Science Curriculum

Intent

Our science curriculum is designed with the intent that all children will become a competent scientist who are inquisitive about the world around them. We intend to provide children with first-hand scientific investigative experiences which inspires children's curiosity and builds their science capital. Our thematic lessons will provide children with numerous opportunities to take their learning across year groups by pre-teaching and revisiting skills and knowledge. This progression within our science curriculum ensures that children can make links to prior learning, develop deeper knowledge of key skills, and master their learning with repetition through stimulating and challenging experiences.

Implementation

Core scientific concepts will be taught during **discrete** science lessons each week. However, there will be further opportunities through our thematic curriculum for pupils to demonstrate their science understanding.

The curriculum provided through both the discrete science sessions and the thematic sessions allow pupils to embed and recall the key scientific knowledge principles and working scientifically skills needed for pupils to achieve the end of year expectations. The thematic session provides opportunities for teachers to pre-teach some aspects of knowledge and skills before moving onto the core unit of science or in some instances it may be a revisiting session. Using both discrete sessions and thematic sessions for the teaching of science, ensures we are providing clear progression by allowing the children to look back on previous learning and apply what they have learnt to new situations. This approach directly coincides with Ofsted's inspection framework which states:

"People learn new knowledge when new concepts are connected in their minds with what they have already learned. It is more appropriate, therefore, to understand the way knowledge is stored as a complex, interconnected web or 'schema'. Every time a pupil encounters a word they have previously learned, but applied in a new context, it adds to the complexity of their understanding of that concept. In other words, they develop a deeper understanding of that concept and enhance their capacity to use that concept in their own thinking"

Pre-teaching:

Our thematic curriculum touches on elements of science learning, creating memorable experiences that can be referred to in older year groups. For instance, in the dimensions curriculum for year one, they must "recognise that we need light in order to see things and that dark is the absence of light" which is taken from the year 3 curriculum.

In this topic lesson, the children play Blind Man's Bluff and learn simply that light helps us see. However, in their year 3 science lesson, they will remind them of
this concept but then conduct further investigations to learn about how light reflects off surfaces, enabling us to see and how shadows form.

Reviewing

Our thematic curriculum also enables children to recap their science knowledge and retain what they have learnt. For instance, in year five science lessons they will learn about the differences in reproduction between amphibians, insects, birds etc... Then, in year 6, they will recap and apply this knowledge by researching animals in Kruger National Park.

Progression document

Our new progression document clearly shows staff what prior learning has occurred before new concepts are taught and whether the topic learning is a pre-teach or a review of a scientific concept. This will enable staff, to pitch lessons correctly and challenge pupils beyond the curriculum where necessary. KWL activities will continue, however, they will show more evidence of prior learning as children can dip into the memorable experiences they have had previously.

Year 1 ***Dimensions*** *Lesson*

- Ask the children to discuss how they think flowers and plants grow.
- Discuss their experiences of growing plants.
- Show them Lima (butter) beans seeds and discuss how they think they will grow.
- Watch the FunKey film about growing. Ask the pupils where would be the best place to put the beans in order for them to grow in the classroom.
- Plant the beans and monitor their growth

Year 3 ***Science*** *Lessons*

Children would take this learning further by:

- Growing a seed and a bulb and producing scientific observations
- Conducting comparative tests with plants in different conditions.
- Learning the technical process and language of germination

Science lessons taught in thematic

If a thematic lesson is purely based on science knowledge, lessons taught through thematic will be evidenced in the science floor book. The purpose of the 'floor book' is to record incidental science teaching that is not linked to their science learning objectives. If a science concept is taught through another subject, then it will go in that subject's book. For example, after teaching the year 1 thematic lesson where pupils discuss living, non- living and never living things, the teacher would be expected to put evidence into the floor book, whereas the lesson where the children learnt about sun-safety by designing and making a hat would go into their D.T. book.

IMPACT

The science curriculum is designed to ensure pupils are able to recall and embed scientific skills and knowledge throughout their time at primary school and prepare them for the future. The progression document provides clear end points for pupils at each stage of their learning and enables teachers to provide opportunities for pupils learning which are pitched appropriately.

In order for teachers to be able to plan and adapt learning to meet the needs of pupils they regularly assess the pupils recall of their knowledge during starter lessons, KWL grids, quizzes and key questioning. Pupil's 'knowledge' understanding is teacher assessed at the end of **each unit**. Teachers use the age-related expectations to establish whether in the knowledge aspect of the unit children are working below, at the expected level or above. This is then shared with the receiving teachers at the end of the year to ensure future planning is reflective of pupil's knowledge especially when units are revisited.

Scientific enquiry is the aspect of the science curriculum that we use as the key indicator to assess pupils' science ability. This is embedded in all science units. Teachers collate evidence from a variety of sources such as floor books, science books, questioning, marking and planning to make teacher assessment judgements **each term**. There are also opportunities across the Trust and within school for shared moderation sessions to ensure the accuracy of these judgements.

However, alongside the summative assessments, teachers use daily formative assessment to identify and address any misconceptions. This is reflected through marking, questioning and differentiated activities where teachers will offer further support to pupils who require further reinforcement but also provide challenge to those pupils who need activities which require them to apply 'deeper thinking' in order to apply their learnt skills and knowledge in a variety of ways.

By the time pupils leave Key Stage 2, their Science Capital will be developed sufficiently for them to gain an understanding of future opportunities and careers.