the size of shadows change.

Forces and magnets

Year 3

- Compare how things move on different surfaces notice that some forces need contact between two objects, but magnetic forces can act at a distance
- Observe how magnets attract or repel each other and attract some materials and not others
- Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
- Describe magnets as having two poles
- Predict whether two magnets will attract or repel each other, depending on which poles are facing.

Intent

Our intent is to give every child a broad and balanced Science curriculum which enables them to confidently explore and discover what is around them, so that they have a deeper understanding of the world we live in as a process of enquiry. We intend to build a Science curriculum which develops learning and results in the acquisition of knowledge and build a Science curriculum which enables children to become enquiry based learners. We intend that the children can understand and use scientific vocabulary appropriate for their stage of learning. Children will be able to make careful observations and experiment in a practical way so they develop curiosity and an ability to be effective problem solvers. The children have opportunities to develop their scientific understanding through using different types of scientific enquiry to answer their own questions. These include observing changes, noticing patterns, making links between topics as well as grouping and classifying things.

Implementation

Alumwell Infant School use 'PlanBee' resources for Science. This scheme, refined by our teachers, depending on the children's needs, provides full coverage of the new National Curriculum. Through our long and medium term plans, we offer a structure and sequence of lessons for teachers ensure they have covered the skills required to meet the aims of the national curriculum. Science in our school will harness the natural curiosity of children in the Early Years Foundation Stage, promote respect for living organisms and the natural environment and ensure that our children will acquire scientific knowledge, be able to retain what they know and recall what they've learnt in subsequent year groups, so becoming more knowledgeable and independent learners as they move through the key stages. Learning opportunities will enable all children to work collaboratively, apply their reading, writing and speaking skills to raise questions and make observations, methodically plan and safely carrying out investigations.

Impact

The successful approach to the teaching of science at Alumwell Infant School will result in a fun, engaging, high quality science education, that provides children with the foundations for understanding the world that they can take with them throughout their academic journey. Children are formatively assessed through questioning about their current science learning and about their attitudes towards the subject. Formative assessment is used as the main tool for assessing the impact of Science at Newsome Junior School as it allows for misconceptions and gaps to be addressed in the moment and in subsequent lessons. Assessments throughout Key Stage 1 are ongoing and recorded by teachers using their judgment on an assessment grid, carried out half-termly. This helps identify the children who are working towards the expected level, at the expected level and exceeding the expected level in science.

	EYFS	KS1 Statutory Curriculum Guidance Non-Statutory Curriculum Guidance Teacher Assessment Framework		KS2 Statutory Curriculum Guidance Non-Statutory Curriculum Guidance
	EYFS	**Year 1**	**Year 2**	**Year3/KS2**
Vocabulary	Animals including Humans Head Eyes Nose Mouth Ears Hands Fingers Feet Toes Arm Leg Animal Plants Tree Leaf Flower Stem Seed Earth and space Earth Moon Sun Star Materials Material Wood Glass Paper Hard Soft Sound Loud Quiet Seasonal changes Summer Spring Autumn Winter Season Day Dark Light Night	Animals including humans Fish, Reptiles, Mammals, Birds, Amphibians, Herbivore, Omnivore, Carnivore, Leg, Arm, Elbow, Head, Ear Plants Deciduous, Evergreen trees, Leaves, Flowers (blossom), Petals, Fruit, Roots, Bulb, Seed, Trunk, Branches, Stem Everyday Materials Wood, Plastic, Glass, Paper, Water, Metal, Rock, Hard, Soft, Bendy, Rough, Smooth Seasonal Changes Summer, Spring, Autumn, Winter, Sun, Day, Moon, Night, Light, Dark	Animals including humans Survival, Water, Air, Food, Adult, Baby, Offspring, Kitten, Calf, Puppy, Exercise, Hygiene Plants Seeds, Bulbs, Water, Light, Temperature, Growth Everyday materials and their uses Hard, Soft, Stretchy, Stiff, Shiny, Dull, Rough, Smooth, Bendy, Waterproof, Absorbent, Opaque, Transparent Brick, Paper, Fabrics, Squashing, Bending, Twisting, Stretching Elastic, Foil Living things and their habitats Living, Dead, Habitat, Energy, Food chain, Predator, Prey, Woodland, Pond, Desert	Animals including humans Movement, Muscles, Bones, Skull, Nutrition, Skeletons Plants Air, Light, Water, Nutrients, Soil, Reproduction, Transportation, Dispersal, Pollination, Flower Rocks Fossils, Soils, Sandstone, Granite, Marble, Pumice, Crystals, Absorbent Light Light, Shadows, Mirror, Reflective, Dark, Reflection Forces and magnets Magnetic, Force, Contact, Attract, Repel, Friction, Poles, Push, Pull
		Working Scientifically • Question, find out, observe, describe, test, compare • Measure, length, height, mass/weight, time, temperature • Record, results, table, chart, pictograph, block graph, bar chart		Working Scientifically • Question, find out, observe, describe, test, compare, explain, accurate, predict • Measure, length, height, mass/weight, time, temperature, tape measure, thermometer, data logger • Record, results, table, chart, pictograph, block graph, bar chart

