

**Manor Park Primary School**



# **Science Policy**

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**Reviewed by:** Rebecca Bradley, Science Leader

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# MANOR PARK PRIMARY SCHOOL

## Overview

Science is a vitally important core subject that provides children with a wealth of opportunities to be naturally curious about the world around them. At Manor Park, our children demonstrate a natural fascination with how the world works and our science curriculum, as well as wider enrichment opportunities provide them with a valuable contribution to their understanding.

Science depends upon developing key skills, as well as an acquisition of important facts, ideas and knowledge. Both of these areas of learning are inextricably linked and together they allow children to develop and extend their understanding of the world and how it has been constructed. The 'working scientifically' skills are the key focus of our lessons and they are the ones that all children need to develop, in order to learn more about the world around them. This involves planning and undertaking a variety of exciting, creative and fun investigations and experiments for biology, chemistry and physics. Through building up a body of foundational knowledge, pupils are encouraged to develop a sense of excitement and curiosity about natural phenomena. Our children then participate in different types of scientific enquiries and are encouraged to pose and answer scientific questions about the universe. At every opportunity, we demonstrate how knowledge can be applied to real life situations, emphasising the importance of science development. Children are encouraged to question and explore possibilities, through discussion with others and by testing their hypothesis.

We aim to engage and inspire children in the hope that many of them will pursue a career in science, encouraging them to have high aspirations for themselves and their future. We will also ensure that our pupils leave primary school with a solid skills-set and grounding in practical science as well as a heightened ecological awareness and a sense of environmental responsibility, which is crucial within our ever-changing world.

## Aims

- The curriculum is planned and implemented through the use of sequential objectives, to ensure a logical, progression in attainment.
- Children develop a knowledge of appropriate scientific facts and basic concepts.
- Pupils consolidate their understanding of key concepts and build on their prior knowledge and application of skills.
- Practical investigations are organised so that children are able to communicate their work to others in a variety of ways.
- Children develop an enquiring mind and have the desire, knowledge and ability to find out about the world around them, using all their senses.
- Open mindedness is encouraged so children interpret their findings critically and do not always expect the 'right answer'.
- Children acquire appropriate scientific vocabulary, which is discussed and recorded, to allow pupils to describe scientific processes and natural phenomena, using technical terminology accurately and precisely. Vocabulary is embedded from unit to unit, ensuring clear progression and a deepening understanding of key concepts.

- Teacher and child assessments are used in a way that supports and encourages children to extend and challenge their ideas and findings.
- Science teaching is made relevant by building upon pupils' own experience and using contexts suitable for their age. Wherever possible, cross-curricular skills are linked and developed during science lessons.
- Pupils are encouraged to offer their own suggestions, and to be creative in their approach to science, gaining enjoyment from their scientific work.
- Curiosity is encouraged in children about their environment, through a practical approach.
- Children are taught to treat the living and non-living environment with respect and sensitivity.
- Children are equipped with specific scientific knowledge so that they understand the implications of science, today and for the future.
- Children have a positive attitude towards and enjoyment of science.
- Children achieve highly, with many exceeding age related expectations.

## **National Curriculum**

All staff in key stage 1 and key stage 2 will follow the national curriculum guidelines and programmes of study for science. Children in Reception will follow the early years foundation stage curriculum.

The amount of time devoted to science within Key stage 1 and 2 each week is 2 hours. Within Key Stages 1 and 2, science is a timetabled lesson and is taught weekly as an integrated part of the creative curriculum or as a discrete lesson to ensure complete coverage of all national curriculum objectives. Within the foundation stage, science is taught as an integral part of our creative curriculum and within the area of 'understanding the world'.

As part of our bespoke creative curriculum, science lessons have been planned to incorporate key learning and skills from the national curriculum. These programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts, in order to progress to the next stage. Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data.

As part of our rich curriculum offer, the children experience excitement in their science learning through 'Let's Investigate' days, visits from science experts, participating in lectures and programmes at Warwick University and 'Mad Science' courses offered as part of Manor Park University. Manor Park children are highly engaged during science lessons, achieving their learning objectives and making substantial and sustained progress.

## **Progression and Differentiation**

Lessons are planned to allow children to develop knowledge, concepts and skills and to make accelerated progress. Lessons are carefully differentiated, including resources and supportive scaffolds, to enable all children to achieve highly. In addition to this, challenges are offered to stretch the more able, encouraging children to think methodically, and consider a range of possibilities. Open investigations are also planned for, which allows for differentiation by outcome and the opportunity to work in mixed ability groups. 'Working scientifically' skills are developed and embedded, with clear progression across the school, always building on prior learning and key concepts, enabling children to achieve highly, with the opportunity for many to exceed age related expectations.

