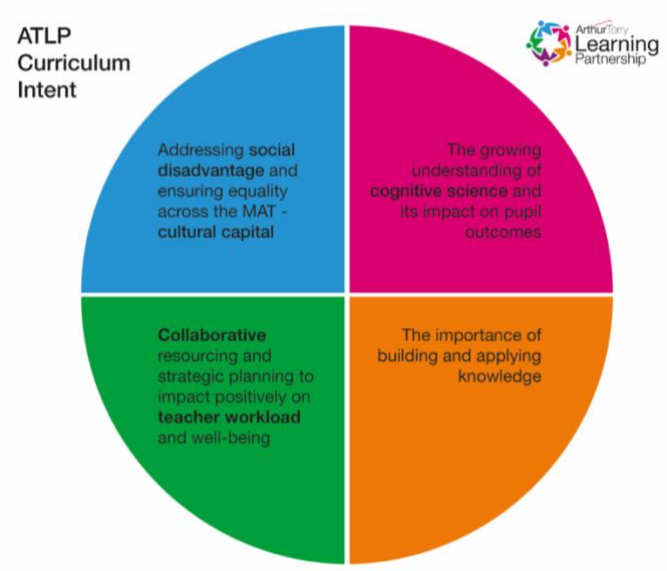
Intent:



Science Vision

At William MacGregor Primary school, science learning aims to provide a strong understanding of the world, through sustaining deep knowledge and developing specific skills to think scientifically. Teachers of the school offer a broad and balanced curriculum of all topics for all children.

Key features of our curriculum:

Our aim is to develop a love of science, to develop future scientists and teach them about the vast application and wonders of science in their everyday lives. Therefore the science curriculum has been designed around 3 key principles:

1. Develop understanding of science by teaching concrete concepts followed by more abstract concepts

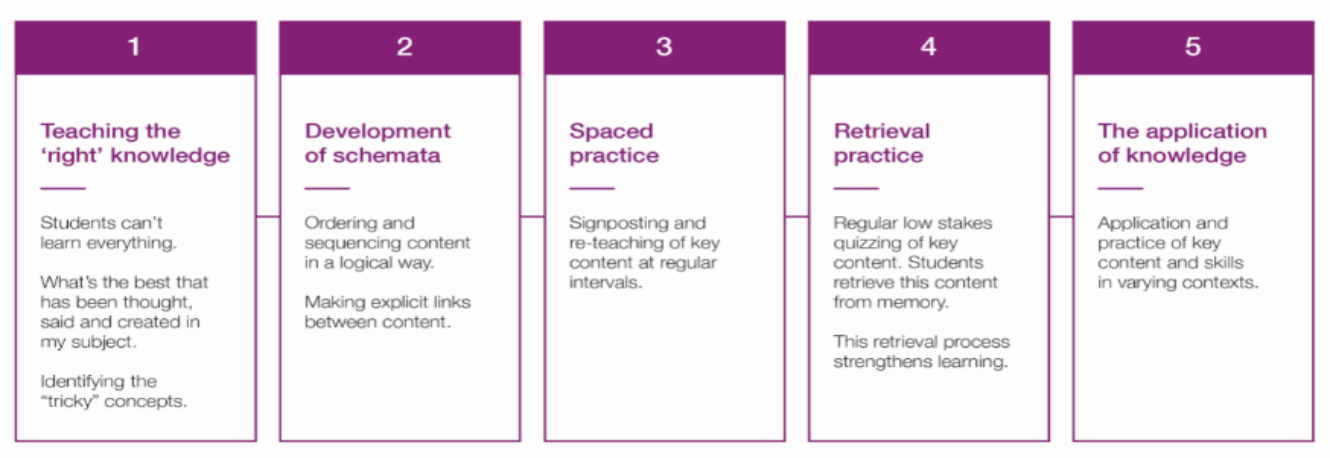
2. Emphasis on enquiry so to encourage students to question, seek, find and predict

3. Development of scientific skills, integrated into each unit, to enable students to explain and analyse

Children are encouraged to understand how science can be used to explain the things that happen around them, predict how things will behave and analyse causation during their time at the school and beyond.

