SUNNYMEDE JUNIOR SCHOOL

Learning for a Better Tomorrow

Science Policy

Adopted by Governing Body: November 2013

Review: Every three years

This Review: March 2018

Next Review Date: March 2021

Headteacher's signature	*Chair of Governor's signature*

Governors and staff were consulted when writing this policy.

Aims

- To develop pupils' enjoyment and interest in science.
- To develop pupils' understanding of key scientific knowledge and conceptual understanding through biology, chemistry and physics.
- To develop pupils' understanding of the nature, processes and methods of science through investigation work.
- To enable pupils to effectively communicate ideas using scientific vocabulary.
- To develop pupils' awareness of how science influences and affects our everyday lives.
- To enable pupils to demonstrate mastery in their learning

Attitudes:

- Encouraging the development of positive attitudes to science.
- Building on children's natural curiosity and development of a scientific approach to problems.
- Encouraging open-mindedness, self-assessment, perseverance and responsibility.
- Building our children's self-confidence to enable them to work independently.
- Developing our children's social skills to work cooperatively with others.
- Providing our children with an enjoyable experience of science, so that they will develop mastery, leading to a deep and lasting interest and may be motivated to study science further.

How science is structured through the school

Science teaching in the school is about excellence and enjoyment. We adapt and extend the curriculum to match the unique circumstances of our school. Science is taught in 'blocks', allowing pupils to fully immerse themselves in and consolidate their learning. The children will have additional science experiences at least once a week using short activities and discussions such as those on 'Explorify'. The time spent teaching science is the equivalent of two hours per week. Sometimes this will be of a cross-curricular nature. The school broadly follows the Kent Primary Science Scheme of Work. Units from this scheme of work are covered across the school and are mapped out on the school's long term plan. These have been agreed after whole-staff discussion. In accordance with the guidance in the National Curriculum, this scheme clearly indicates a progression in the key scientific knowledge and concepts, from Year 3 to Year 6. This ensures progression between year groups and guarantees topics are revisited. Teachers are expected to adapt and modify the model plans to suit their children's interests, their learning needs, current events, their own teaching style, the use of any support staff and the resources available. In doing so, we ensure that all aspects of the National Curriculum are addressed over time.

Our Approach to Science

The essential elements describing how science is taught in our school are described below.

- We will encourage discussion, awe and wonder in our science lessons as a 'hook' to begin topics and activities from 'Explorify'
- We have adopted parts of a commercial primary science scheme, which is adapted to our circumstances.
- Teachers' planning and resources are shared on the school's intranet.
- We use ICT widely in science. Children are given the opportunity to practise science skills and enhance their presentation using carefully chosen software.
- We use ICT for enquiry work, including data logging and using cameras to video and photograph activities.
- The school combines these secondary sources with first-hand scientific enquiries, building children's science enquiry skills.
- We actively teach science skills, and reinforce learning with selected enquiry simulations.
- We encourage children to ask and answer their own questions as far as is practicable.
- Children complete at least one full investigation each half term, taking increasing responsibility for their planning, carrying them out and recording/interpreting the results.
- We use homework to support school and class activities. This relates to the school's overall homework policy.
- We use cross-curricular links in science with, for example, in design and technology and mathematics.
- We develop science informally through science clubs, school visits and other out-of-school activities.
- Pupils on the Gifted or Talented register will be given an opportunity annually to participate in a science based extra-curricular activity to build on their expertise
- We promote outdoor learning opportunities to enhance knowledge and understanding in science.
- We endeavour to ensure that all pupils experience two science focussed trips or experiences during their time at Junior School.

The nature, process and methods of science

Pupils are taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundation knowledge and concepts, pupils are encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They are encouraged to:

- Understand how science can be used to explain what is occurring
- Predict how things will behave

- Analyse causes.

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. Pupils will learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry should include:

- Observing over time
- Pattern seeking
- Identifying, classifying and grouping
- Comparative and fair testing (controlled investigations)
- Researching using secondary sources
- Pupils will seek answers to questions through collecting, analysing and presenting data.

Encouraging 'Mastery' in Science

Mastery is reached when a pupil can show they have fully grasped the scientific skills, concepts and knowledge set out in the National Curriculum Programmes of Study for the relevant year group / phase. This is achieved when a child can apply age-related learning in a more complex and in-depth manner, in a range of contexts and curriculum areas and using a range of methods. Mastery is not simply knowing a fact, acquiring a skill or understanding a concept but applying that fact, skill or concept independently in their learning in different contexts and over a period of time (not just once). We will give our children the opportunity to show their depth of understanding in science by using the following strategies and approaches:

- 'Wow Moments' will be encouraged: – activities will be designed to excite and engage the children, encouraging them to deepen their thinking and begin to develop and explore answers to their own questions about the world around them.
- Higher order questioning in lessons - pupils will be encouraged to think deeply about their answers and apply their understanding in new situations.
- Pupils will be given opportunities to apply their understanding of Science in a variety of practical activities, during which they will investigate a question. They will generate data and compare their results with others, trying to explain what it means and why there may be differences.
- By self-selecting their equipment, pupils will be able to develop their understanding of what is the most appropriate to carry out and conclude an investigation. They will be asked to evaluate their choices and consider if/what they could improve.
- Pupils will be challenged to give well thought out conclusions, based on their results, and to consider how accurate and reliable the results are.

