

Science Progression

Sparkwell All Saints Primary School

Our Science curriculum develops children's curiosity about the world and their ability to explain what they observe. Knowledge of living things, materials and physical processes grows alongside the skills needed to ask questions, investigate, gather evidence and reach conclusions.

How learning develops

Children begin with practical exploration and familiar experiences. As they move through school, they make more careful observations, use increasingly precise vocabulary and measurements, and draw on earlier learning to explain patterns and changes. By Year 6, they plan enquiries with greater independence and use evidence to justify and evaluate their conclusions.

Phase	The developing scientist
Early Years	Explore with the senses, notice changes and similarities, ask questions and talk about discoveries. Begin to record observations through pictures, marks and simple tables.
Years 1 and 2	Ask simple scientific questions, observe closely, sort and group, and carry out simple tests. Record findings and begin to explain patterns using scientific language.
Years 3 and 4	Use a wider range of enquiries, including comparative and fair tests. Measure in standard units, record results in different ways and use evidence to explain findings.
Years 5 and 6	Select approaches and equipment, identify and control variables, and take increasingly accurate measurements. Evaluate evidence, justify conclusions and suggest improvements and further questions.

Knowledge and enquiry together

Working scientifically runs through the subject. Children use observation over time, pattern seeking, identifying and classifying, comparative and fair testing, and research to explore scientific questions. A prediction draws on what is already known; a conclusion explains what the evidence shows.

Reading the progression tables

The tables show the main progression from Nursery foundations to Year 6. Nursery describes the early experiences on which Reception learning builds. Related strands are grouped to make the sequence easier to follow; topics are revisited and connected as understanding deepens.

Each row summarises key knowledge and skills rather than individual lessons. The sequence moves from describing what happens towards explaining how and why, choosing suitable methods and considering the strength of the evidence.

Asking questions and investigating

Children develop from exploring with adult support to planning purposeful enquiries, making decisions and recognising how to improve an investigation.

Stage	Questioning and planning	Observing and investigating
Nursery foundations	Ask or answer a simple scientific question.	Explore natural materials with the senses. Try different ways of doing things and talk about observations using simple scientific vocabulary.
Reception	Ask relevant questions to find out more, explain how things work and consider why things happen.	Observe, record and talk about materials and living things with support. Notice how activities are going and adapt ideas where necessary.
Year 1	Ask simple scientific questions using words such as what, why, how, when and which.	Follow instructions to carry out simple tests with support. Observe objects, materials and living things, sort by features and talk about what might happen.
Year 2	Ask and answer scientific questions about the world. Make simple predictions and suggest ways to answer questions.	Follow instructions to perform simple tests. Observe changes over time, sort and group by features, and explain the reasons for groupings.
Year 3	Ask questions and explain that they can be answered in different ways. Make predictions based on what might happen.	Set up and carry out simple comparative and fair tests. Make increasingly careful observations, identifying similarities, differences, changes and connections.
Year 4	Ask relevant questions independently and begin to identify suitable ways to answer them.	Begin to plan and carry out comparative and fair tests independently. Choose observations and their timing, and follow a method accurately.
Year 5	Ask a wide range of questions that broaden understanding. Plan enquiries, write methods and identify variables.	Choose equipment and use prior knowledge to predict outcomes. Within a group, decide what to observe, when and for how long; explore links between cause and effect.
Year 6	Ask deeper and broader questions. Plan enquiries, identify and control variables, and decide what equipment and data are needed.	Independently choose and make systematic observations. Use comparisons, identify changes and classify findings to explore relationships and cause and effect.

Measuring recording and explaining

Children learn to collect dependable evidence, choose useful ways to present it and explain what their findings do and do not show.

