Curriculum Knowledge and Skills Progression Document for Science

Knowledge, skills and understanding breakdown for EYFS

The statutory framework for the EYFS (2021) states that '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 foster their understanding of our culturally, socially, technologically and ecologically diverse world. Enriching and widening children's vocabulary will support later reading comprehension.'

Birth to three

- Do they explore materials with different properties? (EM)
- Do they explore natural materials, indoors and outside? (EM)
- Do they explore and respond to different natural phenomena in their setting and on trips? (WS)

Three and four year olds

- Can they use all their senses in hands-on exploration of natural materials? (WS)
- Do they explore collections of materials with similar and/or different properties? (EM)
- Can they talk about what they see, using a wide vocabulary? (WS)
- Can they explore how things work? (WS)
- Can they plant seeds and care for growing plants? (P)
- Do they understand the key features of the life cycle of a plant and an animal? (P/AIH)
- Can they begin to understand the need to respect and care for the natural environment and all living things? (P/AIH)
- Can they explore and talk about different forces they can feel?
- Do they talk about the differences between materials and changes they notice? (WS/EM)

Children in Reception

- Can they explore the natural world around them?
- Can they describe what they see, hear and feel whilst outside? (WS)
- Do they recognise some environments that are different to the one in which they live? (AIH)
- Do they understand the effect of changing seasons on the natural world around them? (SC)

ELG's

The Natural World

- Do they explore the natural world around them, making observations and drawing pictures of animals and plants? (AIH/P/WS)
- Do they 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? (AIH/WS)
- Do they understand some important processes and changes in the natural world around them, including the seasons and changing states of matter? (SC/EM)

National Curriculum Requirements for Science at Key Stage 1

The National Curriculum requirements note that the principal focus of science teaching in Key Stage 1 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.

'Working Scientifically' is described separately, but must always be taught through and clearly related to the teaching of substantive science content.

Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at Key Stage 1.

Knowledge, skills and understanding breakdown for Year 1

Working Scientifically

- Can they talk about what they can sense (see, touch, smell, hear or taste)?
- Can they use simple equipment to help them make observations?
- Can they find out by watching, listening, tasting, smelling and touching?
- Can they perform a simple test?
- Do they know what a test is?
- Can they tell other people about what they have done?
- Can they use simple equipment safely and with appropriate purpose?
- Can they give a simple reason for their answers?
- Can they identify and classify things they observe?
- Can they think of questions to ask?
- Can they answer scientific questions?
- Can they give a simple reason for their answers?
- Can they explain what they have found out?
- Can they talk about similarities and differences?
- Can they explain what they have found out using appropriate vocabulary?
- Can they show their work using pictures, labels and captions?
- Can they record their findings?
- Can they put information in a chart or table?
- Can they make accurate measurements?

Plants

- Can they name the petals, stem, leaf, bulb, flower, seed, stem and root of a plant?
- Can they identify and name a range of common plants and trees?
- Can they recognise deciduous and evergreen trees?
- Can they name the trunk, branches and root of a tree?
- Can they describe the parts of a plant (roots, stem, leaves, flowers)?
- Can they observe the growth of flowers and vegetables that they have planted?
- Can they name the main parts of a flowering plant?

Animals, including Humans

- Can they point out some of the differences between different animals?
- Can they sort photographs of living things and non-living things?
- Can they identify and name a variety of common animals? (birds, fish, amphibians, reptiles, mammals, invertebrates)
- Can they describe how an animal is suited to its environment?

- Can they identify and name a variety of common animals that are carnivores, herbivores and omnivores?
- Can they name different habitats?
- Can they begin to classify animals according to given criteria?
- Can they point out differences between living things and non-living things?
- Can they name the parts of the human body that they can see?
- Can they draw and label basic parts of the human body?
- Can they identify the main parts of the human body and link them to their senses?
- Can they name the parts of an animal's body?
- Can they name a range of domestic animals?
- Can they classify animals by what they eat? (carnivore, herbivore, omnivore)
- Can they say why certain animals have certain characteristics?
- Can they name a range of wild animals?

