Long Meadow School

Science

Intent, Implementation and Impact

Intent

At Long Meadow School, **high quality teaching** and **enjoyment of learning** is at the heart of everything we do. We encourage children to be inquisitive throughout their time at Long Meadow and beyond. In a rapidly evolving world, we believe that developing children's thinking and scientific practice excites their curiosity about phenomena and events in our universe. Our science curriculum promotes an appreciation of man's achievements and respect for the natural environment. Throughout the programme of study, children acquire **key knowledge** through **practical experiences** and learn to explain **scientific processes** and **concepts** confidently. Children are encouraged to ask questions and we believe that scientific investigation is about developing and evaluating explanations through experimental evidence and modelling. Children learn to discuss scientific issues that may affect their own lives, the direction of society and the future of the world.

In conjunction with the aims of the National Curriculum, our science teaching offers opportunities for children to:

- 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
- be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Our curriculum is well-structured and sequenced to enable knowledge and skills to be revisited throughout the school. The programme of study, skills progression and **never stops** are clearly identified within our **Hands, Head, Heart** curriculum document. Developing the skills needed to **work scientifically** is a key priority at Long Meadow School. We ensure this **never stops** by:

- giving pupils regular, high quality, practical hands-on experiences across the whole science curriculum
- breaking down the skills of scientific enquiry and carefully matching them to appropriate scientific concepts and topics in each phase and year group
- ensuring that pupils carry out full investigations, tests and experiments in each year
- encouraging curiosity and child-led questioning and investigations where possible

A Roadmap is used as a visual tool to show the children the journey they are on for Science and to summarise what they will learn during their time at LMS. We aim to address potential barriers to learning by providing children with a clear progression pathway enabling them to achieve and embed knowledge into their **long-term memory,** so preparing them for their own future and **life in modern Britain**.

Implementation

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all children are capable of achieving high standards in science. Our whole school approach to teaching and learning of science involves the following:

- our **Hands, Head, Heart Curriculum** ensures complete coverage of the curriculum, building upon what has been previously taught and ensuring milestones are achieved at the end of each year group/Key Stage
- science is taught in planned blocks of work/topics and lessons are logically sequenced
- the Early Years Foundation Stage curriculum supports children's understanding of science through planning and teaching of 'Understanding the World'. Both the environment and skilled practitioners foster curiosity and encourage explorative play. Children are motivated to ask questions about why things happen and how things work
- where possible, links are made with other subjects to enrich learning
- children achieve their best outcomes when new learning is linked to previous experiences and learning. Children's existing knowledge is routinely checked through completion of KWL grids, exploratory questions/challenges (such as concept cartoons and Explorify questions) and quizzes at the start of a lesson/topic to ensure that teaching is informed by the children's starting points
- **working scientifically** skills (**never stops**) are explicitly taught in all lessons to ensure that they are systemically developed throughout the children's school careers. Teachers demonstrate how to use scientific equipment and the various working scientifically skills in order to embed understanding
- lessons are practically led as much as possible, giving children regular, high quality, practical hands-on experiences
- problem solving opportunities allow children to apply their knowledge and find out for themselves. Scientific enquiry places key responsibility on children to learn through research and investigation. Tasks are designed to provide appropriate challenge to all learners, in line with the school's commitment to inclusion
- effective use of scaffolds ensures that all children are appropriately challenged from their individual starting points and learning is adapted where necessary to meet the needs of our SEN and EAL learners, ensuring that high expectation are maintained, whilst simultaneously supporting children's individual needs
- **Magenta Principles** are utilised to encourage children to think, talk and do. There is a focus on interaction and discussion as a key learning tool, allowing children to share ideas and develop their ability to talk and think like scientists. Reasoning helps to establish long-term memory and there is an expectation that children will need to recall knowledge
- children use an increasingly wide range of scientific vocabulary to describe ideas, objects and phenomena. Key scientific vocabulary is introduced in each topic/year group. It is displayed in the classroom and word banks are provided. Pre-teaching scientific vocabulary is encouraged, especially for SEND and EAL children, so it can be used in the following lessons
- children are encouraged to ask their own questions and curiosity is celebrated within the classroom
- teachers use precise questioning to test conceptual knowledge and skills
- key knowledge is rigorously checked, revisited and consolidated as necessary
- teachers support, encourage and foster a love of science through engaging enrichment opportunities. Effective use of educational visits and visitors are planned to enrich and enhance children's learning. Outdoor learning is encouraged, where possible
- children are supported and challenged in a variety of ways to ensure that all children, including SEND, EAL, disadvantaged and gifted children can achieve their full potential

Impact

The impact of the work in science at Long Meadow School is measured in a variety of ways. The school uses moderated materials provided by Association for Science Education alongside its **Hands, Heart, Head** curriculum document to assess the children's learning. Monitoring is also carried out through pupil voice, (when the children are asked about their work), book looks (learning in the children's books), learning walks and lesson observations, looking at the work on display, a scrutiny of social media posts about science at Long Meadow School and class websites, as well as evaluating any internal or external assessment information we have from statutory tests and internal assessment checks.

In line with the **Hands, Head, Heart** curriculum and age-related expectations, monitoring will show that teaching is effective and children:

- can use the key skills of **working scientifically**
- can demonstrate **knowledge and understanding** of the curriculum content (Physics, Chemistry and Biology)
- use key **scientific vocabulary** accurately and **confidently**
- are **resilient** when facing new challenges
- are **happy** and enthusiastic scientists