Ask simple questions	Ask questions to find out more Ask why questions Ask one or two simple questions linked to a topic	Ask simple questions and recognise that they can be answered in different ways. For example: • Why are flowers different colours? • Why do some animals eat meat and others do not? • What materials are waterproof?	Ask simple questions and recognise that they can be answered in different ways including use of scientific language. For example: • Why do some trees lose their leaves in autumn and others do not? • How long are the roots of tall trees? • Why do some animals have underground habitats?	Ask relevant questions and use different types of scientific enquiries to answer them. For example: • Why does the moon appear as different shapes in the night sky? • Why do shadows change during the day? • Where does a fossil come from?

Perform simple tests	Explore how different materials can change shape (Play dough, paper, textiles) Children grow their own plants Find out about my own likes and dislikes (smell, touch, taste) Exploring what happens to different objects in water Exploring what different materials feel like (textures) Identifying objects they like and dislike the smell, touch or look of. Exploring building using different materials/ objects - which is best?	Perform simple tests (Year 1 focus) Which materials keep things warmest? What does a plant need to grow? Which materials are waterproof and which are absorbent?	Perform simple comparative and fair tests (Year 2 focus) Finding out and describe how plants need water, light and a suitable temperature to grow and stay healthy. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	Set up simple practical enquiries, comparative and fair tests. Which type of soil is most suitable when growing two similar plants? To see if their right hand is as efficient as their left. Can explain to a partner why a test is a fair one.

Observe closely, using simple equipment	Observe plant growth and talk about the different stages they observe Children can talk about the weather and how the weather changes through the year. Make observations about how people are the same and how people are different Make observations about what is the same and different between different animals Children can talk about the weather and how the weather changes through the year.	Use simple equipment to observe closely. Observe changes across the 4 seasons. Observe and describe weather associated with the seasons and how day length varies. Observe plants and trees in the natural environment. Observe the stages of plant growth.	Use simple equipment such as thermometers and rain gauges to observe closely changes over time. Observe and describe how seeds and bulbs grow into mature plants. Observe how a material can change shape through manipulation.	Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers

Gather and record data to help in answering questions	Using their observations to answer questions verbally.	Gather and record data to help in answering questions Make a simple written explanation about what has been learned from an investigation or what conclusions have been found.	Gather and record data to help in answering questions including from secondary sources of information using drawings, labelled diagrams, block graphs or tables. Communicate his/her Ideas, what he/she does and what he/she finds out In a variety of ways e.g. Simple written reports or write ups. Use his/her observations and ideas to suggest answers to questions noticing similarities, differences and patterns	Gather, record, classify and present data in a variety of ways to help in answering questions drawings, labelled diagrams, keys and child constructed bar charts and tables Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

Identify and classify	Identify and name simple body parts. (arms, legs, head) Describe what I use these body parts for. Name and identify animals (farm animals, pets, animals found in a zoo) Identify and describe where these animals might live. (habitats) Describe some key features of some animals e.g. Wings, legs, fur etc. Describe the basic needs of animals – food, water, shelter Identify the names of different objects. Use some words to describe how different objects feel Identify some common materials (wool, wood, glass) and identify where some of these materials come from. Make observations and talk about plants in the outdoor environment Know the names of some common plants – beanstalk, sunflower, poppy, daffodil	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 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. 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	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. Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. 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 and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for different uses Compare how things move on different surfaces. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	Group information according to common factors e.g. Plants that grow in woodlands/plants that grow in gardens. (Yr 3 focus) e.g. Venn Diagrams with bisecting sets or Carroll Diagrams