## **Planning**

The objectives of planning in science are as follows:

- Clear, achievable learning objectives are set for the children as well as opportunities for stretch and challenge.
- Progression, continuity and subject coverage throughout the school is delivered, using Manor Park subject skills progression document.
- Practical, scientific investigations are regularly planned.
- Formative and summative assessment is effectively used on Class Track, to inform future planning.

The topics in science are planned so that they build upon prior learning. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit. Re-visiting, reinforcement and extension of learning is built into the science coverage, so that children secure their understanding and are increasingly challenged as they progress through the school.

## **Assessment**

Assessment is on-going using Class Track, assessing both knowledge and science skills. Class teachers assess against national curriculum science objectives as to whether children are achieving the expected standard. Assessment will encompass: observations of pupils whilst learning and investigating; questioning; pupils' discussions; oral presentations; pupils' written work and pictorial or graphical work. Teachers have regular opportunities to moderate within and across year groups, to ensure the accuracy of teacher assessments.

At the end of Key Stage 1 and 2, teachers make an assessment of the children's work in science based on observation throughout the year and the assessment tasks. The end of key stage judgement is reported to parents in the summer term along with SATs results for English and maths.

## **Working scientifically skill development**

The teaching of science should develop the key specific skills of:

- Hypothesising, predicting and estimating.
- Planning and carrying out investigations.
- Fair testing.

- Observing and measuring.
- Presenting results by appropriate means, including the use of ICT.
- Evaluating results and drawing conclusions.

### **The contribution of science teaching to other curriculum areas**

The science coverage links with many other areas of the curriculum:

- **Geography:** There are strong links between the effects of science on the environment. Units that have strong links are those on energy, renewable and non-renewable energy sources, habitats, rocks and weathering and the rock cycle and weather systems.

- **English:** There are opportunities to develop speaking and listening skills through discussion and argument; to expand vocabulary through key word lists; to improve writing skills through answering questions, organising work in paragraphs and developing written arguments, and to read a range of texts.

- **Maths:** Skills in maths are developed through opportunities to measure and use a range of units; to construct tables, and to collect, display and analyse a range of data.

- **Computing:** Opportunities are available for students to word process work; to find information from electronic sources; to use spreadsheets, databases and graphs, and to use data logging, simulation and modelling.

### **Special Educational Needs**

All children should have access to a broad balanced curriculum, including science, which enables them to make the greatest progress possible. We provide learning opportunities that are matched to the needs of the children. Further details are contained in the school Special Educational Needs policy.

### **Equal Opportunities**

It is the responsibility of all teachers to ensure that all pupils irrespective of their gender, ethnicity, social circumstance and ability have access to the curriculum and make the greatest progress possible.

### **Health and safety within science**

All teaching staff are conversant with the health and safety policy and relevant regulations, and plan accordingly. Teachers follow guidelines and take appropriate precautions. Further details can be found in the health and safety school policy.

### **Science leader's role**

In planning, the leaders will:

- Review and contribute to schools planning.
- Prepare policy and organise resources for staff.
- Prepare a subject development plan.

The leader will assist staff by:

- Leading staff meetings.
- Planning/leading INSET sessions.
- Providing advice and giving necessary support.
- Being informed about current developments in the subject.
- Co-ordinating staff requests for resources and all ordering.
- Monitoring and maintaining condition and availability of resources.

The leader's responsibility for monitoring and evaluating includes:

- Analysing pupils' access to the subject.
- Reviewing teachers' plans and the quality of science teaching.
- Monitoring standards of pupils' work and progress made.
- Gathering feedback from pupils through pupil voice.
- Reviewing teacher/pupil records.
- Reviewing assessment and end of key stage results.

### **Equipment and Resources**

There is a wide range of resources available to the school, which will be maintained and monitored by the science leader. The resources are a collective responsibility for the whole school, and pupils are encouraged to treat resources carefully and safely. Children are expected to, where appropriate, choose their own equipment and set such equipment up for practical science. This should be done under adult supervision with health and safety requirements in mind. By doing so, they:

- make sensible choices about which equipment to use,
- treat the equipment with care,
- use the equipment with their own and other's safety in mind,
- become independent learners.

The school grounds and surrounding areas will be used wherever possible to teach science and link to outdoor learning.