MUNTHAM HOUSE SCHOOL

SCIENCE POLICY

Science Policy

Overview

Science stimulates and excites pupils' curiosity about phenomena and events in the world around them. It links ideas and knowledge with direct practical experience and can engage learners at many levels. The scientific method develops and supports inquiry through experimentation and proposition. It develops creativity in thought and analysis in practice.

Intent – Aims and Objectives

In Science, we intend to:

- To engage pupils as learners at many levels by linking ideas with practical experience.
- To link pupils' understanding with scientific thought and thus develop a greater understanding of the world in which we live and their responsibility to ensure its sustainability.
- To help pupils develop, model, and evaluate experiments using critical and creative thought.
- To develop pupils' questioning and analytical skills.
- To develop pupils' understanding of how central scientific ideas contribute to technological change and how these impact improving the quality of our everyday lives.
- To provide a rich and varied science curriculum to stimulate and interest all pupils.
- To ensure teaching styles and methods in science vary to suit the type of learning and the pupils' differing learning styles and abilities.
- To provide appropriate and sufficient scientific resources for all pupils to support effective learning and teaching.
- To develop various other skills, including inquiry, problem-solving, ICT, Maths, Literacy, and different means of presentation in a cross-curricular way.

Implementation – Teaching Guidelines Science

The content covered at Key Stage 3 builds on the foundations set in the primary curriculum. It covers content in a spiral model so that pupils are prepared and on a pathway that will allow them the best opportunity to succeed in their GCSE subjects. In KS3, we follow the AQA syllabus. This syllabus provides an alternative approach to KS3 content. Content is under 10 big idea headings: Forces, Electromagnetism, Energy, Waves, Matter, Reactions, Earth, Organisms, Ecosystems, and Genes. Each idea contains four smaller topics: the building blocks for the big ideas.

This content is a spiral design for understanding. It's easier for pupils to develop an understanding of a big idea through multiple interactions with the concepts within the idea. By connecting smaller ideas to more abstract ideas, pupils will be better prepared to apply these concepts when approaching an unfamiliar topic.

Each big idea topic contains four smaller topics that build complexity. For example, ‘Waves’ topics are ordered from simpler, more concrete topics ‘, Light’ and ‘Sound’, to more abstract ones ‘, Wave properties’ and ‘Wave effects’. These have been created to avoid repetition, draw on various scientific skills and use different contexts.

In KS4, pupils at Muntham are expected to achieve a combined GCSE award for studying the AQA trilogy curriculum. Pupils will study the GCSE content in years 10 and 11; if they are ready, they will begin in year 9. The lessons' content follows this course's specifications, and pupils also complete the required practical activities in Biology, Chemistry, and Physics so they are prepared for the six terminal examinations in year 11.

Lessons all have clear learning objectives, which the children share with and understand. They are always aware of what they will learn through the activity and what skills the teacher is looking for in their learning.

Teachers use a range of learning and teaching styles, incorporating individual, pair, class, and group work into lessons. Children are taught through discussion, practical activity, games, investigations, problem-solving recording and practice, consolidation, and regularly use IT to record and support their work. The teaching style and methods are varied according to the subject matter and the pupils being taught.

Pupils have frequent opportunities to develop their skills in planning investigative work, selecting relevant resources, making decisions about sources of information, carrying out activities safely, and deciding the best form of communicating their findings. They are encouraged to take responsibility for their learning as far as possible for their ages and abilities.

We recognise pupils of widely different abilities in all classes, and we use various methods to ensure suitable learning opportunities for all pupils by matching the task's challenge to the pupil's ability. We achieve this by:

- Setting common, open-ended tasks which can have a variety of responses.
- Setting consecutive tasks of increasing difficulty, with children completing what they feel able to.
- Grouping pupils by ability and setting different tasks for each ability group.
- Provide resources that meet the needs of the group.
- Using learning assistants to support the work of individual pupils or groups of pupils.
- Giving additional teacher input to some pupils when needed.

Curriculum Planning

Long Term Planning (Curriculum Map)

This is based on the National Curriculum for Science, which details what is to be taught over the Key Stages and provides the topic basis for planning science activities for each year group. This varies little from year to year unless there are changes to the National Curriculum. It is monitored regularly and evaluated annually. The curriculum maps for science can be found in the science folder.

Medium Term Planning

This takes the long-term plan and organises science teaching into termly or half-termly sections. The planning is more detailed, and the objectives are more specific, including assessment opportunities. This planning is developed by the class teachers, who respond to the needs of their pupils. It also ensures a balanced distribution of work is undertaken across each term.

Impact – Monitoring and Assessment

The science curriculum is monitored regularly by the head of science and the science teachers; they examine pupils' work, monitor classroom practice and planning, and ensure parity of entitlement for all pupils across the school.

Pupils in KS3 have half-term assessments based on the topics they studied. These assessments vary in delivery and can be extended practical write-ups, levelled tasks, tests, or extended classwork. The assessments are formative, and the next steps in learning are given to pupils. These assessments are used with all available evidence to make a judgment once a term against the pupil's terminal target. Pupils are judged to be on, above, or below target.

KS4 assesses pupils against the course's AQA GCSE criteria and assessment objectives. At the end of each study topic, the pupils are assessed and given targets to improve. Once a term, the science teacher takes all available evidence to make a statement if the pupil is on, above, or below their end of KS4 target. They are highlighting any areas of underachievement and making early intervention possible.

When assessing pupils in science, various strategies, including questioning, discussion, concept mapping, and marking, are used to evaluate progress. The information is used to identify the pupils' needs and to inform planning.

Monitoring the Effectiveness of the Policy

Annually (or when the need arises), the effectiveness of this policy will be reviewed by the Head of English, the Head of Education and the nominated Governor. Necessary recommendations for improvement will be made to the Governors.