Subject Policy
Science

Reviewed by: Sarah Bailey
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INTENT: At Debden Church of England Primary Academy, all of our curriculum disciplines are used to underpin our school vision, which is to ensure that the children in our care:

- Progress exceptionally well academically, across a broad and knowledge-rich curriculum;
- Develop into confident compassionate, well-rounded individuals, in a safe, caring, Christian environment;
- Become equipped with the learning skills needed to deal with future challenges;
- Create happy, positive memories of their childhood.

Our science curriculum has been carefully constructed through close consideration of both the expectations of the National Curriculum and the vision and contextual requirements of our school and its children. Through our science curriculum, we aim for children to:

- Develop ideas and understanding about the biological and physical aspects of the world;
- Develop understanding of the nature, processes and methods of science;
- Foster positive attitudes toward science, and examine and appreciate how science affects their lives and the environment.
- Be equipped with the curiosity, critical thinking and innovation skills required to face the scientific problems of the 21st Century.

Our science curriculum has been tailored to our school's individual context. For example, scientific units of study have been thoughtfully mapped out to allow for enhanced progression within mixed year-group classes. We also make use of the local environment to enhance study – for example using the school's grounds/ local forests for 'classifying animals' and exploring local buildings and their school for uses of 'everyday materials.'
We strive for children to take a 'hands-on', exploratory approach to science, to gain valuable skills in hypothesising, testing, and evaluating enquiries, and to develop their curiosity and enthusiasm for scientific discovery.
A number of units run throughout most of the age-spectrum of our curriculum, for example 'living things and their habitats', 'animals including humans' and 'materials', and our knowledge organisers help us to ensure that there is clear and logical progression between year groups in these areas. Furthermore, as a part of our 'language-rich' curriculum approach, we have mapped out the key vocabulary within each unit, to ensure that children develop broad scientific language throughout their time at Debden.

IMPLEMENTATION:
Science is taught continuously throughout the year, with units aligned as closely as possible with other subject disciplines. We believe that this allows for greater depth of study, and increased opportunities to build schemata.

As a base for planning, teachers use PLAN Science resources to underpin unit structure and curriculum structure, however staff have the flexibility to adjust these schemes in order to best meet the interests and needs of their class. Knowledge organisers are provided to children and their families at the start of each science unit, outlining the key knowledge that the children will be learning about throughout their study. This allows families to support children's learning from home throughout units. Children are empowered in their learning through having a voice in the direction that their scientific study takes – knowledge harvests take place at the beginning of units, and children consider the questions that they would like to find answers to throughout the topic. Across all units of study, children develop their scientific skillset against the 'Working Scientifically' criteria; in all units, an emphasis is placed on the teaching of scientific skills such as predicting, estimating, measuring, fair testing, hypothesising, and drawing conclusions.

Pedagogical Approach: Across all subjects at Debden Primary Academy, we use teaching strategies drawn from Rosenshine's work on *The Principles of Effective Instruction* and Lemov's recommendations in *Teach Like a Champion*, and this includes within the teaching of Science. Some of the most important pedagogical strategies include:

-New Material in Short Steps: The individual components of large-scale works are given in small chunks of new material, ensuring that children's working memory is not overloaded.

-Regular Review: We spend the initial portion of lessons reviewing what has been learnt in prior lessons, terms and years. This helps to commit information to long-term memory.

-No Hands Up/ Cold Calling: We want to ensure that every child is an active participant in their learning, who fully engages and is able to contribute ideas. Cold calling also helps us to gauge what every child in the class understands, in order to tailor our teaching to the children's needs. To allow children to orally rehearse responses, we also provide regular opportunities for talk partners.

-Guided Practice and Independent Practice: Throughout units we aim to progress from practice that is more heavily guided and scaffolded, to more independent practice when a high success rate has been achieved.

-EEF 'Five a day' to improve SEN outcomes.

IMPACT:

Whole-Class Feedback – In addition to the verbal feedback that is provided within each lesson, teachers are expected to complete at least two whole-class cycle within each half term. This includes highlighting strengths, identifying misconceptions and next steps, and commenting upon the children's presentation. A 'blue sticker task' (the call to action) should be utilised to address misconceptions and learning that has not been secured.

End of Unit Assessment – At the end of each unit, children complete an assessment, which is out of 20 (15 marks for knowledge and 5 marks for Working Scientifically skills). The assessment papers are written by the subject leader and class teacher and test the knowledge as prescribed in the organisers, through progressively more complex questions (utilising Blooms Taxonomy). The questions should also enable students to showcase the skills in the appropriate area/s of the skills map. The children's scores are tracked via our 'Insight' monitoring system, to enable us to understand the progress that they are making throughout the school, and to tailor our approaches accordingly.

Monitoring – Takes place 2-3 times per year, which is normally carried out by the subject leader. At least once per year, this is carried out alongside the link Governor. The subject monitoring process includes:

-**Lesson visits;**

-Book look;

-Student chats;

-Checking of student understanding of information on knowledge organisers;

-Viewing classroom displays;

-Conversations with teachers;

-Analysis of assessment data;

-Subject leader 'deep-dive' questions and review of key subject documents (when with link Governor).

The information gathered from teachers is fed back via our subject leader monitoring reports.

The Headteacher also meets with selected groups of children from each class to ascertain the science knowledge that they have developed over the course of the term.