

**INTENT**
**What are our ambitions for Science?**

At High Green Primary School, we recognise how science impacts every aspect of daily life, and without science humankind would not have made progress throughout history. As one of the core subjects taught at primary level, we give the teaching and learning of science the prominence it deserves.

Learning science is concerned with increasing pupils' knowledge of our world, and with developing skills associated with science as a process of enquiry. Our science curriculum develops the natural curiosity of each child no matter their demographic, encourages them to have respect for living organisms, and instil in pupils the importance of caring for the natural environment.

Using the requirements of the Science National Curriculum as our guide, our Science lessons offer opportunities for children to:

- Develop scientific knowledge and conceptual understanding of the disciplines of Physics, Chemistry and Biology.
- Formulate their own questions about the natural world.
- Foster the confidence to 'be wrong' when it comes to making predictions and postulating their own theories.
- Promote an awareness of the importance of teamwork in scientific experimentation.
- Practically investigate their questions using various methods of enquiry.
- Gain competence in the science skills of planning scientific investigations, gathering and analysing data and critical evaluation of investigations across the disciplines.
- Use a range of methods to gather data from investigations and secondary sources including I.C.T., drawings, diagrams, videos and photographs.
- Present data in a variety of methods including tables, bar charts, line graphs, pictograms and pie charts.
- Produce comprehensive science reports that demonstrate their proficiency in the scientific method.
- Have care for the safety of all individuals in lessons by developing knowledge of the hazards of the materials and equipment they handle, along with mitigating these hazards.
- Develop an enthusiasm and enjoyment of scientific learning and discovery.

**In EYFS**

Science topics are part of The Understanding of the World area of the EYFS statutory framework. Through the coverage of the Natural World ELG children will be able to:

- Explore the natural world around them, making observations and drawing pictures of animals and plants.
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

At High Green Primary we strive for all children to be:

- Curious and inquisitive of the world around them
- Share their experiences of science knowledge
- Respect living things and the environment

**In Key Stage 1**

There are six science topic areas that are taught throughout years 1 and 2. At this stage The principal focus of science teaching is to enable children to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. Children will be encouraged to use the appropriate scientific vocabulary at this key stage to discuss and explain

findings. Throughout our school, children are encouraged to develop and use a range of working scientifically skills including questioning, researching and observing for ourselves.

At High Green Primary we aim for all children to be:

- ask questions
- make predictions and test answers in a variety of ways; about the constantly changing world around us.
- Make observations about the world around us and from what experiences they have had
- Develop an understanding and respect for living things, the natural world and life processes.

### **In Key Stage 2**

Science is taught through the National Curriculum. The main teaching focus of science in Key Stage 2 is to provide pupils with a platform to broaden their scientific view of the world around them. This in turn enables them to design their own investigations, ask questions about what they observe and select the most appropriate method to answer these questions. Children are also encouraged to use scientific vocabulary in order to talk and write confidently about what they have discovered. This facilitates greater depth of learning and development of scientific skills

At High Green we aim for all our children to:

- Have a positive attitude towards science and a greater curiosity
- Have an understanding of science through a process of enquiry and investigation
- Be confident and competent in scientific knowledge, concepts and skills
- Be able to reason, predict, think logically and to work systematically and accurately
- communicate scientifically
- be able to have the initiative to work both independently and in co-operation with others.

### **How does Science support our four core principles?**

#### **HOLISTIC**

Science is an important area of the curriculum which allows children opportunities to solve problems, ask and answer questions, explore and understand the world around us and the impact the environment has on our daily lives. Science also encourages children to develop their critical thinking and observation skills.

#### **EMPOWERMENT**

Science throughout the school enables children to take responsibility for their own learning and ensure they become independent learners and make good progress throughout the curriculum. Children have many opportunities throughout taught session through choosing Mild, Spicy or Hot activities that are relevant to their learning ability. Children also feel empowered by constructing their own investigations and experiments- this allows them to take responsibility for their own learning and progress.

#### **FAMILY AND COMMUNITY**

At High Green we encourage parent involvement through sharing children's work via Seesaw. This enables parents and or carers to interact with their child's learning and can then use this as discussion at home.

#### **RELATIONSHIPS**

Collaborative problem solving and investigation activities are a part of High Green's ethos to ensure children have the opportunity to share their own ideas and listen to the ideas of others. Peer support forms a crucial role in building children's confidence and taking ownership of their own learning.

### **IMPLEMENTATION**

The science curriculum aims to help children develop basic scientific ideas and understanding about the biological and physical aspects of the world, and the processes through which they develop this knowledge and understanding.

