SCIENCE INTENT FOR OUR PROGRAMME OF STUDY: KNOWLEDGE, PROGRESSION, COVERAGE

(PRIOR, NOW, NEXT)

*Our core school intent runs through every aspect of our teaching and learning. It is our philosophy and approach in every subject area. It is **how** we teach and learn. Every leader commits to this. But every subject must have its own Programme of Study - its own lines of progression for the knowledge and skills we plan to teach and therefore its own rationale/intent for **what** we teach and learn. This is the rationale for this 'prior, now and next' in science.*

We have used the National Curriculum and Early Years Framework to create a seven year journey in the following ways. Where reasonable and meaningful we have linked the science studies with the themes within our curriculum but we have not made links for the sake of it and the progression of scientific knowledge and understanding is the primary motivation in each case.

EARLY YEARS: KNOWLEDGE AND UNDERSTANDING OF THE WORLD

There is clear emphasis upon the natural world in the new Early Years Framework. Getting outside and exploring the children's locality is a continuous thread and one which runs throughout the key stage. "Drawing upon what they have read in class" requires a careful plan for our non-fiction reading texts ideally linking them to our 'I Wonder' statements that link to Knowledge and Understanding the World. Seasons are a more prominent feature and this is now more specific in relation to the natural world and the links we make to light and materials as a result. Above all, it still remains a very practical, experience led stage and we aim to balance the feel of a more formal direction at times with the vital importance of the investigative nature of early years in its broadest sense. Shaping work by the children's interests remains essential and informing the short and long term content and pitch of teaching based upon what they already know and are interested in remains essential.

WORKING SCIENTIFICALLY

From the outset, we ask simple scientific questions which require close observations and simple tests which suggest answers up to the end of Year 2. We move into comparative and fair tests as we move into Lower Key Stage 2. Our observations become increasingly systematic. Accurate measurements and measurement equipment are essential to this, whilst we record and present data using bar charts and tables. We ask the children to draw simple conclusions from results but to communicate these in a range of different forms including oral, written and presentations. We plan for the children to draw conclusions from their results, make predictions, suggest improvements and identify differences. As we move into Upper Key Stage 2, we develop our planning for scientific enquiry towards recognising and controlling variables. Taking repeat readings with increasing accuracy and precision. Data is recorded and presented using a wider range of formats including scatter graphs and line graphs where necessary. We consider reliability in test results, consider relationships between cause and effect and then potentially what further comparative and fair tests may be needed. Finally, we consider scientific evidence that the children may need to use to support or refute particular ideas or arguments.

MATERIALS & PROPERTIES

We begin to look at everyday materials in Early Years and simple changes that we see. The move to describing their properties and comparing them. We then move into considering their suitability for particular uses and how these certain solid shapes can be changed and altered to meet need. We then develop into deeper studies of rocks before moving into solids, liquids and gases, the changing of states and the processes needed for change. We use this finally, in Year 5, to develop into reversible and irreversible change as we undertake a final comparison and grouping series of studies with wider ranging criteria.

LIVING THINGS & NATURAL WORLD

Our Early Years are aimed at first hand experience of the natural world as the children begin to recognise and understand the environment and changes around them. Year 1 is aimed at naming and identify varieties of common animals and parts of the body in order to create a knowledge baseline. We then build knowledge about what living things needs to live and grow well and remain healthy and what a habitat is - and its significance. We have designed the studies so that the keeping healthy/growing theme continues through Lower Key Stage 2 alongside developing our further understanding of the plant life cycle and the functions of each part of a flowering plant within this. In Upper Key Stage Two, we progress into life cycles of other groups of living things and consider the process of reproduction. The detailed classification of living things and the more detailed study of the functions of the human body and what can harm these alongside a final study upon evolution and inheritance, including Darwin's theory of evolution, are the final steps in progression in year 6.

PHYSICAL PROCESSES

Our Early Years study of the seasons moves into a deeper study of seasonal weather and daylight in Key Stage 1. Light, Forces and Electricity are planned into two part studies across Key Stage 2. Light begins with an emphasis upon shadows and then moving into how light travels and how we see things within the second section. Forces begin with an emphasis upon magnets firstly and then moving into gravity, air and water resistance and friction at that second stage. Electricity is designed to introduce circuits, their components and conductors and insulators before moving to more complex control of circuits and use of symbols as we apply learning in the year 6 study. Sound and Earth & Space are positioned alongside their required year groups.