South Ossett Infants Academy

Science: EYFS and Key Stage 1

Progression of Learning Objectives

Science Coverage: EYFS

Lower Foundation

Communication and Language

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

Physical Development

- Make healthy choices about food, drink, activity and toothbrushing.

Understanding the World

- Understand position through words alone. For example, "The bag is under the table," – with no pointing.
- 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.
- Begin to make sense of their own life-story and family's history.
- 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.
- Begin to understand the need to respect and care for the natural environment and all living things.
- Explore and talk about different forces they can feel.
- Talk about the differences between materials and changes they notice.

Upper Foundation

Communication and language

- Learn new vocabulary.
- Ask questions to find out more and to check what has been said to them.
- Articulate their ideas and thoughts in well-formed sentences.
- Describe events in some detail.
- Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen.
- Use new vocabulary in different contexts.

ELG: C&L: Listening, attention and understanding

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

Personal, Social and Emotional Development

- Know and talk about the different factors that support their overall health and wellbeing: regular physical activity, healthy eating, toothbrushing, sensible amounts of 'screen time', having a good sleep routine, being a safe pedestrian.

Understanding the World

- Explore the natural world around them.
- Describe what they see, hear and feel while they are outside.
- Recognise some environments that are different to the one in which they live.
- Understand the effect of changing seasons on the natural world around them.

ELG: UTW: 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.

ELG: PSED: Managing Self

- Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.

Science National Curriculum: Key Stage One

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics.

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

Scientific knowledge and conceptual understanding	**The nature, processes and methods of science**
Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. The social and economic implications of science are important but, generally, they are taught most appropriately within the wider school curriculum: teachers will wish to use different contexts to maximise their pupils' engagement with and motivation to study science.	'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand. Pupils should learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data.

Curriculum Coverage

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Cycle A 26-27	Animals including Humans: focus on bodies and health	Seasonal Changes	Everyday Materials: uses for materials	Plants: needs of plants and growth	Animals including Humans: animals and fish	Living things and their habitats: focus on food chains
Cycle B 27-28	Seasonal Changes	Animals including Humans: focus on pets	Everyday Materials: comparing materials	Plants: parts of a plants and trees	Everyday Materials: focus on change	Living things and their habitats: focus on habitats

Working Scientifically

KS1

- Ask simple scientific questions and recognise they can be answered in different ways
- Use simple equipment to make observations e.g. magnifying glass
- Carry out simple tests with your class
- Identify and classify things into groups
- Answer questions using observations and ideas from the lesson
- Gather and record data to help answer questions

KS1 Vocabulary

aim	findings	same
answers	gather	similarity
block diagrams	group	simple tables
changes	identify (name)	sort
compare	investigate	sorting diagrams
describe	measure	tally charts
difference	notice	test
different	observe	What will we do? (plan)
enquiry	patterns	What do you think will happen? (prediction)
equipment	pictograms	What happened? (results)
experience	questions	What have we found out? (conclusion)
explore	record	

Science: KS1			
Biology		**Chemistry**	**Physics**
Animals, including Humans	*Plants*	*Everyday Materials*	*Seasonal Changes*
• Know how to describe and classify a range of animals by amphibian, reptile, mammal, fish and birds including their pets • Know and classify animals by what they eat (carnivore, herbivore and omnivore) • Know how to sort by living and non-living things • Identify, label and draw the parts of the human body that can be seen and which parts are associated with each sense Key Concept and Abstract terms: - Life - Variation - Growth - Similarity and Difference	• Know and name a variety of common wild and garden plants • Know and name the petals, stem, leaves and root of a plant • Know and name the roots, trunk, branches and leaves of a tree Key Concept and Abstract terms: - Life - Energy - Variation - Growth - Similarity and Difference	• Know the name of the materials an object is made from • Name materials made out of wood, plastic, glass, metal, water and rock • Describe the properties of everyday materials • Group objects based on the materials they are made from Key Concept and Abstract terms: - Matter - Similarity and Difference	• Observe changes across the 4 seasons • Name the seasons and describe the weather in each season • Describe how day length varies in each season e.g. shorter in the winter and longer in the summer Key Concept and Abstract terms: - Energy - Similarity and Difference - Change
Vocabulary fish, amphibians, reptiles, birds, mammals, carnivore, herbivore, omnivore, wild, nocturnal, non-living	**Vocabulary** buds, bulbs, deciduous, evergreen, trunk, vegetable, wild plants, garden plants, environment, blossom, petals, branches	**Vocabulary** materials, wood, plastic, glass, hard, smooth, bumpy, metal, liquid, gas, rock, stretch, stiff, bend, waterproof, shiny	**Vocabulary** Spring, Summer, Autumn, Winter, weather, temperature, thermometer

