



Kexborough Primary School : Curriculum Planning

Science : Year 6

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. Choose scales for graphs which show data and features effectively 2. Identify measurements and observations which do not fit into the main pattern 3. Begin to explain anomalous data 4. use appropriate ways to Communicate quantitative data using scientific language	5. Describe evidence for a scientific idea 6. Use scientific knowledge to identify an approach for an investigation 7. Explain how the interpretation leads to new ideas	8. Measure quantities with precision using fine – scale divisions 9. Select and use information effectively 10. Make enough measurements or observations for the required task	11. Make reasoned suggestions on how to improve working methods 12. Show how interpretation of evidence leads to new ideas 13. Explain conclusions, showing understanding of scientific ideas

SCIENTIFIC KNOWLEDGE— LIVING THINGS AND THEIR HABITATS

National Curriculum—Statutory PoS Substantive Knowledge	Language / Vocabulary Substantive Knowledge	Experiences	Cross curricular / Inter Disciplinary
Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals Give reasons for classifying plants and animals based	Classify, compare, classification, domain, kingdom, phylum, class, order, genus, species, characteristics, vertebrates, invertebrates, organisms, micro organisms, fungus, bacteria, virus		

SCIENTIFIC KNOWLEDGE— ANIMALS INCLUDING HUMANS

National Curriculum—Statutory PoS Substantive Knowledge	Language / Vocabulary Substantive Knowledge	Experiences	Cross curricular / Inter Disciplinary
Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function Describe the ways in which nutrients and water are transported within animals, including humans	Internal organs, heart, lung, liver, brain, kidneys, skeletal, skeleton, muscular, muscle, digest, digestion, circulatory system, blood vessels, chambers, impact, diet, drugs, alcohol, exercise,		

SCIENTIFIC KNOWLEDGE— LIGHT

National Curriculum—Statutory PoS Substantive Knowledge	Language / Vocabulary Substantive Knowledge	Experiences	Cross curricular / Inter Disciplinary
Recognise that light appears to travel in straight lines Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes Use the idea that light travels in straight lines to explain why shadows have the same shape as the	Light ray, light source, natural, manmade, direction, reflect, reflection, scatter, absorb, mirror, shadow, opaque, transparent, translucent, periscope, rainbow, filter Convex, concave (optional)		

SCIENTIFIC KNOWLEDGE— EVOLUTION AND INHERITANCE			
National Curriculum—Statutory PoS Substantive Knowledge	Language / Vocabulary Substantive Knowledge	Experiences	Cross curricular / Inter Disciplinary
<p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</p>	<p>Evolution, adaptation, inheritance, inherited traits, adaptive traits, natural selections, DNA, genes, variation, parent, offspring, fossil, environment, habitat, plants, animals, living things</p>		

SCIENTIFIC KNOWLEDGE— ELECTRICITY			
National Curriculum—Statutory PoS Substantive Knowledge	Language / Vocabulary Substantive Knowledge	Experiences	Cross curricular / Inter Disciplinary
<p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches</p> <p>Use recognised symbols when representing a simple circuit in a diagram</p>	<p>Voltage, brightness, volume, switches, series circuit, electrical safety, sign, symbol, circuit diagram, switch, bulb, buzzer, motor,</p>		