



Kexborough Primary School : Curriculum Planning

Science : Year 5

The **principal focus** of science teaching in upper key stage 2 is to enable pupils to **develop a deeper understanding** of a **wide range of scientific ideas**. They should do this through **exploring** and **talking about their ideas; asking their own questions** about scientific phenomena; and **analysing functions, relationships** and **interactions** more systematically. At upper key stage 2, they should encounter more **abstract ideas** and begin to recognise how these ideas help them to **understand** and **predict** how the **world operates**. They should also begin to **recognise** that **scientific ideas change and develop over time**. They should select the most **appropriate ways to answer science questions** using different types of scientific enquiry, including **observing changes over different periods of time, noticing patterns, grouping** and **classifying** things, carrying out **comparative** and **fair** tests and finding things out using a wide range of **secondary sources** of information. Pupils should **draw conclusions** based on their **data** and **observations, use evidence to justify** their ideas, and use their scientific knowledge and understanding to **explain their findings**.

'Working and thinking 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, spell** and **pronounce scientific vocabulary** correctly.

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments

SCIENTIFIC SKILLS

Planning, Communication and Sources	Enquiring and Testing / Obtaining and Presenting Evidence	Observing and Recording	Considering Evidence and Evaluating
1. Record observations systematically 2. Use appropriate scientific language and conventions to communicate quantitative and qualitative data 3. Select a range of appropriate sources of information including books, internet and CD Rom	4. Use previous knowledge and experience combined with experimental evidence to provide scientific explanations 5. Recognise the key factors to be considered in carrying out a fair test	6. Make a series of observations, comparisons and measurements with increasing precision 7. Select apparatus for a range of tasks 8. Plan to use apparatus effectively 9. Begin to make repeat observations and measurements systematically	10. Make predictions based on their scientific knowledge and understanding 11. Draw conclusions that are consistent with the evidence 12. Relate evidence to scientific knowledge and understanding 13. offer simple explanations for any differences in their results 14. Make practical suggestions about how their working methods could be improved

SCIENTIFIC KNOWLEDGE— LIVING THINGS AND THEIR HABITATS

National Curriculum—Statutory PoS Substantive Knowledge	Language / Vocabulary Substantive Knowledge	Experiences	Cross curricular / Inter Disciplinary
Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird Describe the life process of reproduction in some plants and animal	Mammal, amphibian, insect, bird Egg, live young, Reproduction, sexual, asexual Pollination, seed dispersal, germination, flower, fruit, seed, stamen, sepal, stigma, ovary, pollen		

SCIENTIFIC KNOWLEDGE— ANIMALS INCLUDING HUMANS

National Curriculum—Statutory PoS Substantive Knowledge	Language / Vocabulary Substantive Knowledge	Experiences	Cross curricular / Inter Disciplinary
Describe the changes as humans develop to old age.	Puberty, life cycle, gestation, growth, reproduce, foetus, baby, fertilisation, baby, toddler, child, teenager, adult, old age, life expectancy, adolescence, adulthood, early adulthood, middle adulthood, late adulthood		

SCIENTIFIC KNOWLEDGE— EARTH AND SPACE

National Curriculum—Statutory PoS Substantive Knowledge	Language / Vocabulary Substantive Knowledge	Experiences	Cross curricular / Inter Disciplinary
Describe the movement of the Earth and other planets relative to the sun in the solar system Describe the movement of the moon relative to the Earth Describe the sun, Earth and moon as approximately spherical bodies Use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky	Earth, sun, moon, planets, stars, solar system, rotate, axis, day, night, orbit, spherical, heliocentric, geocentric, hemisphere, season, tilt Mercury, Venus, Earth, Mars, Jupiter, Saturn, Neptune, Pluto (Dwarf planet)		

SCIENTIFIC KNOWLEDGE— PROPERTIES AND CHANGES OF MATERIALS

National Curriculum—Statutory PoS Substantive Knowledge	Language / Vocabulary Substantive Knowledge	Experiences	Cross curricular / Inter Disciplinary
<p>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda</p>	<p>Properties, hardness, solubility, transparency, electrical conductor, thermal conductor, magnetic</p> <p>Dissolve, mix, solution, separate, solids, liquids, gases, reversible changes,</p> <p>Evaporation, condensing, melting, freezing, sieving, filtering</p> <p>Irreversible changes, new material, burning, rusting, magnetism, chemical</p> <p>Conductivity, insulation</p>		

SCIENTIFIC KNOWLEDGE— FORCES

National Curriculum—Statutory PoS Substantive Knowledge	Language / Vocabulary Substantive Knowledge	Experiences	
<p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p>	<p>Gravity, air resistance, water resistance, friction, surface, force, effect, move, accelerate, decelerate, stop, change direction, brake, mechanism, pulley, gear, spring</p>		