

# Science Framework



## **Intent**

The 2014 National Curriculum for Science aims to ensure that all children:

- 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 skills required to understand the uses and implications of science, today and for the future.

We, at Hemingbrough Primary School, understand that it is important for lessons to have a skills-based focus, and that the knowledge can be taught through this. We encourage children to be inquisitive throughout their time at school and beyond. The Science curriculum fosters a healthy curiosity in children about our universe and promotes respect for the living and non-living. We believe science encompasses the acquisition of knowledge, concepts, skills and positive attitudes.

Throughout the programmes of study, the children will acquire and develop the key knowledge that has been identified within each unit and across each year group, as well as the application of scientific skills. We ensure that the Working Scientifically skills are built-on and developed throughout children's time at the school so that they can apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts confidently and continue to ask questions and be curious about their surroundings.

## **Implementation**

All teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all children can achieve high standards in science through questioning and curiosity.

Our whole school approach to the teaching and learning of science involves the following:

- Science will be taught in planned and arranged topic blocks by the class teacher, to have a scientific enquiry approach to encourage curiosity.
- Through our planning, we involve problem solving opportunities that allow children to find out for themselves to encourage independence and resilience. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom. Planning involves teachers creating engaging lessons, often

involving high-quality resources to aid understanding of conceptual knowledge. Teachers use precise questioning in class to test conceptual knowledge and skills and assess children regularly to identify those children with gaps in learning, so that all children can access the curriculum.

- We build upon the learning and skill development of the previous years. As the children's knowledge and understanding increases, and they become more proficient in selecting, using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.
- Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics.
- Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding. Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning and workshops with experts when possible.
- Children are offered a wide range of extra-curricular activities, visits, trips and visitors to complement and broaden the curriculum. These are purposeful and link with the knowledge being taught in class.
- Regular events, such as Science Day or project days, such as Nature Day (trips to Hagg Lane that involve our local community), allow all pupils to come off-timetable, to provide broader provision and the acquisition and application of knowledge and skills. These events often involve families and the wider community.

### **Schemes:**

Staff are to use the ASE (Association for Science Assessment) 2017 Powerpoints to help support their planning. The ASE documents show very clearly the expectations of the children and how independent tasks can be created for independent learning. Staff may source ideas and worksheets from outside areas such as: Twinkl and Explorify but will refer to the ASE and progression of skills to check all objectives are covered.

### **Assessment**

Assessment is ongoing during every lesson to help pick up on misconceptions early, along with offering extension to the Greater Depth children. At the end of each topic, teachers give the children a TAPS (Teacher Assessment in Primary Science) focused assessment and record results on objective tick sheets and Otrack following the school's recording levels as Entering, Developing or Secure.

## **Equal opportunities**

All pupils will have equal opportunities to reach their full potential across the science curriculum and are given the opportunity to access the curriculum at their year group age.

Teachers will:

- set suitable learning challenges with scaffolds if needed.
- respond to individual pupil's learning needs
- overcome barriers to learning for individuals and groups by modelling, scaffolding and offering paired and group work in mixed ability.
- offer support or differentiate any homework given.

## **Provision for Inclusion: SEND/additional needs/Pupil premium**

All pupils will have equal opportunities to reach their full potential across the science curriculum and are given the opportunity to access the curriculum at their year group age.

Teachers will:

- set suitable learning challenges with scaffolds if needed.
- respond to individual pupil's learning needs in accordance with their education plans.
- overcome barriers to learning for individuals and groups by modelling, scaffolding and offering paired and group work in mixed ability.
- offer support/scaffold or differentiate homework.
- differentiate class work by supporting not constricting the curriculum and scaffold as much as possible.

## **Health and Safety/Safeguarding**

When working with tools, equipment and materials in practical activities and in different environments, including those that are unfamiliar, pupils will be taught:

- about hazards, risks and risk control
- to recognise hazards, assess consequent risks and take steps to control the risks to themselves or others
- to use information to assess the immediate and cumulative risks
- to manage their environment to ensure the health and safety of themselves and others
- to explain the steps, they take to control risks

## **SMSC/British Values /Cultural Capital**

Teaching will provide opportunities for pupils' SMSC/BV and Cultural Capital development through examples such as:

- encouraging pupils to reflect on the wonder of the natural world
- awareness of the ways that science and technology can affect society and the environment
- consideration of the moral dilemmas that can result in scientific developments
- showing respect for differing opinions and co-operation in activities
- raising awareness that scientific developments are the product of many different cultures