Stage	Measurement and recording	Reporting and concluding
Nursery foundations	Order two or three objects by length, height or capacity. Talk about what they notice in a set of data.	Begin to offer simple explanations for why things happen.
Reception	Use simple measuring equipment with support. Record observations in simple tables and pictograms.	Represent observations through marks, drawings, charts and tables. Explain why things happen using vocabulary such as because, then and next.
Year 1	Use simple equipment with support to observe and measure. Gather and record simple data using tables, diagrams or drawings.	Talk about what they have done and, with help, say what they think they have found out.
Year 2	Use simple equipment to measure and observe. Record with some accuracy using tables, charts and diagrams.	Notice patterns and relationships in data. Explain what they did and found out using simple scientific language.
Year 3	Measure in standard units using different equipment. Record findings in diagrams, tables, charts and graphs with increasing accuracy.	Describe methods using suitable vocabulary. With help, draw a simple conclusion from evidence and identify next steps or improvements.
Year 4	Take accurate measurements in standard units. Classify and present findings using suitable diagrams, keys, tables and graphs.	Use scientific vocabulary to report findings, answer questions and draw evidence-based conclusions. Suggest improvements and further questions.
Year 5	Choose equipment for increasingly accurate measurements. Select from scientific diagrams, labels, classification keys, tables, graphs and models to record complex results.	Justify conclusions using evidence. Identify improvements, further questions and predictions, and explain findings with relevant scientific vocabulary.
Year 6	Take accurate, precise and repeated measurements. Choose suitable recording methods, including classification keys, tables and bar, line or scatter graphs.	Evaluate findings and justify methods and conclusions. Distinguish facts from opinions, suggest methodological improvements and propose further questions and predictions.

The human body and healthy living

Learning develops from naming body parts and practising hygiene to understanding body systems, development and the effects of lifestyle choices.

Stage	The body and its systems	Health and safe practice
Nursery foundations	Identify some body parts in pictures.	Wash and dry hands after using the toilet and before eating. Follow simple safety rules with an adult's help.
Reception	Draw the human body and name some body parts. Begin to connect parts with their functions.	Explain why regular handwashing matters. Follow instructions in different environments and when using simple equipment.
Year 1	Draw and label the main body parts. Explore the five senses and their associated body parts.	Explain why cleanliness and handwashing are important. Describe ways to stay safe in familiar situations.
Year 2	Describe stages of human development from baby and toddler to child, teenager, adult and elderly person.	Describe basic needs for survival. Explain the importance of exercise, a balanced diet, sleep and personal hygiene.
Year 3	Explain how the skeleton and muscles support, protect and move the body. Compare diets and recognise that humans obtain nutrients from food.	Explain the importance of a balanced diet and drinking water. Understand that sunlight can damage skin and eyes and describe protective measures.
Year 4	Describe the digestive system and the functions of its main parts. Identify incisors, canines, premolars and molars and their functions.	Describe what damages teeth and how brushing, limiting sugary foods and drinks, and dental visits help protect them.
Year 5	Describe human reproduction and changes from birth to old age, including puberty and ageing.	Explain why personal hygiene matters during puberty. Describe precautions when heating, burning, cooling or mixing materials.
Year 6	Name and explain the functions of the heart, blood vessels and blood. Explain how circulation transports oxygen, water and nutrients.	Explain how positive and negative lifestyle choices affect the body. Recognise hazards associated with lasers and the need to use them safely.

Plants growth and change

Children progress from caring for plants and noticing growth to explaining plant structures, reproduction and changes in living things over time.

Stage	Plant identification and structure	Growth reproduction and change
Nursery foundations	Care for seeds and plants. Describe observable features of different plants and trees and begin to draw their parts.	Say how living things change over time. Recognise that plants need suitable conditions to grow.
Reception	Name and group plants and trees by their visible features. Name basic plant parts.	Observe the natural world and describe changes, including seasonal changes and familiar animal life cycles.
Year 1	Identify and compare common wild and garden plants, including deciduous and evergreen trees. Label the basic structure of common plants.	Describe changes in plants and animals over time, including seasonal changes and changes as plants grow.
Year 2	Explain that plants need water, light and a suitable temperature to grow and stay healthy.	Observe and describe how seeds and bulbs grow into mature plants. Describe basic life cycles of familiar animals.
Year 3	Name and describe the functions of roots, stems, leaves and flowers in flowering plants.	Draw and label a flowering plant's life cycle, including germination, flower production, pollination, fertilisation, seed formation and seed dispersal.
Year 4	Use shared characteristics when grouping plants and other living things. Explore plant groupings as part of classification.	Explain how familiar habitats change over time and how these changes influence the living things within them.
Year 5	Label and draw flower parts involved in reproduction, including the stamen, anther, filament, carpel, stigma, style and ovary.	Group plants by how they reproduce. Distinguish sexual reproduction from asexual reproduction, which produces offspring from one parent.
Year 6	Use classification systems to identify plants from different habitats.	Explain that offspring are of the same kind as their parents but show variation. Use scientific examples and evidence to explain how living things have changed over time.