#### **In EYFS**

Science at Foundation Stage is covered in the 'Understanding the World' area of the EYFS Curriculum. It is introduced **indirectly** through activities that encourage children to explore, problem solve, observe, predict, think, make decisions and talk about the world around them.

### **In Key Stage 1 & 2**

In both Keys stage 1 and 2 classes follow the PZAZ Scheme of work. This is a clear and comprehensive scheme of work in line with the National Curriculum where teaching and learning shows progression across all key stages within the strands of Science.

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all children can achieve high standards in science. Teaching is set out thus:

- Science will be taught as set out by the year group requirements of the National Curriculum. This is a strategy to enable the accumulation of knowledge and allows progress in repeated topics through the years.
- Pupils will concentrate on one science skill per term. Term 1 will be dedicated to planning investigations, Term 2 to results gathering and analysis, and Term 3 will be spent evaluating practical work. Although each skill is related and there are links between them, there is minimum crossover as they are taught, so each becomes firmly embedded.
- Through our planning, we involve problem solving opportunities, allowing children to find out for themselves how to answer questions in a variety of practical means. Children are encouraged to ask their own questions and be given appropriate equipment to use their scientific skills to discover the answers.
- Engaging lessons are created with each lesson having both practical and knowledge elements. Teachers use precise questioning in class to test conceptual knowledge and skills and children are regularly assessed to identify those children with gaps in learning, so that all children keep up.
- We build upon the learning and skill development of previous years. As the children's knowledge and understanding increases, and they become more proficient in selecting and 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 explicit in 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 theme of the lesson.
- 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.

Attainment will be assessed each half term through related topic assessment tasks

Where applicable links to Science will be made to develop the children's topical learning.

Science is taught on a weekly basis for 2 hours, however in some year groups there is a dedicated science week to ensure objectives are covered.

### **IMPACT**

#### **How does Science support SMSC?**

The Science curriculum supports SMSC development by:

**Spiritual development** is enhanced through the consideration of issues such as the structure of the solar system and the formulation of the Universe.

**Moral development** is enhanced through the consideration of issues such as the effects of human activity on the planet e.g. extinction of species, global warming, pollution.

**Social development** is enhanced by students being encouraged to show respect for other people's ideas.

**Cultural development** is enhanced by consideration of the work done by various Scientists e.g. Charles Darwin.

#### **How does Science support personal development?**

By providing rich and varied contexts for children to acquire, develop and apply a broad range of knowledge, understanding and skills the curriculum enables children to think creatively and critically to solve problems and to make a difference for the better.

This successful approach results in a fun, engaging, high-quality science education, that provides children with the foundations for understanding the natural world. Our engagement with the local environment ensures that children learn through varied and first-hand experiences. Much learning takes place outdoors so pupils can investigate their immediate environment. Through various workshops, trips and interactions with experts and local charities, children have the understanding that science has changed our lives and that it is vital to the world's future prosperity. Children learn the possibilities for careers in science as a result of our community links

and connection with national agencies such as the STEM association. Pupil voice is used to further develop the Science curriculum, through questioning of pupil's views and attitudes to Science to support the children's enjoyment of science and to motivate learners.

**How does Science enhance the development and love of reading?**

Through the use of stories within science sessions children are able to make links between scientific enquiries and the world around them.

**How does Science support a deeper understanding of life in Britain, including diversity and democracy?**

Scientific progress relies on problem solving and collaboration. Groups composed of people with diverse experiences and areas of expertise tend to be more creative and innovative. Asking questions drives science forward, and scientists with different perspectives often ask different questions. In year 6 the evolution topic focusses on how the human species has evolved and adapted as well as other species- this enable's children to have an understanding of scientific enquiry and compare different eras within births history.

**How is Science assessed?**

Formative assessments are made after sessions. All children are assessed in science half-termly- this is an accumulation of all the concepts that have been taught that half term to identify what skills children have retained and where the gaps are.

Science is assessed using end of unit assessments from the PZAZ Scheme of work. Children also highlight the vocabulary they have acquired throughout the topic area and see if they have a better understanding of the vocabulary form the beginning of the unit.

**How is Science monitored and shared with key stakeholders?**

Science is monitored throughout the year with subject teams. The teams will undergo a deep dive of the curriculum area and identify the strengths and weaknesses- this is done yearly in the Spring term. This is shared with Governors and staff. There is also an end of term pit stop this monitoring ensure that the statutory objectives have been covered across the year groups.