- Mathematics will be used to compare data or present the data as a graph when appropriate.
- The children will be given opportunities to research ideas (using books and the Internet) and will be encouraged to summarise their research in their own words and ask questions about what they have learnt.
- During discussions, the children will be expected to talk about what they have learnt and identify the next stages and steps. They will encouraged to make links between their experiences

As a result of this, pupils will have a deep understanding of the concepts covered including the social, moral, spiritual and cultural aspects of science. They will develop and extend their learning and apply their skills to other situations.

Equal Opportunities in Science

- Science is taught within the guidelines of the school's equal-opportunities policy.
- We ensure that all our children have the opportunity to gain science knowledge and understanding regardless of gender, race, class, physical or intellectual ability.
- Our expectations do not limit pupil achievement and assessment does not involve cultural, social, linguistic or gender bias.
- We aim to teach science in a broad global and historical context, using the widest possible perspective and including the contributions of people of many different backgrounds, including female scientists.
- We value science as a vehicle for the development of language skills, and we encourage our children to talk constructively about their science experiences.
- In our teaching, science is closely linked with literacy, mathematics and computing.
- We recognise the particular importance of first-hand experience for motivating children with learning difficulties.
- We recognise that science may strongly engage our gifted and talented children, and we aim to challenge and extend them through differentiated work and links with Mayflower High School.
- We access 'Outreach' Science through the Key Stages Science challenge afternoon sessions at The Billericay School.

Assessment and Recording in Science

- We use assessment to inform and develop our teaching, using a combination of Assessment for Learning (AfL) and testing.
- Units of work commonly begin with an assessment of what children already know and want to find out.
- We use CPG end-of-unit tests in years 3, 4 and 5 to assess learning and identify areas for development. In year 6, teachers use questions from Testbase. These tests and questions are used to guide and support the

teacher assessment of individual's attainment within his/her year group. Equally important is the continuous assessment of children's work, much of which is informal. Teachers record their observations on our school assessment sheets which track each pupil's attainment for each objective. This information is added to an electronic assessment tool, Target Tracker, on a termly basis.

Children are involved in the process of self-improvement, recognising their achievements and acknowledging where they could improve. Activities during, and at the end of, each topic record achievement and celebrate success.

- Year 6 children may be chosen to take the National Assessments (Science SATS) as part of national sampling.
- Following the Marking and Feedback Policy, we mark work positively, making it clear where work is good and how it could be improved with a next step.
- The school's science coordinator monitors progress through the school by sampling children's work at regular intervals.
- Reports to parents are made verbally, and written once a year, describing each child's attitude to science, his/her progress in scientific enquiry and understanding of the content of science.

Role of the Science Subject Leader

There is a named co-ordinator responsible for co-ordinating the teaching of Science throughout the school. Their role is to:

- Provide support, advice and resources to members of staff
- Monitor the planning and teaching of science and outcomes for all children, supporting staff with planning and assessment of science where necessary (to include reviewing the quality of termly and weekly science planning, book scrutiny, review of curriculum coverage, assessment records, pupil voice activities, review of the learning environment and, where appropriate, direct observation of teaching and learning)
- Ensure the curriculum and school policy is understood and implemented by all relevant parties
- Attend relevant training and support staff through relevant INSET sessions
- Monitor the use and need of resources throughout the school.
- Keep up to date with developments in the teaching of science, adapting the school's curriculum, assessment systems and policies in line with any changes to statutory requirements and national and local developments.
- Promote science by ensuring the core curriculum is engaging, as well as organising other activities to promote science

Monitoring and Evaluation

In order to ensure continuity and progression, the teaching of science across the school will be monitored regularly, using a range of strategies. Day-to-day monitoring is the prime responsibility of the science subject leader, who should report findings to the Leadership Team promptly (within one week) following any monitoring activity. This should include a written summary of strengths, areas for development and what support may be required. Any agreed actions arising should be acted upon within an identified time frame. The subject leader should ask for support with monitoring where appropriate.

The nominated governor for science will monitor the policy and practice of science within the school. They will liaise with the Subject Leader and meet with them in order to monitor and review evidence to support their evaluation of the school's provision.

This policy will be reviewed every three years, or sooner if considered necessary, and in consultation with relevant stakeholders. Any changes will be presented to the Governing Body for approval.