Animals habitats and interdependence

Children move from naming familiar animals to using classification systems and explaining relationships between organisms and their environments.

Stage	Identifying and classifying living things	Food and relationships
Nursery foundations	Name familiar domestic and wild animals and notice their different features.	Describe what a familiar animal or pet eats.
Reception	Match animals to their young and recognise that young animals may look different from their parents.	Match animals to the foods they eat, including plants, other animals or both.
Year 1	Identify, compare and group common animals, including fish, amphibians, reptiles, birds, invertebrates and mammals.	Group animals by diet. Use carnivore, herbivore and omnivore to describe what they eat.
Year 2	Identify plants and animals in habitats and microhabitats. Revisit common animal groups and describe familiar life cycles.	Construct and interpret simple food chains to show how living things depend on one another for food.
Year 3	Describe animal groupings and what animals need to survive. Distinguish vertebrates and invertebrates and compare types of skeleton.	Compare and contrast animal diets. Recognise that food supplies nutrients and that diets may change as food availability changes.
Year 4	Compare and group living things from different environments by observable features and behaviour. Use classification keys.	Construct and interpret food chains and food webs. Explain interdependence and how energy passes from producers to consumers.
Year 5	Apply knowledge of living things and their relationships when considering changes within a habitat.	Use food chains and webs to explain what might happen when a living thing is removed from or introduced into a habitat.
Year 6	Use and construct classification systems for plants and animals. Classify living things, including microorganisms, by shared characteristics, similarities and differences.	Explain how the circulatory system transports oxygen, water and nutrients within animals, connecting nutrition with body systems.

Materials and their properties

Children explore and compare materials before using evidence to explain their properties, uses and changes, and to choose methods for separating mixtures.

Stage	Identifying comparing and selecting	Changes and uses
Nursery foundations	Explore and sort everyday items into groups of the same material with support. Notice differences such as shiny and not shiny.	Explore and talk about waterproof materials.
Reception	Name and sort items by material. Recognise different properties through play and exploration.	Explore magnetic and non-magnetic materials, including which objects are attracted to a magnet.
Year 1	Name common materials such as wood, plastic, glass, metal, water and rock. Distinguish an object from the material it is made from.	Investigate properties such as hard or soft, stretchy or stiff, rough or smooth, transparent or opaque, and waterproof or not waterproof.
Year 2	Observe and compare materials when heated or cooled, then sort and group them using observations.	Compare suitability for particular uses. Describe changes caused by bending, twisting, stretching or squashing, and by heating or cooling.
Year 3	Group reflective and non-reflective materials. Compare and group rocks by appearance, properties or uses.	Compare materials by their magnetic properties. Recognise sedimentary, igneous and metamorphic rocks and explore how fossils form.
Year 4	Group materials as solids, liquids or gases. Describe materials as electrical conductors or insulators.	Observe changes of state during heating and cooling. Measure temperature and explain melting, freezing, evaporation and condensation.
Year 5	Compare hardness, solubility, transparency, conductivity and magnetism. Use comparative or fair tests to justify material choices.	Investigate dissolving and separate mixtures by filtering, sieving and evaporating. Compare reversible and irreversible changes.
Year 6	Investigate thermal insulators and identify common features.	Use diagrams to describe how light behaves when reflected by mirrors or passing through lenses, linking material properties with their effects on light.

Weather Earth and space

Learning begins with local weather and seasonal change and develops into explanations of Earth, the water cycle and the Solar System.