At William MacGregor, lessons are specifically planned to allow children to practise and develop the skills of observing, investigating and questioning, including in the outdoor environment and locality. Science knowledge is revisited throughout the children's learning journey in order to build upon their prior learning and increase their enthusiasm for the topics. This provides opportunity to embed procedural knowledge into the long-term.

Implementation:



Teaching Principles:

Implementation of the curriculum is based upon the 5 principles above. Cognitive science is a fundamental part of these principles, and they have been designed based on research into the working memory and long-term memory, considering how learning can be constructed to maximise the information retained by children. These principles underpin the long and medium term planning of Science, as well as the way in which individual lessons are planned, delivered and sequenced.

Lessons are planned so that the cognitive demand is suitable for all learners, guiding learners through new knowledge in smaller, manageable steps. Dual coded lesson presentations, knowledge organisers and resources within the classroom environment are used to support learners in their learning of new knowledge. Thinking maps are used where appropriate for the children to record and explain their learning. Oracy is on a developing journey at William MacGregor. Our aim is for it to be fundamental to our teaching; through high quality oracy education children learn through talk, to talk. We aim to use an Oracy framework to plan explicit and systematic teaching of oracy throughout the Science curriculum.

Verbal feedback and conversations with peers are key components of the teaching of science, and can be used throughout lessons to ensure progress, develop key vocabulary and provide challenge.

Staff Development:

Staff development will be based on new planning materials provided by the partnership ensuring that all staff are aware of correct and purposeful implementation.

Staff development is focused upon feedback given by science lead to ensure that progress is being made across the school.

Staff will take part in regular CPD to support their teaching of science within the classroom. Staff will complete research such as reading to develop their knowledge of enquiry based learning. Staff are required to feedback to leaders on strengths and developments of the teaching of the subject so provisions can be put in to place to enhance the teaching of knowledge and skills.

Assessment:

Formative assessment is used in every lesson to inform next steps in learning and ensuring gaps are closed and foundations are secure to ensure new learning can successfully take place. Teachers use spaced retrieval and low stakes testing to assess knowledge and understanding. Knowledge organisers and thinking maps also play a key role in assessing sustained learning.

Summative assessment is used at the end of each topic to inform the teacher of knowledge gained and to identify areas that need additional teaching. Summative assessments will be repeated to identify knowledge retained and to identify areas that need to be focused on using retrieval practice.

All summative assessments will be used to direct teacher assessment at the end of the year to inform the next teacher of each child's starting point in terms of knowledge and skills.

Monitoring:

Monitoring is undertaken by the subject lead, as well as members of the senior leadership team. The focus is directed by the WMG monitoring form, informed by any whole-school or staff specific focuses, such as the use of retrieval practice. It can be made up of one or a combination of: pupil conversations, professional discussions with staff, and learning walks (all of which would involve looking through evidence of learning in books). Leaders monitor the quality of teaching, providing feedback to ensure that teachers are providing high quality Science lessons. Feedback is then given promptly with the intent of developing practice, followed by a discussion if clarification is needed or to plan CPD that would be beneficial.

Moderation:

Moderation of teaching provision is currently ongoing within the ATLP quality circle. Through the Year 3 pilot programme, teaching has been moderated by comparing books and children's work. This has informed subject leaders about potential areas for development within the teaching of science in Year 3.

In terms of moderating attainment within Science, both assessment and moderation are very much in developmental stages. Once assessment methods have been finalised, moderation will be developed in accordance with other ATLP schools, to develop moderation across the partnership.

Work-life balance:

The long and medium term plans have been developed as a result of the work done by the ATLP Science Quality circle. This means that there are medium term plans created for years 3 and 4 and in September 2020 there should be medium term plans and individual lesson plans for years 1-4. Where needed, planning support is given by the subject lead.

To support work-life balance and maximise progress, teachers are encouraged to use live marking, verbal feedback and peer/self assessment.