Everyday materials

- Can they distinguish between an object and the material from which it is made?
- Can they describe materials using their senses, using specific scientific words?
- Can they explain what material objects are made from?
- Can they explain why a material might be useful for a specific job?
- Can they name some different everyday materials? e.g. wood, plastic, metal, water and rock
- Can they sort materials into groups by a given criteria?
- Can they explain how solid shapes can be changed by squashing, bending, twisting and stretching?
- Can they sort materials into two groups – can be recycled, can't be recycled?
- Can they sort materials according to how they can be recycled?
- Can they describe things that are similar and different between materials?
- Can they explain what happens to certain materials when they are heated, e.g. bread, ice, chocolate?
- Can they explain what happens to certain materials when they are cooled, e.g. jelly, heated chocolate?

Seasonal Changes

- Can they observe changes across the four seasons?
- Can they name the four seasons in order?
- Can they observe and describe weather associated with the seasons?
- Can they observe and describe how day length varies?
- Can they observe features in the environment and explain that these are related to a specific season?
- Can they observe and talk about changes in the weather?

Year 2

Working Scientifically

- Can they use (see, touch, smell, hear or taste) to help them answer questions?
- Can they use some scientific words to describe what they have seen and measured?
- Can they suggest ways of finding out through listening, hearing, smelling, touching and tasting?
- Do they know what a fair test is?
- Can they carry out a simple fair test?
- Can they explain why it might not be fair to compare two things?
- Can they say whether things happened/did not happen as they predicted and why?
- Can they suggest how to find things out?
- Can they organise things into groups?
- Can they find simple patterns?
- Can they identify animals and plants by a specific criteria?
- Can they suggest more than one way of grouping animals and plants and explain their reasons?
- Can they use (text, diagrams, pictures, charts, tables) to record their observations?

- Can they measure using simple equipment?
- Can they use secondary sources to find things out?

Living things and their habitats

- Can they match certain living things to the habitats they are found in?
- Can they explain the differences between living and non-living things?
- Can they describe some of the life processes common to plants and animals, including humans?
- Can they decide whether something is living, dead or non-living?
- Can they describe how a habitat provides for the basic needs of things living there? Can they describe a range of different habitats?
- Can they describe how plants and animals are suited to their habitat?
- Can they talk about how animals adapt to live in different habitats?
- Can they name some characteristics of an animal that help it to live in a particular habitat?
- Can they describe what animals need to survive and link this to their habitats?

Animals, including humans

- Can they describe what animals need to survive?
- Can they explain that animals grow and reproduce?
- Can they describe the life cycle of some living things? (e.g. egg, chick, chicken)
- Can they explain the basic needs of animals, including humans for survival? (water, food, air)
- Can they describe why exercise, balanced diet and hygiene are important for humans?
- Can they explain that animals reproduce in different ways?

Plants

- Can they describe what plants need to survive?
- Can they observe and describe how seeds and bulbs grow into mature plants?
- Can they find out & describe how plants need water, light and a suitable temperature to grow and stay healthy?
- Can they describe what plants need to survive and link it to where they are found?
- Can they explain that plants grow and reproduce in different ways?

Everyday Materials

- Can they describe the simple physical properties of a variety of everyday materials?
- Can they compare and group together a variety of materials based on their simple physical properties?
- Can they talk about ways to protect our Planet?
- Can they describe the properties of different materials using words like, transparent or opaque, flexible, etc.?
- Can they sort materials into groups and say why they have sorted them in that way?
- Can they say which materials are natural and which are man-made?
- Can they explore how the shapes of solid objects can be changed? (squashing, bending, twisting, stretching)
- Can they find out about people who developed useful new materials?
- Can they identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper, cardboard for particular uses?
- Can they explain how things move on different surfaces?
- Can they explain how materials are changed by heating and cooling?
- Can they explain how materials are changed by bending, twisting and stretching?
- Can they tell which materials cannot be changed back after being heated, cooled, bent, stretched or twisted?

Progression of vocabulary for Science at EYFS

Nursery

Plants

Plants, water, sun, garden, outside, look after, flower, soil.

Animals, Including Humans

Grow, pets, farm animals, wild animals, look after, healthy, safe, body part, senses, animals, Birds (owl, duck), insects/bugs/mini-beasts, things animals give us - meat, chicken, bacon/ham, milk/cheese/ butter, wool, hair, eggs, honeycomb, honey.

Materials

Material, wood, plastic, metal, fabric, glass, hard, soft,

Seasons

Spring, summer, autumn, winter, seasons, dark, light, night, day, sun, moon

Reception

Plants

Living, compost, grow, growth, change, die, decay, lifecycle, roots, shoots, stem, leaves, buds, light, warmth, temperature.