Stage	Weather seasons and patterns	Earth space and long term change
Nursery foundations	Describe daily weather and talk about warm and cold conditions.	Notice that winter and summer evenings differ and begin to talk about changes in daylight.
Reception	Notice weather patterns and describe how weather changes with the seasons.	Notice and discuss differences in day length between seasons.
Year 1	Observe and describe weather and changes across the four seasons. Use simple equipment to investigate weather.	Observe and describe how day length changes across the year.
Year 2	Describe typical seasonal weather patterns in the UK.	Describe features of Earth using words and pictures, including land and water.
Year 3	Find patterns in the way shadows change during the day.	Investigate and compare local soils. Explain in simple terms how fossils form and what they can tell us about past life.
Year 4	Explain the water cycle using words or diagrams, including the roles of evaporation and condensation.	Connect heating and cooling with changes of state as part of the water cycle.
Year 5	Use Earth's rotation to explain day and night and the Sun's apparent movement across the sky.	Describe or model planetary movement relative to the Sun. Describe the Sun, Earth and Moon as approximately spherical and use this knowledge when exploring eclipses.
Year 6	Explain how shadows form and change using knowledge that light travels in straight lines.	Describe significant changes on Earth and use evidence, including fossils, to explain changes in living things over time.

Light shadows and sound

Children explore familiar phenomena and then use scientific explanations and models to describe light, shadows, vibration, pitch and volume.

Stage	Light and shadows	Sound and other phenomena
Nursery foundations	Notice natural phenomena and explore making shadows with objects or the body.	Talk about phenomena such as weather, rainbows and clouds.
Reception	Describe shadows and explore making them larger or smaller. Recognise that a solid object blocking light creates a shadow.	Notice and describe natural phenomena. Begin to recognise that sound is created when something vibrates.
Year 1	Explain simply how shadows form. Compare shadows made by different objects and materials.	Observe and describe familiar weather phenomena, including thunder and lightning.
Year 2	Build on earlier observations of familiar natural phenomena through questioning and simple tests.	Explain simply how sounds are made. Compare sounds made by instruments and voices, including pitch and volume.
Year 3	Explain the difference between light and dark and why light is needed to see. Describe how opaque objects block light and form shadows.	Investigate patterns in shadows and explain how changing the light source or object changes them.
Year 4	Apply observation and pattern seeking when investigating physical phenomena.	Explain how sounds are made and heard. Find patterns in pitch and volume and investigate how volume changes with distance.
Year 5	Connect observations of the Sun and daylight with Earth's rotation.	Use models and knowledge of spherical bodies when exploring the Sun, Earth, Moon and eclipses.
Year 6	Explain that light travels in straight lines and enters our eyes from sources or by reflection. Explain shadow shape and size using this knowledge.	Describe reflection and refraction using scientific vocabulary. Use diagrams to explain light passing through lenses or reflecting from different mirrors.

Forces electricity and models

Children explore movement and simple devices before investigating forces, mechanisms and the behaviour of components in electrical circuits.

Stage	Forces and movement	Electricity and modelling
Nursery foundations	Explore floating and sinking and describe forces they can feel.	Play with battery-powered toys and models. Notice that machines need power to work.
Reception	Predict, test and sort objects that float or sink. Talk about forces they can feel.	Explore electrical and non-electrical light sources and recognise that batteries power some devices.
Year 1	Use toys, models or simple equipment to investigate weather, including wind and rainfall.	Describe, following exploration, what simple electrical circuits can do, such as lighting a lamp or sounding a buzzer.
Year 2	Sort and group objects that float and sink.	Make models with moving parts, such as levers, sliders, wheels and axles.
Year 3	Explain pushes and pulls, including contact forces and magnetic forces acting at a distance. Compare movement across different surfaces.	Make working models with simple mechanisms or electrical circuits.
Year 4	Predict whether a circuit will work by checking for a complete loop and a cell or battery.	Construct simple series circuits using components and switches. Explain that a complete loop is needed for current to flow.
Year 5	Explain gravity and investigate friction, air resistance and water resistance. Describe how these forces affect moving objects.	Describe and demonstrate how levers, gears and pulleys help move objects.
Year 6	Explain how the number and voltage of cells affect lamp brightness or buzzer volume in a circuit.	Build circuits and draw them using recognised electrical symbols. Compare component behaviour and explain the effects of changes, including opening or closing a switch.