



Science Policy

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“The art of science of asking questions is the source of all knowledge.” Thomas Berger.

This policy reflects the school’s values and philosophy in relation to the teaching and learning of science.

It sets out a framework within which teaching and non-teaching staff can operate.

The policy should be read in conjunction with the scheme of work for science.

Science is a core subject within the National Curriculum

Intent

The national curriculum for science aims to ensure that all pupils:

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

At Moss Side Primary School we aim to provide a Science curriculum which enables all children to:

- show curiosity about, explore and discover both the world around them and the wider world.
- develop confidence in investigating by working scientifically using a ‘hands-on’, practical & visual approach.
- develop language and vocabulary as a scientist through discussion of ideas, knowledge and findings.
- record ideas and findings in a variety of ways. Children will make links in their science learning with the wider school curriculum, and will utilise skills from other curriculum areas.

Scientific knowledge and conceptual understanding

The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also important that they develop secure understanding of each unit’s key learning in order to progress to the next stage. Children’s starting points are identified by assessing prior learning at the beginning of each science topic. Common misconceptions are addressed throughout the topic. Throughout the unit, children’s knowledge is assessed in line with the key knowledge outlined on the knowledge organisers. 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. The science curriculum requires children to apply mathematical knowledge including collecting, presenting and analysing data.

The nature, processes and methods of science

‘Working scientifically’ specifies the understanding of the nature, processes and methods of science for each year group. This is embedded within lessons, not taught as a separate strand. Pupils learn to use a variety of approaches to answer relevant scientific questions, including:

- Observing over time
- Pattern seeking
- Identifying, classifying and grouping
- Comparative and fair testing (controlled investigations)
- Researching using secondary sources.

Pupils are given opportunity to seek answers to questions through the skills of observing, raising questions, predicting, hypothesising, planning, controlling factors (fair testing) measuring, collecting interpreting data, constructing tables and graphs, explaining, communicating and evaluating findings, researching information.

Spoken language

The national curriculum for science reflects the importance of spoken language in pupils’ development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely. Adults assist children in making their thinking clear, both to themselves and others. Staff help children to build secure foundations by using discussion to probe and remedy children’s misconceptions.

The Curriculum

The Moss Side Science curriculum document gives teachers a clear progression of skills from which to plan their lessons. Science is taught for two hours each week in KS2, it is taught for one full afternoon in KS1. Learning is organised into five units for each year group. Teachers may use additional schemes to support their teaching of the objectives including White Rose Science and Twinkl Science. The class teacher, with help from the science co-ordinator, is responsible for science in each class. Knowledge organisers are used as a way of planning and assessing children’s learning throughout a topic. These outline the key learning, key questions and key vocabulary for each topic.

EYFS

The Foundation Stage deliver science content through the ‘Understanding of the World’ strand of the EYFS curriculum. This includes guiding children to make sense of their physical world and their community through opportunities to explore, observe and find out about people, places, technology and the environment. They are assessed according to the ‘Development Matters’ attainment targets & Early Learning Goals.



Key Stage 1

The principle focus of science teaching in Key Stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They are encouraged to be curious and ask questions about what they notice. They are helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer 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 begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, there will also be some use of appropriate secondary sources, such as books, photographs and videos.

'Working scientifically' is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study.

Lower Key Stage 2

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

'Working scientifically' is described separately at the beginning of the programme of study, but must always be taught through, and clearly related to, substantive science content in the programme of study.

Upper Key Stage 2

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and



observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

'Working and thinking scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study.

Resources

The science resources are kept mostly in the large science cupboards in the library. EYFS have a range of resources kept in classrooms for simple access for children during exploration. The school library has a good supply of science topic books to support children's individual research. The iPads and laptops can also be used for research purposes.

For 'consumable' resources – teachers to advise the Science Lead of resources required.

Equal opportunities

At Moss Side Primary School we are committed to providing all children with an equal entitlement to scientific activities and opportunities regardless of race, gender, culture or class.

Inclusion

In school we aim to meet the needs of all our children by adapting our science teaching using a variety of approaches.

These include:

- Setting suitable learning challenges;
- Responding to pupils diverse learning needs;
- Overcoming potential barriers to learning and assessment for individuals and groups of pupils.

We ensure the lesson caters for all children's learning. Lesson support may include small group support and 1:1 support. Children with learning and/or physical difficulties are able to take an active part in scientific lessons and practical activities and investigations and to achieve the targets they have been set. We place strong emphasis on experimental investigational work wherever possible, which the children will approach and work through at their own level. Some children will require closer supervision and more adult guidance to allow them to progress, whilst more able children will be extended through open-ended questions allowing opportunities to take their learning further.

Assessment

Assessment of children's learning is made through a combination of informal assessment of prior learning and on-going teacher assessment.

Progress and achievement in science is reported to parents through end of year reports and parents' meetings.

The Science Lead carries out the assessment of the impact on children's learning over time through staff meetings, looking at children's work and conducting pupil voice interviews.



Safety

When working within science lessons, in practical activities and in different environments, including those that are unfamiliar, pupils should be taught:-

- About hazards, risks and risk control;
- To recognise hazards, assess consequent risks and take steps to control the risks to themselves and others;
- To use information to assess the immediate and cumulative risks;
- To manage their environment to ensure the health and safety of themselves and others;
- To explain the steps they take to control risks.

It is important that children are taught the rules of safety when undertaking experiments and investigations. Materials and equipment need to be handled sensibly. The teacher needs to ensure that all staff and pupils involved are aware of safety implications connected with any science activity they are undertaking. Children are expected to follow the instructions in the class.

The role of the Science Lead

- a) To read, understand and interpret the National Curriculum orders in science in order to help the staff also understand what is required.
- b) To annually review and keep up to date the science policy and scheme of work in science.
- c) To keep under review and make suggestions for the updating and regeneration of all the science equipment in the school.
- d) To research the range of science schemes appropriate to the needs of pupils in the school and make suggestions for development.
- e) To devise and support a scheme of assessment (including testing) in science. This scheme must incorporate the end of key stage assessments and have appropriate record keeping practice.
- f) To liaise with the staff about the development of science teaching in school.
- g) To attend courses of a routine nature and also key developmental courses on behalf of the staff. To lead discussions with staff on return to school. To arrange school-based in-service training for members of staff as appropriate.
- h) To look at teaching plans in science if required to offer support and guidance.
- i) To visit classrooms to review the teaching and monitor the time allocation, teaching strategy and teaching quality.
- j) To be aware of developments needed in the school to improve the attainments of the pupils in science.
- k) To feedback areas for development of DT to senior leaderships following staff discussion, learning walks and pupil voice, in order for this to inform the School Development Plan.
- l) To provide updates to the governing body to keep them informed about art in school and abreast of any changes.
- m) To ensure information on the school website is up to date.