

## **Science: Intent, Implementation and Impact**

### **Intent**

Hawthorn's vision is to distil a lifelong love of science within our pupils, we want them to be inquisitive, explore and question the world around them. Science has changed our lives and is vital to the world's future prosperity. The children will have a clear understanding of what is meant by Biology, Chemistry and Physics and how they fit with our everyday understanding of the world. We work hard to provide a rich and varied curriculum to challenge and meet the needs of our children. All pupils should be taught the skills of Working Scientifically and the essential aspects of the knowledge, methods, processes and uses of science. From EYFS up to KS2, our pupils will build up a body of key foundational knowledge and concepts, pupils are encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. We provide our children with wider opportunities in science with educational visits and make links to other subjects. Teachers plan with the support of the science leader a White Rose curriculum covering the Science National Curriculum. We challenge pupils on a weekly basis to develop the progressive Working Scientifically with Scientific Enquiry skills to explore and embed the knowledge so that within each type a range of skills will be developed. We monitor our schools progress in science regularly in line with our science policy.

The national curriculum for science aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

### **Implementation**

Through using White Rose Science, we are continuing to develop a high level of subject knowledge of science in our school by introducing training and professional development. Teachers use a system for assessment for learning to tailor lessons around our children and help us plan for next steps. In our school, we strongly encourage all pupils to use specific vocabulary. Through effective teaching of science, we develop children's knowledge, vocabulary, and key skills during each topic. With effective subject management, we are a well-equipped and resourced school. Regular monitoring shows that our children are developing an understanding of key scientific principles and vocabulary within their work which they are encouraged to apply. Children are provided with regular opportunities to develop strategies for questioning and thinking. In our school we have a rigorous monitoring process which is kept up to date and works towards our school improvement plan.

## **How are lessons taught?**

All children will be introduced to the scientific vocabulary for the area of science that is about to be taught.

All classes will have their vocabulary displayed in the classroom for them on/around their science wall.

In addition to this, where needed, pupils have key vocabulary provided for them whilst completing an activity in their books.

Teachers will create a hook for the children's learning, by using, for example:

- An initial experiment

- An image or images

- A visit

- Have a brief look at a scientist to revisit after learning.

Pupil voice will be encouraged throughout to assess new learning, dispel misconceptions and encourage curiosity. Where possible, the question that will lead their learning should be introduced.

The process is repeated when looking at new area of science.

## **Resources**

Planning will be supported by the use of: White Rose Science, Association of Science Educators (ASE), Engaging Science and other resources appropriate for the teaching and learning of a particular strand or topic. Where appropriate, Concrete, Pictorial and Abstract methods (CPA approach), BSL, pre-teaching and post teaching will be used to enhance teaching and learning. This will help children deepen their understanding of the concepts being taught and enhance their learning experience.

## **Assessment**

Assessment is part of the planning process. Teachers plan with assessment in mind considering prior learning, misconceptions and the expectation for the area of study. Retrieval and Formative assessment involving questioning, in the moment of 'live' marking, observation, challenge and questioning will be used in every lesson. At the end of each lesson or series of lessons, a science 'quiz' and or a summative assessment can be used to identify gaps in teaching and learning. The 'results' are then input into an excel spread sheet as part of the White Rose Science scheme.

## **Monitoring**

Science will be monitored via book monitoring, teachers' teaching, learning walks, observations, and pupil voice.

## **Staff Development**

Staff training during staff meetings, Mentoring team-teaching and peer observations; Training courses