

Science subject specific curriculum statement

Rational

We have said we want learners in our subject to be:

- Self-motivated
- Knowledge rich
- Curious
- Confident
- Risk takers/happy to make mistakes
- Problem solvers
- To have a high science capital

In our Curriculum provision map we have identified specific topics we where can develop these ideas with students and in our SOLs and individual lessons there will be identified tasks. They will also be an underlying thread throughout our curriculum which will be address in how we approach what we deliver. This will include:

- Driving questions for topics and lessons to engage students and make links to the wider world.
- Using the plan, monitor and evaluate cycle when developing practical skills. This will be used to develop students' ability to design effective practicals and investigate their own questions.
- Use of open ended homework tasks to allow students to develop their curiosity.
- Developing science capital by using personal students experiences in our lessons (identifying how they are doing science in their everyday lives) and presenting examples of a range of scientists (in the curriculum but also as enrichment opportunities).
- Use of enrichment opportunities as they come up (guest speakers, competitions etc.)
- Regular use of modelling of staff thinking in lessons
- Use of knowledge tests with a "passing grade"
- Modelling self-reflection with student post-assessment so they are able to evaluate and plan for the future.
- Scaffolding of exam command words whenever they are used.

Key science knowledge

We organise our content around the Big Science Ideas [Harlen et al, 2015]:

- 1 All matter in the Universe is made of very small particles
- 2 Objects can affect other objects at a distance
- 3 Changing the movement of an object requires a net force to be acting on it
- 4 The total amount of energy in the Universe is always the same but can be transferred from one energy store to another during an event
- 5 The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth's surface and its climate
- 6 Our solar system is a very small part of one of billions of galaxies in the Universe

- 7 Organisms are organised on a cellular basis and have a finite life span
- 8 Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms
- 9 Genetic information is passed down from one generation of organisms to another
- 10 The diversity of organisms, living and extinct, is the result of evolution
- 11 Science is about finding the cause or cause of phenomena in the natural world
- 12 Scientific explanations, theories and models are those that best fit the evidence available at a particular time
- 13 The knowledge produced by science is used in engineering and technologies to create products to serve human ends
- 14 Applications of science often have ethical, social, economic and political implications

These ideas are revisited throughout the five years building upon the depth and breadth as return to them.

Adaptive teaching

Use of PLCs before, during and after a topic allows staff to have a clear picture of where students are and design our lessons around their starting points. Teaching of skills is explicit throughout our schemes of learning and developed across the five years.

In lessons support for students is provided through scaffolding to provide the individual support students need to reach the expected outcomes. Staff know their students well and so focus their time in lesson (through questioning, small group work etc.) where it will have the most impact.

Covid impact

We are aware that students have gaps and misconception which have arisen from the disrupted nature of covid learning. Our lessons are always focused on identifying a students' starting point and any gaps they may have.

We are continually returning to our *Big Science Ideas* – the fundamentals on which everything else is built. In our teaching if we have a concern that a student has a fundamental gap we have built in time for additional interleaving lessons where we can review these ideas to help support the new learning students are doing.

Students have also had less opportunity to develop their practical skills. Skills modules have been used alongside looking for additional opportunities to train students how to use practicals as a really focused learning opportunity.