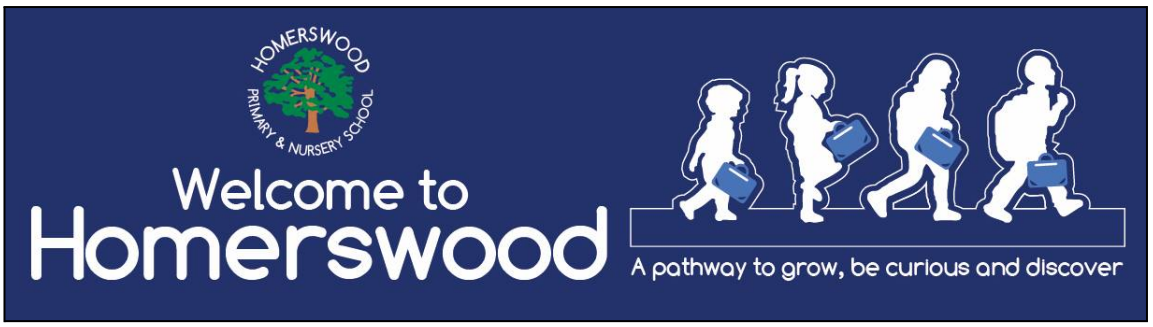

Science Guidance

Homerswood Primary and Nursery School

Written: December 2022

Review: December 2023

Science Guidance

Aims of the guidance

- To establish an agreed approach to what constitutes quality teaching and learning in Science
- To enable staff to identify key features of effective teaching and learning and help ensure they match the abilities, attainments, interests and experiences of pupils
- To provide an agreed focus for the monitoring and evaluation of teaching and learning in Science
- To instil a love of learning and the ability to make connections
- To incorporate other aspects of the curriculum as outlined in the school's curriculum overview document.

Underlying Principles

The following principles form the basis of this document:

- The needs and progress of the learner are central to planning, delivery and assessment of the curriculum
- Learning promotes sustained progress and achievement for all pupils, including those with SEND, disadvantaged and most able pupils.

Intent

Our ambitious Science curriculum enables our children to learn and grow as scientists. At Homerswood School, we use Developing Experts to provide access to all substantive (science content- conceptual knowledge of different ideas in science) and disciplinary (working scientifically - understanding the nature of science and how scientists work to gather and analyse evidence across a range of enquiry types) knowledge in a range of contexts to support the embedding of these concepts and skills to all. Each unit of Developing Experts outlines a unit summary including the main summative knowledge from the National curriculum, six broken down lessons with mission objectives, key vocabulary quizzes, a working scientifically skills focus, an expert film and links to careers.

Our investigative Science will encourage children to ask important questions about how things work and why things happen in a certain way. Ultimately, this will help all children to understand the world they are growing up in and provide them with life skills as well as becoming creative thinkers and adults who strive to seek solutions to problems and answers to life's questions. The knowledge and skills they investigate will create an awe and wonder in the children, sparking their curiosity to find out more and continue their learning in the future. The Homerswood tracks, such as communication, self-exploration, using key vocabulary, researching using high quality texts and the internet, developing knowledge each year to aid their memory and writing instructions or conclusions, are met throughout every unit starting from Nursery to Year 6.

Opportunities to promote children's spiritual, moral, social and cultural development is threaded throughout our Science curriculum. By its very nature, the scientific exploration of the natural and man-made world evokes moments of awe and wonder as children extend their experiences, and develop their understanding of the amazing world of which they are part of. Opportunities for children to work collaboratively whilst investigating, supports children's on-going social development. Researching scientists from different backgrounds, cultures and periods encourages the children to begin to appreciate the diversity within the field of science; children will use 'Think like scientists' resources to provide questions to encourage critical thinking and research, thus extending and challenging the pupils.

