



Science at Ravensthorpe Primary Academy

1. Curriculum design

Using The 'big ideas of science education' by Wynne Harlen (2010) as a starting point, the United Learning curriculum (UL) for science has been developed around key **vertical concepts** which are progressively taught in small steps. They are:

- All material in the Universe is made of very small particles.
- Objects can affect each other at a distance.
- Changing the movement of an object requires a net force acting on it.
- The total amount of energy in the Universe is always the same but energy can be transformed when things change or are made to happen.
- The composition of Earth and its atmosphere and the processes occurring within them shape the Earth's surface and its climate.
- The solar system is a very small part of one of millions of galaxies in the Universe.
- Organisms are organised on a cellular basis.
- Organisms require a supply of energy and materials for which they are often dependent on or in competition with other organisms.
- Genetic information is passed down from one generation of organisms to another.
- The diversity of organisms, living and extinct, is the result of evolution.
- Organisms are healthy when physically, mentally and socially well and free from disease. [This is additional to the original ten ideas and included as we felt it important]. History is taught through 3 strands

We teach science discretely and follow the United Learning (UL) curriculum which has been carefully sequenced and builds on knowledge from other curriculum areas such as maths and geography.

Science is taught through 3 strands

- **Substantive knowledge** - Core content and key concepts
- **Disciplinary knowledge** - Working Scientifically which is **explicitly taught** and practised alongside the substantive knowledge, and regularly reviewed and built upon across the years and key stages
- **Curiosity and excitement about science** - Selecting examples and applications of science that **inspires pupils' curiosity** about the world and natural phenomena.

We use the UL 4 lesson model to allow for any gaps in learning to be addressed through pre-teaching.

Reading and writing have been interwoven into the curriculum, to give multiple opportunities for children to practice these skills and make links in their learning.

Subject overview documents map out when assessments, pre-teaching and the curriculum lessons will be. They specify any enhancements and first-hand experiences plus opportunities for extended writing.

2. Curriculum delivery

- United Learning resources are used to deliver lessons. This follows Rosenshine's Principles of *I do, We do, You do*
- PowerPoints are available for all lessons which teachers adapt to meet the needs of learners, ensuring the core content remains.
- Teachers use practical hands on resources and first hand experiences to make learning memorable.
- Lessons are adapted to meet the needs of all learners. Teachers use children's individual APDR (Assess, plan, do review) support plans to inform their adaptations.
- **I do:** New learning is modelled explicitly. Teachers use metacognitive talk to share the learning process and model on the visualiser.
- **We do:** Children practice the new learning with the teacher or in pairs.
- **You do:** Children show their new learning independently.

3. Books

- All books are clearly labelled using the school standard labels. EYFS use floor books. Y1-6 have a history book.
- A topic title page is used at the start of every new unit.
- The pre-learning quiz is completed and stuck into the book.
- Pre-learning is identified in the book by the title 'Pre-learning'
- All learning has a date and L.O (EYFS- Y3 short date and LO stuck in, KS2 long date and LO written)
- Worksheets are used when essential, but children are encouraged to show their learning in other ways such as diagrams, short burst writing or double page spreads.
- The post quiz is completed and stuck into the book.

4. Feedback and Assessment (refer to presentation policy)

- Lessons are planned to encourage active thinking and learning checked through the use of the Walkthrus: *Cold Call, Mini whiteboards and Think Pair share*.
- Teachers use formative assessment and live marking during the lesson to pick up misconceptions.
- Following the feedback policy, teachers identify misconceptions and address them with the children. This could be through the Walkthrus *Whole Class Feedback*. Children respond or edit in green pen.
- Teachers complete a summative assessment on children's learning using the information from their formative assessments, quiz activities and the work produced. This is entered onto the INSIGHT tracking system.