



Kexborough Primary School : Curriculum Planning

Science : Year 4

The principal focus of science teaching in Lower Key Stage 2 is to enable pupils to **broaden** their **scientific view** of the world around them. They should do this through **exploring, talking about, testing** and **developing ideas** about everyday phenomena and the relationships between living things and familiar environments, and by **beginning to develop** their ideas about **functions, relationships** and **interactions**. They should **ask their own questions** about what they **observe** and **make some decisions** about which **types of scientific enquiry** are likely to be the best ways of answering them, including **observing changes over time, noticing patterns, grouping** and **classifying** things, **carrying out simple comparative** and **fair tests** and finding things out using **secondary sources of information**. They should **draw simple conclusions** and use **some scientific language**, first, to talk about and, later, to write about what they have found out. **'Working scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study.** Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should **read and spell scientific vocabulary** correctly and with confidence, using their growing word reading and spelling knowledge.

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 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.

SCIENTIFIC SKILLS

| Planning, Communication and Sources | Enquiring and Testing / Obtaining and Presenting Evidence | Observing and Recording | Considering Evidence and Evaluating |
|--|--|---|---|
| 1. Record observations, comparisons and measurements using tables and bar charts 2. Begin to plot points to form a simple graph 3. Use graphs to point out and interpret patterns in their data 4. Select information from a range of sources provided for them | 5. With help, pupils begin to realise that scientific ideas are based on evidence 6. Show in the way they perform their tasks how to vary one factor while keeping others the same 7. Decide on an appropriate approach in their own investigations to answer questions 8. Describe which factors they are varying and which will remain the same and say why | 9. Carry out measurement accurately 10. Make a series of observations, comparisons and measurements 11. Select and use suitable equipment 12. Make a series of observations and measurements adequate for the task | 13. Predict outcomes using previous experience and knowledge and compare with actual results 14. Begin to relate their conclusions to scientific knowledge and understanding 15. Suggest improvements in their work, giving reasons |

SCIENTIFIC KNOWLEDGE— LIVING THINGS AND THEIR HABITATS

| National Curriculum—Statutory PoS Substantive Knowledge | Language / Vocabulary Substantive Knowledge | Experiences | Cross curricular / Inter Disciplinary |
|---|---|-------------|---------------------------------------|
| <p>Recognise that living things can be grouped in a variety of ways</p> <p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things</p> | <p>Group, classification, classify, sort, key</p> <p>Environment, flowering, non flowering, plants, animals, vertebrate, invertebrate</p> <p>Flowering plants (including grasses) / Non flowering plants (including mosses and ferns)</p> <p>Human impact - nature reserve, ecological parks, man made ponds, population, pollution, litter, development, deforestation</p> | | |

SCIENTIFIC KNOWLEDGE— ANIMALS INCLUDING HUMANS

| National Curriculum—Statutory PoS Substantive Knowledge | Language / Vocabulary Substantive Knowledge | Experiences | Cross curricular / Inter Disciplinary |
|--|---|-------------|---------------------------------------|
| <p>Describe the simple functions of the basic parts of the digestive system in humans</p> <p>Identify the different types of teeth in humans and their simple functions</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey</p> | <p>nutrition, vitamins, minerals, fat, protein, carbohydrates, fibre, water, diet. Small intestine, large intestine, bowel, stomach, waste</p> <p>Incisor, molar, canine, chew, grind, tear, cut, enamel, decay, filling, root, plaque</p> <p>Dentist, toothbrush, toothpaste</p> <p>Chain, predator, prey, producer, hunt, omnivore,</p> | | |

SCIENTIFIC KNOWLEDGE— STATES OF MATTER

| National Curriculum—Statutory PoS Substantive Knowledge | Language / Vocabulary Substantive Knowledge | Experiences | Cross curricular / Inter Disciplinary |
|---|---|-------------|---------------------------------------|
| <p>Compare and group materials together, according to whether they are solids, liquids or gases</p> <p>Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p> | <p>State, changing state, solid, liquid, gas, melt, freeze, evaporate, condense</p> <p>Heat, cool, temperature, degree, Celsius, thermometer,</p> <p>Water cycle, water vapour, cloud, rain</p> | | |

| SCIENTIFIC KNOWLEDGE— SOUND | | | |
|--|---|-------------|---------------------------------------|
| National Curriculum—Statutory PoS Substantive Knowledge | Language / Vocabulary Substantive Knowledge | Experiences | Cross curricular / Inter Disciplinary |
| <p>Identify how sounds are made, associating some of them with something vibrating</p> <p>Recognise that vibrations from sounds travel through a medium to the ear</p> <p>Find patterns between the pitch of a sound and features of the object that produced it</p> <p>Find patterns between the volume of a sound and the strength of the vibrations that produced it</p> <p>Recognise that sounds get fainter as the distance from the sound source increases</p> | <p>Vibrate, vibration, air, medium, ear, sound</p> <p>Volume, loud, quiet, faint,</p> <p>Pitch, high, low</p> <p>String,, percussion, wind, brass</p> <p>Insulate</p> | | |

| SCIENTIFIC KNOWLEDGE— ELECTRICITY | | | |
|--|--|-------------|---------------------------------------|
| National Curriculum—Statutory PoS Substantive Knowledge | Language / Vocabulary Substantive Knowledge | Experiences | Cross curricular / Inter Disciplinary |
| <p>Identify common appliances that run on electricity</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery</p> <p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors</p> | <p>Appliances, electricity, electrical circuit, cell, wire, bub, buzzer, switch, open, closed, danger, electrical safety, series</p> <p>Insulator, wood, rubber, plastic, glass</p> <p>Conductor, metal, water</p> | | |