



Barnfields Primary School: Science Curriculum

Subject Leader Curriculum Intent, Implementation and Impact Overview			
Subject Quest: <i>Predict and explain the behaviour of the natural world by observing and testing in a controlled manner.</i>			
The Three Core Concepts at Barnfields			
Investigation	Observation	Explanation	
Intent	Supporting Research	Implementation	Impact
<p><i>All children are taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key powerful knowledge and concepts, pupils are encouraged to recognise the importance of rational explanation and develop a sense of excitement and curiosity about natural phenomena.</i></p>	<p>Ofsted research suggests that a successful knowledge-rich curriculum should be designed to help pupils remember what they have been taught. A curriculum designed by teachers to impart invaluable knowledge they want their pupils to know will enable children to further their learning in a creative and explorative way which will incite excitement in the subject. - Chris Jones, R., 2018. <i>Curriculum research: our findings - Ofsted blog: schools, early years, further education and skills</i> [online] 'To be able to retrieve, use, and apply knowledge in the long term, it is highly effective to practice retrieving, using, and applying knowledge during learning' - (Karpicke & Aue, 2015)</p>	<p>Our science curriculum will be carefully and coherently designed, following the National Curriculum whilst also providing opportunities for powerful knowledge to be acquired through the Barnfields' six curriculum drivers: values, creativity, relevant, enquiry, ambitious and community.</p> <p>Creativity requires knowledge. Therefore, we have designed an ambitious, knowledge-led science curriculum whereby children at Barnfields Primary School will become scientific experts in the concepts being taught throughout their time at school. Different scientific Enquiry types (comparative and fair testing, identifying, classifying and grouping, observing over time, pattern seeking and using secondary resources) are referred to each lesson thereby allowing children to understand the strand of science that their learning for a lesson focuses on. Over time, children will be encouraged to lead their own lines of enquiry, thereby taking ownership of their learning. When delivering a well-considered sequence of science at Barnfields, we will take the dispersed practice approach to promote long-term knowledge retention: teaching through a dispersed sequence of lessons provides children with consistency and allows them to build on their knowledge and skills lesson-by-lesson. Alongside Progression Grids, carefully constructed Medium Term Plans (MTP) are used to inform planning which ensures full coverage, identifying prior and future learning, where children can build on and apply their knowledge to subsequent learning year-on-year. These MTPs also ensure that the relevancy of the learning the pupils will undertake is linked to the individual child and their lives. By using these MTPs, teachers are able to tailor-make the learning to the lives of</p>	<p>Children will achieve age related expectations in Science at the end of their cohort year.</p> <p>Children will retain knowledge that is pertinent to Science with a real-life context.</p> <p>Children will be able to question ideas and reflect on knowledge</p>

Subject Quests/Core Concepts:

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		<p>the individual children, thereby ensuring that the powerful knowledge we strive to encourage each child to obtain is delivered in an engaging and relevant manner.</p> <p>Retrieval Grids, a question-based strategy to revisit previous concepts, are used at the beginning of every science lesson; this deliberate practice facilitates the transference of knowledge from working memory to long-term memory, freeing up thinking space for creativity! With every new fact that the children learn and retain, the number of new ideas and connections open to them increases enormously. There will be a termly scientist that each year group research and get to understand. This will impact on children as they will appreciate how these significant scientists have affected individuals, groups and the world around them. By studying these scientists, children can greater understand the way they can affect their own community.</p>	
<p><i>All children are encouraged to develop and use a range of skills including observations, planning and investigations, enabling them to become enquiry-based learners and to think scientifically.</i></p>	<p>Education Endowment Foundation research indicates that the ability to reason scientifically – by testing hypotheses through well-controlled experiments – is a strong predictor of later success in the sciences and that this skill can be developed through experiences that allow pupils to design experiments that require them to control variables.</p>	<p>In addition to a knowledge-based curriculum, we encourage our children to have enquiring minds. Therefore, the five types of scientific enquiry (identifying, classifying and grouping; pattern seeking; observing over time; research using secondary sources; comparative and fair testing) underpin the sequencing of our science lessons at Barnfields, which can be seen in our MTPs. The enquiry types are signposted at the beginning lessons (where appropriate) and are explained explicitly to the children so that they have a good understanding of what each enquiry type involves and how their knowledge and creativity can be applied to them.</p> <p>Alongside the implementation of the five types of enquiry, practical elements of science will be woven into most science lessons, promoting working scientifically to ensure that children are excited and engaged in science rather than purely building their knowledge of that particular topic.</p> <p>In addition, we have recently achieved the Primary Science Quality Mark (PSQM) which recognises schools where science teaching and learning is valued and impactful, and where the profile and quality of science is evident across the whole school.</p>	<p>Children will work collaboratively and practically to investigate and experiment.</p> <p>Children will be able to explain the skills that they have used to reason scientifically.</p>

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