Implementation

Regarded as a core subject, at Homerswood Primary School, Science is taught weekly in KS1 for one hour and in KS2 for two hours by the class teacher. In EYFS, Science is taught through 'Understanding the world' and they are exposed to many different exploration opportunities in continuous provision where they begin to develop their investigative skills, ask questions and work collaboratively. We use Developing Experts to cover objectives from the National Curriculum confidently and creatively. Through this, all teaching materials are provided for teachers to deliver and assess topics taught. There are clearly labelled resource boxes per topic which includes high quality texts or stories, photographs and experimental equipment. Practical activity is at the core of Developing Experts, linking to careers and the real world to ensure science capital is met, ensuring links are made to the substantive knowledge consistently. The scheme aims to support teachers in developing pupils as independent learners who are curious and willing to ask and answer their own questions, set up their own enquiries and evaluate their findings. Throughout the various units, teachers are supported in scaffolding these skills using the six scientific enquiry types:

• observation over time

• fair or comparative tests

• identification and classification

• research

• pattern seeking

• problem solving

Links are made within and across the units of each topic and between years to support pupils in making connections and in applying or developing their knowledge progressively. Throughout Developing Experts, pupils communicate their science using a variety of approaches, e.g. writing, drama, poetry, discussion, modelling and using ICT (to create video clips, etc.). This ensures that all pupils can share and articulate ideas in a variety of ways and develop various skills. Pupils continuously engage in self- assessment, allowing them to reinforce their learning or change ideas and therefore move learning on. Key scientific vocabulary for each unit is listed with definitions (rocket words) so that

teachers can share with pupils the expectation that these words should be used throughout and remembered. A pupil's ability to use scientific words appropriately is an indicator of understanding of knowledge and skills.

Annually, at Homerswood we arrange our own Science week, in line with the national British Science week, to inspire awe and wonder into Science. Each year has a theme to inspire the children and ensure they are curious about science that is meaningful to them. We also invite in parents or specialists from science or STEM roles to engage the children first-hand into scientific careers and findings.

Due to the hands-on practical nature of our Science, all children will be able to access the learning. The inclusivity of the lesson will allow children to organise their own investigation, using one of the enquiry types, with resources to answer their own questions. The learning will be scaffolded with teacher's questions or ideas or other reasonable adjustments to spark interest and curiosity in any children less confident. The use of visuals including differentiated writing frames, vocabulary prompts and sentence starters are provided for any pupils that may require the support. All children, including SEND, will be inspired by exciting, 'buzz' questions to spark their interest in a personalised way. Challenging the children to apply their learning in new contexts provides opportunities for them to embed ideas and skills and work at a greater depth level.

Impact

Pupils develop their knowledge and skills through a series of planned activities linked to the curriculum which build on previous and personal knowledge. It is important that assessment supports the pupil's journey through the science curriculum to ensure appropriate outcomes for each individual. To allow teachers to assess accurately, teachers input whether the pupils are at expected levels, working towards or working above the National curriculum standards and working scientifically skills onto a spreadsheet. These formative assessment opportunities support teachers in planning to address misconceptions or gaps in previous topics and to consider next steps for pupils, moving them from one level to another. The evidence teacher's use for such assessments includes observing them working, listening to their discussions and using questions to probe understanding and reasoning, alongside their writing and other opportunities such as video clips, models and role play activities.

Each year, progression documents will follow the children to identify what they understood this year and how this will be advanced by the next teacher to maintain the spiral curriculum of learning. Key topics such as Animals including humans and Everyday materials are stated in the national curriculum to explore in depth and build on each year to which the subject leader will monitor too. The subject leader will regularly collect data to identify successes and gaps within the learning to ensure the children's journey throughout the school is secured. The subject leader will also complete pupil voice to hear the children discuss their science learning enthusiastically, by using key scientific vocabulary, asking questions and informing me of their investigations, alongside demonstrating their knowledge and curiosity into the subject.

Safeguarding Links

At Homerswood, we understand that it is the responsibility of all to maintain the values of equality, regardless of any background, gender or abilities. The Science curriculum takes into account issues of difference including: gender, race and ethnicity. Any stereotypes or issues within the subject are discussed respectfully and a wide range of scientists are explored.

The children's safety during any experiments is also risk assessed, in line with CLEAPSS and our site manager where required.

Consultation

This guidance was written in conjunction with Developing Experts documents and discussions with colleagues.

Written by: C Garoghan

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