**Knowledge, Skills & Understanding Progression-Year 5 Science**

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| **National Curriculum Requirements of Science KS2- Upper** |
| 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.**Working Scientifically**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 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
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| **Skill** | **National Curriculum Objective** | **Term 1** | **Term 2** | **Term 3** |
| **Earth and Space** **‘Out of this world’** | * 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.
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| **Properties and changes of materials****‘Material world’** | * 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
* know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution

 use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating* give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
* demonstrate that dissolving, mixing and changes of state are reversible changes
* 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.
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| **All living things** **‘Circle of life’** | * 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 animals
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| **Forces** **‘Let’s get moving’** | * explain that unsupported objects fall towards the earth because of the force of gravity acting between the earth and the falling object.
* identify the effects of air resistance, water resistance and friction that act between moving surface.
* recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.
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| **Animals including humans****‘Growing up and growing old’** | * describe the changes as humans develop to old age.
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| **Super Science Topic** **(This unit supports the working scientifically skills)****‘We are super scientists’** |  |  |  | **√** |