

BIG PICTURE CURRICULUM PLANNING - KEY STAGE 3 SCIENCE

<p>The big aims of KS3</p>	<p>Our curriculum design seeks to enable students to view the pursuit of Science as meaningful and useful. Inquiry is thus grounded in the roles played by Science in daily life, society and the environment. We acknowledge that the advancement in Science has occurred due to imagination and creativity and promote independent, inquisitive young scientists with a natural curiosity of the world around them, with the belief we will inspire the next generation of inventors and explorers.</p>
<p>Characteristic of a compelling learning experience</p>	<p>Compelling Learning in Science is characterised by giving prominence to how scientists think and work and getting our students to work and think in a similar way. Alongside working scientifically skills a number <u>habits of mind</u> are explored such as creativity, integrity, objectivity, open-mindedness and curiosity.</p>
<p>Key concepts</p>	<p>Thinking Scientifically: <u>Creativity</u> encourages pupils to seek relevant and innovative ways to solve a problem; <u>Integrity</u> explores how scientist have a responsibility to communicate with <u>honesty</u>; <u>Objectivity</u> relies on the use of data and or information to validate observations and explanations fairly; <u>Open-mindedness</u> requires a mindset of understanding that all evidence is speculative, may have limitations and that views may need to change if other evidence comes to light and finally <u>curiosity</u>, wanting to explore the world and question which often requires <u>perseverance</u>.</p> <p>Through: Using models for and in explanations, Weighing up Evidence to construct arguments and explanations, The process of developing scientific ideas including the role of the scientific community in their development, Provisional nature of scientific evidence</p> <p>Understanding the applications and implications of Science: Effect and appreciation of social, political, cultural, and economic views on Science, Scientifically informed to be able to make decisions, Creative use of scientific ideas to bring about technological developments, Implications, benefits & drawback of scientific and technological advancement of society and the environment and How science relates to career pathways.</p> <p>Communicating and collaborating in Science: Using appropriate presentation skills to enhance communication of scientific findings & arguments; understand how and why scientists communicate, explaining ideas and evidence using appropriate conventions, terminology, symbols, quantities, units; presenting a range of views judging and possible misrepresentation and Scientists communicating worldwide using conventions.</p> <p>Using investigative approaches: Scientific apparatus, experimental skills and aspects of safety, to effectively plan appropriate scientific investigations, identify & manipulate variables within the context of an investigation, support the gathering of evidence through collection of precise and reliable data and be aware of the risks associated with the investigative process.</p> <p>Working critically with evidence - Collecting, presenting and analysing data: Evaluation of the planning and implementation of scientific investigations, consideration of errors and anomalies, processing and analysing data to support the draw conclusions and evaluation process. Explanation and evaluation of evidence to support the scientific process.</p>

<p>Key knowledge</p>	<p>Our Key Stage 3 Science course enables us to create compelling and engaging lessons that promote learning for understanding through ten big ideas headings: Forces, Electromagnetism, Energy, Waves, Matter, Reactions, Earth, Organisms, Ecosystems and Genes. Each idea contains four smaller topics: the foundations for the big ideas which are delivered through multiple interactions. Allowing learning to be extended, reinforced and broadened each time the big idea is revisited.</p> <p>Forces: Speed, gravity, contact Forces, pressure</p> <p>Electromagnets: Voltage and resistance, current, electromagnets, magnetism</p> <p>Energy: energy costs, energy transfer, work, heating and cooling</p> <p>Waves: Sound, light, wave effects, wave properties</p> <p>Matter: Particle model, separating mixtures, periodic table, elements</p> <p>Reactions: Metals and non-metals, acids and alkalis, chemical energy, types of reaction</p> <p>Earth: Earth structure, universe, climate, Earth resources</p> <p>Organisms: Movement of substances, cells, breathing, digestion</p> <p>Ecosystems: Interdependence, plant, respiration, photosynthesis</p> <p>Genes: Variation, human reproduction, evolution, inheritance</p>	
<p>Key skills</p>	<p>Working scientifically gets students working in the ways of a professional scientists and as such working scientifically skills are taught through and clearly related to substantive Science content. We allow pupils to explicitly focus on a particular skill at any one time and through clearly related Key Science Knowledge. <u>The key skills that we promote are:</u></p> <ul style="list-style-type: none"> • Analyse, consisting of presenting data, analysing patterns, drawing conclusions and discussing limitations. • Communicate, consisting of constructing explanations, communicating ideas, critiquing claims and justifying opinions. • Enquire, consisting of devising questions, testing hypotheses, planning to control variables and collecting data. • Solve, consisting of estimating risks, examining consequences, interrogating sources and understanding how scientific change over time. 	