Key Skills	**Key Skills**	**Key Skills**	**Key Skills**
• Make first hand close observations of animals from each of the groups (city farm) • Compare the structure of two animals from the same or different group e.g. wings, feathers, vertebrates/invertebrates. • Classify animals using a range of features e.g. lay eggs/give birth to live young. herbivore, omnivore (these terms do not have to be explicitly taught). • Identify animals by matching statements to named images. • Take measurements of parts of the body and present results in a table to interpret. • Conduct simple sense experiments. Which part of my body is good for feeling, which is not? Which food/flavours can I identify by taste? Which smells can I match?	• Can sort and group parts of plants using similarities and differences e.g. the shape of leaves, the colour of the flower/blossom. • Can use simple charts and Venn diagrams etc. to identify and classify plants. • Use photographs and their own observations to talk about how plants change over time (e.g. seed to sapling to tree) and over the year (deciduous and fruit bearing trees). • Plant seeds and observe how they grow and change by making simple observations. • Point to and name the parts of a plant, recognising that they are not always the same e.g. leaves and stems may not be green, the leaves are different shapes.	• Compare and group together a variety of everyday materials on the basis of their simple physical properties. • Classify objects made of one material in different ways e.g. a group of objects made of metal. • Classify one type of object made from a range of materials e.g. a collection of spoons made of different materials. • Chosen an appropriate method for testing an object for a particular property. • Use their test evidence to answer the questions about properties e.g. Which cloth is the most absorbent? • Test the properties of objects e.g. absorbency of cloths, strength of party hats made of different papers, stiffness of paper plates, waterproofness of shelters.	• Gather and record data about weather conditions in autumn, drawing on observation and using simple equipment (such as a container to measure rainfall) • Use data to create a pictogram and use this to describe changes in day length over the seasons. • Use their evidence to describe some other features of the weather, surroundings, themselves, animals, and plants found in autumn. • Demonstrate their knowledge in different ways e.g. creating seasonal artwork, creating a pictogram (and use this to ask and answer related questions)

Science: KS1 Continued

Biology			Chemistry
All living things and their habitats	*Animals, including Humans*	*Plants*	*Everyday Materials*
• Classify and compare things by living, dead or never lived • Know how a specific habitat provides for the basic needs of things living there (plants and animals) • Match animals and plants to their habitats including micro habitats • Name some different sources of food for animals • Know about and explain a simple food chain Key Concept and Abstract terms (new): - Adaptation Key Concept and Abstract terms (revisited): - Life - Growth - Energy - Variation - Similarity and Difference	• Know that animals including humans have offspring which grow into adults • Know the basic needs of animals for survival (water, food and air) • Know why exercise, a balanced diet and good hygiene are important for humans Key Concept and Abstract terms (revisited): - Life - Growth - Energy - Similarity and Difference	• Know and explain how seeds and bulbs grow into plants • Know what plants need in order to grow and stay healthy (water, light & suitable temperature) Key Concept and Abstract terms (revisited): - Life - Energy - Growth - Similarity and Difference - Variation - Energy	• Know how materials can be changed by squashing, bending, twisting and stretching • Know why a material might or might not be used for a specific job including wood, metal, plastic, glass, brick, rock, paper and cardboard Key Concept and Abstract terms (revisited): - Matter - Similarity and Difference
Vocabulary microhabitats, species, desert, rainforest, sea, ponds, woodland, rivers, food chain, living, dead, never alive	**Vocabulary** healthy, diet, off-spring, exercise, protein, carbohydrates, fat, dairy, nutrition, survival, hygiene	**Vocabulary** roots, bulb, crown, germination, blossom, trunk, woodland, habitat, oxygen	**Vocabulary** metal, plastic, wood, squashing, bending, twisting, stretching

Key Skills	Key Skills	Key Skills	Key Skills
• Explore the outside environment to find objects that are living, dead and have never lived • Classify objects found in the local environment • Observe animals and plants carefully, drawing and labelling diagrams • Create simple food chains for a familiar local habitat from first hand observation and research • Can give key features that mean the animal or plant is suited to its microhabitat • Using a food chain can explain what animals eat • Can explain in simple terms why an animal or plant is suited to a habitat	• Ask questions and use secondary sources to find out about the life cycles of some animals • Observe animals growing over a period of time e.g. chicks, caterpillars, a baby • Ask questions of a parent about how they look after their baby • Ask pet owners questions about how they look after their pet • Investigate the effect of exercise on their bodies • Classify food in a range of ways, including using the Eatwell guide • Investigate washing hands, using glitter gel • Describe, using diagrams, the life cycle of some animals, including humans, and their growth to adults e.g. by creating a life cycle book for a younger child • Measure/observe how animals, including humans, grow. • Collate what they know about looking after a baby/animal by creating a parenting/pet owners' guide • Explain how development and health might be affected by differing conditions and needs being met/not met	• Make close observations of seeds and bulbs • Classify seeds and bulbs • Research and plan when and how to plant a range of seeds and bulbs • Look after the plants as they grow – weeding, thinning, watering etc. • Make close observations and measurements of their plants growing from seeds and bulbs • Make comparisons between plants as they grow • Can spot similarities and difference between bulbs and seeds	• Classify and sort materials by their properties e.g. manmade, natural • Investigate and observe what happens to different materials during testing and use this to inform explanation of their properties • Investigate which materials are fit for a purpose e.g. What is the best material for an umbrella? • Explain from their observations how materials change when a force is exerted on them by squashing, bending, twisting and stretching. • Investigate the transparency of objects, recording class data in a table and drawing simple conclusions from the findings. • Ask and answer questions about everyday materials