Science Curriculum Rationale

CORNFIELD SCHOOL
LEARNING FOR LIFE

INTENT

Alignment to National Curriculum

At Cornfield we follow the national curriculum as this ensures that there is progression and cohesion throughout the various stages of learning.
All three disciplines of Chemistry, Physics and Biology are covered with the key theme of working scientifically runs throughout.

End Points

There are three clear end points for the Science Curriculum; end of stage 7, stage 8 and stage 9. Once each of the three stages have been completed students will be able to generate and answer their own scientific questions by selecting and carrying out one of the five types of enquiry.

Sequencing

The Science Curriculum follows the model of 'Exploring Science', which is a spiral curriculum and as such has been carefully sequenced to provide progression through the domains of Biology, Chemistry and Physics.
Each stage aims to build on the previous stages knowledge and skills whilst taking an enquiry-based approach, which will help students to develop and progress from 'small ideas' to the 'bigger ideas' of Science.

Addressing Social Disadvantage

We recognise that students come to our school with wide and differing amounts of Science capital (knowledge, experiences, skills and attitudes). We therefore follow the 'science capital teaching approach' (Kings College London, 2015) in order to help address this inequality.

Subject specific vocabulary is used in all lessons, with explicit teaching of tier 2 and 3 vocabulary.

IMPLEMENTATION

Pedagogical Approaches

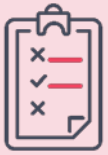
Research shows that the experience of doing is more likely to build schema and make it stick as students are able to make links to what they have seen or done. Using the enquiry-based approach to learning in Science, students will be supported in making connections between the 'smaller ideas' from prior learning and 'bigger ideas' they are currently studying. As such, lessons will usually begin with a recall of previous learning, whether this be from the last lesson, last topic or when the topic was last studied in a previous year group

Promoting Discussion and Understanding

Subject knowledge is presented in small chunks with explicit links to prior learning. Carefully crafted questions are used to check for understanding in order to gain more awareness of the learning in the classroom,. Discussion is critical in supporting a clearer and deeper understanding. Through an element of hands-on science in each lesson, students are frequently discussing their findings and building their understanding.

Knowing More and Remembering More

At the start of each unit, students will revisit the 'smaller ideas' from previous learning in order to help map out how to build and develop these further. Opportunities for retrieval practice are included in Science lessons to ensure knowledge is transferred into long-term memory. The use of retrieval strategies help students to make connections, or to find any gaps and re-teach content when needed.



Teacher Assessment

Students understanding will be measured through specific focused activities such as those shared in the model for 'Exploring Science'. The use of retrieval strategies such as quizzes will allow the students to show if their newly learnt knowledge and skills have transferred to their long-term memory. Retrieval strategies, along with questioning, allow the teacher to gauge the level of understanding and address any misconceptions that may have arisen before moving on.

IMPACT

Approach to Assessment

Using formative assessment throughout lessons and the use of retrieval and recall strategies will support the teacher to monitor students understanding on the knowledge and skills taught. End of topic assessments can be used to help provide summative judgements at the end of each stage of learning.

Progress Data

Data collected throughout the series of topics within each stage of learning is recorded and shared through the EagWig system. Teachers will share the level of progress with parents and careers on a regular basis. Evidence is based on the learning they see in class and the evidence in students books or online records.

Students' Work

Students work (paper or online) will be used as a way of securing and showing learning and not simply a record of activities done in class as this does not necessarily evidence the learning that has taken place. Students have workbooks that can be used to evidence their learning. Worksheets should only be used when they are the most efficient way of teaching a concept. The use of worksheets can provide students with too much scaffolding, therefore not providing the opportunity to apply their knowledge.

Feedback to Students

Students will receive constant immediate verbal feedback within all lessons. This feedback will be used as a more effective way that writing long descriptive pieces of feedback in books. Professional practice reviews will analyse the impact of the verbal feedback, alongside talking to teachers and students. Students will be asked what they know now that they didn't know before to identify if the knowledge has been understood and transferred to the long-term memory.