



Science

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1. Curriculum Aims:

Our curriculum 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

We encourage pupils' familiarity with, and use of, technical terminology, and they are helped to build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. The curriculum also links to other areas of learning in the school such as mathematics, geography and history.

As a theme running throughout the whole curriculum is the notion of 'Working scientifically', i.e. the understanding of the nature, processes and methods of science. This is not taught as a separate strand but is embedded within the content of biology, chemistry and physics, using the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions at an age appropriate level. This includes: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils are encouraged to seek answers to questions through collecting, analysing and presenting data.

By the end of years 5 and 6, pupils are able to use the following practical scientific methods, processes and skills:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments

The curriculum enables learners to use the above scientific skills to develop knowledge, skills and understanding in:

- Living things and their habitats
- Animals, including humans
- Properties and changes of materials
- Earth and space
- Forces

- Evolution and inheritance
- Light
- Electricity

2. Curriculum Content and Planning

Early Years (Nursery and Reception)

The Early Years Foundation Stage (EYFS) is concerned with learning through play and active exploration. We encourage the Characteristics of Effective Learning which include 'playing and exploring', with children being fully engaged in their learning and being willing to 'have a go' and make suggestions; 'active learning', where children are involved and concentrate, keep trying and are pleased when they achieve what they set out to do; and 'creating and thinking critically', where children are encouraged to have their own ideas, make links and choose their own way to do things. As well as encouraging exploration of their environment, the Early Years curriculum allows practitioners to engage fully in the interests of children and help to develop them through questioning, encouragement and provision of resources and situations. This allows children to develop important scientific skills such as observation, questioning and testing. More specifically, the 'understanding of the world' strand of the EYFS includes a section on 'the world' which highlights environment, change, observations of animals and plants and discussion of change and decay.

Key Stage 1 (Years 1 and 2)

The principal focus of the school's 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 their own 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.

The curriculum is designed to help learners to 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 is done through the use of first-hand practical experiences, but there are also opportunities to use appropriate secondary sources, such as books, photographs and videos.

Lower Key Stage 2 (Years 3 and 4)

The principal focus of the science curriculum 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 are encouraged to 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.

The curriculum encourages them to draw simple conclusions and use scientific language, first, to talk about and, later, to write about what they have found out, and pupils are encouraged to read and spell scientific vocabulary correctly and with confidence, using their growing word-reading and spelling knowledge.

Upper Key Stage 2 (Years 5 and 6)

The principal focus of the science curriculum 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, the curriculum ensures that learners 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 are taught to 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 are able to 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, and pupils are encouraged to read, spell and pronounce scientific vocabulary correctly.

3. The role of the Subject Leader

Key Roles and Responsibilities:

- Being aware of the state of the subject throughout the school by having a clear vision of the strengths and weaknesses in provision;
- Reporting to SLT on provision and outcomes;
- Managing the delivery of the subject throughout the school, ensuring statutory requirements are met and improving outcomes for learners;
- Having an action plan to lead the school forward to raise attainment further.

Other roles include: providing a good role model for the teaching of the subject; leading the development of the subject in school; and supporting staff development (see Appendix One).

4. Assessment and Recording

Assessment in Science is ongoing and informs future teaching and learning. Children are assessed at the end of each academic year against age related criteria.

5. Special needs and equal opportunities

All children have equal access to the science curriculum and its associated practical activities. The SLT, Class Teachers and TAs at Lodge Farm Primary School are responsible for ensuring that all children, irrespective of gender, learning ability, physical disability, ethnicity and social circumstances, have access to the whole curriculum and make the greatest possible progress. Where appropriate, work will be adapted to meet pupils' needs and, if appropriate, extra support given. More able pupils will be given suitably challenging activities.

We are dedicated to promoting values which ensure that our pupils develop a strong sense of social and moral responsibility. We prepare our pupils for life in Modern Britain because values such as individual liberty, democracy, the law, mutual respect and tolerance are embedded within the curriculum and the school ethos at Lodge Farm. We encourage pupils to develop their ability to be reflective about their own beliefs and perspectives on life, and the extent to which they are the same as/different to others in faith, feelings and values.

6. Resources

Resources are audited regularly and replenished regularly according to need. Staff plan science units in advance and complete resource requirement forms which are given to the Science Leads who are then able to ensure resources are ordered and in place for lessons. Specialist pieces of equipment and those posing a potential safety risk will be held centrally and staff will be given access when required.

7. Health and Safety

Pupils will be taught to use scientific equipment safely when using it during practical activities. Class teachers and teaching assistants will check equipment regularly and report any damage, taking defective equipment out of action. A simple risk assessment will be carried out for practical activities involving any perceived hazards, and these will be reported to the Science Leader who will determine the appropriateness of the activity.

8. Review procedures

Review 2019 / Changes in curriculum