



Science Curriculum (Intent, Implementation, Impact)

Intent

In science at Kildwick we aim to enthuse the children's love and curiosity about natural phenomena and events around them. We encourage children to explore confidently in order to develop and deepen their understanding of the world in which they live, explaining what is occurring, predicting how things will behave and analysing causes. They learn to question and discuss science-based issues that may affect their own lives, the directions of society and the future of the world, encouraging and supporting the development of science capital. Our pupils will understand how major scientific ideas and specific scientists in the past have contributed toward societal change – impacting on industry, medicine, business and improving quality of life. By implementing an inclusive, progressive, creative and inspiring curriculum with real-life links, we ensure children have a meaningful conceptual understanding of the essential aspects of the knowledge, methods, processes and uses of science. We encourage children to raise their own questions for exploration and develop transferable skills such as observation, communication and teamwork. By working scientifically, through investigations involving planning, testing, recording and analysing results, children come to appreciate the nature of the learning process and its practical application to everyday experiences. We aim for our children to have high aspirations for themselves and teach them about diversity in science including important scientists whose discoveries have impacted on the way we live.

The staff at Kildwick ensure that all children are exposed to high quality teaching and learning experiences, which allow them to explore their outdoor environment which is also important for their social and imaginative development. Communication is key and we value the importance of developing spoken language during science lessons. The children are immersed in subject specific language to enable development and confidence in using scientific vocabulary to articulate concepts clearly. Teachers build the children's foundations securely with discussion to iron out misconceptions.

We aim to develop children's sense of global and local citizenship through understanding the value and importance of making responsible, informed and more sustainable lifestyle choices that minimise our impact on the environment. We do this through embedding our whole school values and providing a creative approach to learning that is rich in making cross-curricular links so that learning is meaningful thus contributing to a lasting, positive behavioural change.



Implementation

Our science teaching is underpinned by our vision and principles shared with everyone. Key points we follow at Kildwick:

- Reflective learning and questioning opportunities for all pupils building on their prior knowledge and providing cross-curricular links.
- An environment that encourages pupils to pose their own questions and suggest their own way of investigating their hypotheses to develop their ideas and independence,
- Key vocabulary and scientific pedagogical methods are used in order to challenge pupils and broaden their understanding.
- Nurturing and applying pupils' science learning to real-life experiences, making science meaningful and building the 'Science Cultural Capital'.
- Hands-on, practical experiences of working in a range of scientific methods to explore, inspire and foster pupils' natural curiosity.
- A creative, inclusive and stimulating science curriculum, enabling pupils to secure and extend their scientific knowledge and vocabulary. Making learning fun!
- Memorable, exciting and collaborative learning experiences that carry on beyond the classroom.

The medium term planning and progression mapping of Science lessons will reflect exactly what content, knowledge and skills are critical for pupils to progress through the curriculum in each year. There is a clearly mapped progression document that shows how these topics progress across the years including EYFS. Teachers plan and have access to curriculum knowledge organisers for each science topic which contain key facts, vocabulary, prior learning, key concepts and other information. This aids planning and teaching.

Working scientifically processes and methods should be embedded in lessons so that children learn to use a variety of skills to answer scientific questions / investigations. These are: observing over time, pattern seeking, identifying and classifying, comparative and fair testing and researching secondary resources. Subject specific vocabulary is identified through knowledge organisers and displays, and is highlighted to the children at the beginning of lessons and revisited through class assemblies and knowledge quizzes.

Teachers use the ASE - The Association of Science Education to plan and moderate pupils' work. Title pages are used at the start of each new science topic to revisit and assess prior learning, raise questions to investigate and challenge. They also showcase, collate, review and assess new science learning during and at the end of a unit. Children suggest what they would like to learn at the start of each topic and this is to maximise engagement and motivation.



Science vision and principles are shared with all staff and they are discussed and acknowledged during lessons providing consistency and a road-map of what is to be expected and celebrated by everyone.

Children will have constant access to a wide variety of subject specific fiction and non-fiction Science books, available during lessons, and in the school library. We encourage scientific writing to be meaningful and demonstrate high quality writing across the curriculum. Where possible, scientific equipment is used for children to explore and investigate. Children get a first-hand learning experience by performing various experiments. Students are made to use the models and understand different scientific theories and concepts.

Science displays provide a way to introduce new material and showcase students' work. Teachers and children create displays that are equally engaging, inspirational and educational. Question boards / boxes for science are used to promote children to raise their own questions. The five enquiry types (Observation over time, Pattern seeking, Identifying, classifying and grouping, Comparative and Fair Testing, Research using secondary sources) are also displayed in every classroom describing the processes and skills pupils should be taught and use, to find out more about the world and how it works.

Children learn in a variety of ways, and so where appropriate, children will learn science outside the classroom. On site we have access to our village playing field and community garden. We also plan visits to museums and local places of scientific relevance. Children can clearly see things in context which promotes and fosters an emotional connection between children and the natural environment. The outdoors also facilitates creative activities such as drawing and sketching, basic skills in science that we should encourage. We mark special days such as World Science Week, Earth Day, STEAM week, British Science week and run a science club through which children can achieve a CREST award.

Teacher expectations

- To be confident about what they are teaching and understand the scientific knowledge and skills required for the topic being taught.
- To plan and prepare meaningful science experiments
- To use open ended questions to challenge and lead children's thinking.
- To challenge pupils and ensure progression throughout the school.
- To work as a whole school to improve standards in science.
- To use a wide range of resources that are easily accessible and well maintained.

Teachers are well-supported and are continuously encouraged to pursue professional development through internal twilight sessions, observations as well as external training where needs are identified.



Impact

Science progress at Kildwick, is measured through the child's ability to obtain sustainable knowledge, remember more and explain more. Our successful, consistent approach results in fun, engaging, high-quality Science education that provides children with the foundations and knowledge for understanding the world. This is evident in pupils' work, photos, and displays.

Through a variety of well designed and well delivered Science lessons, workshops, trips and interactions with experts, children have the understanding that science has changed our lives and that it is vital to the world's future prosperity. Children are aware of the possibilities for careers in Science, as a result of our community links and connection with national and local agencies such as the STEM association, Ogden Trust, Aire River Trust, Secondary Schools and the ASE. This gives our children access to positive role models within the field of science from the immediate and wider local community. We also deliver science fairs in collaboration with other local primary schools and parents.

At Kildwick Primary school, all children have a voice and are scientists and through exposure to a range of different scientists from various backgrounds, all children feel they are scientists and capable of achieving. Teachers are well-supported and are continuously encouraged to pursue professional development through internal twilight sessions, observations as well as external training where needs are identified.

In EY, children are assessed through observations. In KS1 and KS2, children are assessed against the NC core objectives stated on the knowledge organisers for each half term. Teacher assessments are informed through carefully differentiated planning and teaching, targeted questioning, observations, challenges and next steps. Knowledge and skills are assessed through teacher assessments evidenced through pictures, observations pupils' work inc books, quizzes and next steps. Termly assessments are collated on Scholar Pack.

Monitoring and evaluation of the impact on children's learning includes regular monitoring of books by the subject coordinator, year groups mini moderations, learning and environment walks as well as termly progress meetings with each classroom teacher.

Providing equal opportunities for all the children is at the heart of teaching practice at Kildwick Primary School. Activities are differentiated to ensure all the children, including PP, SEND and low attainers needs are met.