Animals, Including Humans

Lifecycle: Egg, caterpillar, chrysalis, butterfly, living things, die, grow, change, places – park, shops, patterns, wildlife, wild, natural, nocturnal, adult/parent, baby, Birds (owl, duck), insects/bugs/mini-beasts (lacewing, ladybird, woodlouse, bee, wasp, spider, tarantula, earthworm, snail, locust, cricket, millipede, butterfly, caterpillar), fish, reptiles (snake, tortoise, gecko), amphibians, mammals (mouse, shrew, vole, hare, fox)

Materials

Rough, smooth, shiny, dull, natural, manmade, same, different, object, properties, suitable, pipette, recycling, properties, waterproof, strong/weak, dense/less dense, hard/soft, materials - bubble wrap, foil, plastic, fabric, paper, straw, sticks, bricks, metal, glass.

Seasons

Daytime, hot, cold, planet, space, harvest, weather, rain, wind, snow, ice, frost, sleet, hail, cold/warm/hot, day length.

Progression of vocabulary for Science at year 1

Plants

Deciduous and evergreen trees and examples of these common to Britain (e.g. oak, ash, sycamore, horse chestnut, elder, pine, hawthorn, holly, yew, lime, cherry, birch, beech, willow)

Examples of common British plants, e.g. daffodil, primrose, bluebell, tulip, snowdrop, dandelion, crocus, rose, wild garlic, cow parsley, foxglove, ivy, buttercup, poppy, lavender

Bulb, roots, stem, leaves, flower (blossom), petals, fruit, seeds, trunk, branches, twigs, crown, seed

Tally, species, leaves

Animals including Humans

Fish, Reptiles, Mammals, Birds, Amphibians (+ examples of each), living, non-living, environment, herbivore, omnivore, carnivore, leg, arm, elbow, head, ear, nose, knees, face, eyes, hair, mouth, teeth, neck, back, wings, beak, tail

Native, backbone, skeleton, soft body, shell, adapted, hibernate, migrate, predator, prey,

Examples of Wild Animals, Domestic animals

Characteristics

Everyday Materials

Wood, plastic, glass, paper, water, metal, rock, hard, soft, bendy, rough, smooth, similar, different, object, material, object, properties, brick, fabric, elastic, foil, rubber, wool, clay, not bendy, rough/bumpy/smooth, stretchy/ squashy/brittle/stiff/rigid, shiny/ dull, waterproof/not waterproof, absorbent/not absorbent, opaque/transparent, absorbent

Seasonal Changes

Summer, spring, autumn, winter, sun, day, moon, night, light, dark, changes, weather, season, spring equinox, baby animals

Autumn – fungi, migration, hibernation, deer, squirrel, swallow, osprey, oose, starlings, murmurate, hedgehog, bat, wood mouse, dormouse, worm, salmon,

Winter – adapt
Winter equinox - sun, sunrise, day, light, moon, sunset, night, dark, weather - wet, dry, wind, temperature, hot, cold, thermometer, degrees Celsius, hibernation.

Working Scientifically

Observe, talk, see, smell, touch, hear, taste, equipment, observe, observations, find out
Test, equipment, safe, reason
Identify, classify, questions, reason, explain, similarities, differences, scientific, vocabulary
Pictures, labels, captions, record, findings, standard units, information, chart, table, accurate, measurements

Progression of vocabulary for Science at year 2

Living Things and Their Habitats

Living, dead, non-living, habitat, energy, food chain, predator, prey, woodland, pond, desert, survive, life processes, plants, animals, humans, microhabitat, seashore, ocean, rainforest

Animals including Humans

Survival, water, air, food, adult, baby, offspring, kitten, calf, puppy, exercise, hygiene, balanced diet, reproduce/reproduction, basic needs, life-cycle

Plants

Seeds, bulbs, water, light, temperature, growth/grow, reproduce/reproduction, germination

Classifying and Grouping Materials

Hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy, waterproof, absorbent, opaque, transparent, natural, man-made, properties, translucent, squashing, bending, twisting

Changing Materials

Everyday material names e.g. brick, paper, fabrics, squashing, bending, twisting, stretching
Elastic, Foil
Change, Heat, Cool

Working Scientifically

Answer, question, describe, compare, similar/similarities, different/differences
Fair test, compare, expect, explain, find things out, suggest
Organise, patterns, identify, criteria, grouping, explain, reason
Record, observations, text, diagrams, pictures, charts, tables, measure, information, online