Lilleshall Primary School

Science Policy 2026 - 2027

Rationale

Science stimulates and excites pupils' wonder about phenomena and events in the world around them. It satisfies their curiosity with knowledge. It is concerned with observing, questioning, experimenting, deducing and reaching conclusions about what has happened based on evidence. Through the fourteen big ideas of Science, children understand how major scientific ideas contribute to the quality of our lives – their influence on industry, business and medicine. When children are studying, teachers should foster their enjoyment of exploration, manipulation, comparison, argument and testing.

Aims

Science is a core subject within the National Curriculum. The aims of teaching Science at Lilleshall Primary School are consistent with our school philosophy.

The aims of Science are:

- to enable children to develop their knowledge and understanding of the world in which they live, through investigation of that world
- to help children develop enquiring minds, to observe and to foster their natural curiosity about themselves and the world
- to provide a Science Curriculum that is broad, balanced, relevant and differentiated
- to fulfil the requirements of the National Curriculum for Science
- to ensure the progressive development of scientific concepts, knowledge, skills and attitudes
- to enable children to work scientifically in a range of appropriate contexts, using a wide variety of materials and equipment, to interpret their findings, record them appropriately and draw conclusions

- to promote positive attitudes towards, and enthusiasm for, Science work in school.

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.

In the teaching and learning of Science, we can identify several objectives:

- To incorporate opportunities to develop basic scientific skills, attitudes and knowledge appropriate to the development of the child
- To provide opportunities for children to acquire practise and develop scientific skills and strategies through a carefully structured activity-based programme centred on investigations
- To provide flexible ways of working including class, group and individual work.
- To provide opportunities for children and staff to share and develop ideas and respect each other's views
- To build upon the experiences children bring to Science and develop these in a wide range of contexts
- To build up children's confidence and competence when working in Science.
- To encourage children to work in an increasingly independent way and develop their own research skills.

National Curriculum

The National Curriculum identifies four main areas of Scientific enquiry:

Biology
Chemistry
Physics
Working Scientifically.

Scientific enquiry at Lilleshall Primary School includes: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils seek answers to questions through collecting, analysing and presenting data.

The National Curriculum states that 'the programmes of study for Science are set out year-by-year for key stages 1 and 2. Schools are, however only required to teach the relevant programme of study by the end of the key stages.' At Lilleshall Primary school we work on a one-year cycle for KS1, and two-year cycles for Lower KS2 and Upper KS2, as displayed on our school website.

Science in the classroom

Timetabling
Science is a core subject and therefore needs to be carried out on a weekly basis and we aim to make the best use of cross curricular links as part of our creative curriculum. Educational visits are also planned to further pupils' understanding through experiential learning.

Foundation Stage
During the Foundation Stage, young children are given opportunities within the Early Learning Goals – Understanding the World – to find out more about the world in which they live. Children investigate objects and materials, using all their senses as appropriate, finding out about, and identifying, some features of the living things, objects and events that they observe.

Key Stage 1
The principal 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 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. They 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 using first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.

Pupils are encouraged to read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

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.

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

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 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 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.

Pupils are encouraged to read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

Planning the Science curriculum

Long Term Planning

In order to ensure the NC requirements for science can be covered at both key stages there is a long-term plan which is displayed on the school web site.

The NC requirements have been organised into units of work and are allocated to specific year groups to ensure a balanced coverage showing continuity and progression.

Key scientists for each area of learning have been identified to be studied.

Medium / Short Term Planning

It is important at this stage for teachers to identify and plan for a range of relevant activities. In each unit of work this will include:

- Illustrative / Discovery work (including STEM activities)
- A full investigation
- Activities to develop conceptual understanding
- Activities to teach key skills e.g., reading a thermometer, collating data in a variety of ways, including scatter graphs.

The medium and short-term planning will also identify:

- meaningful links with other areas of the curriculum
- the context for teaching to provide a stimulating and interesting teaching environment
- relevant resources
- key questions
- thinking skills

Ways of working

The experiences and knowledge children bring to any new learning experience are extremely important. In order to take forward children's learning, they need to make links between their existing knowledge and understanding and the new evidence brought to light during scientific activities.

Teachers should aim to provide opportunities for children to:

- identify and clarify their own ideas at the beginning of a unit of work.

This may be through a brainstorm, topic web or discussion and gives the teacher valuable information about where the children need to develop key understanding, skills and attitudes.

- develop conceptual understanding.

This may be through direct teaching or illustrative work. The children should be involved with hands on activities, as this is when they will learn most effectively. A quality learning wall should be present in each classroom to provide children with opportunities to independently extend their scientific knowledge. Learning walls should be changed at the start of a new unit.

- follow through a complete investigation using their own ideas.

There are ideas for investigations in each unit of work but teachers should not decide on the investigation to be followed before the children have had input in deciding areas they would like to investigate and need to, in order to develop conceptual understanding. The children should be fully involved in the development and formulation of scientific questions.

- Reflect on the evidence and ideas, which have resulted from the investigation and clarify ideas.

Illustrative / Discovery Activities

Illustrative or discovery activities are designed to give children experiences of a key idea in science. For example, materials, forces or a key process in investigations. They are focused by the teacher through the use of open-ended questions and should include as many hands-on experiences for the children as possible. Through illustrative activities children are able to develop their knowledge of a concept and the vocabulary within it. This is a key step in the process, which allows children to formulate their own questions for investigation.

Working Scientifically

There are three different types of investigation. These are:

Modelled investigation – where the teacher models the whole investigative process completing the entire recording, encouraging the children through discussion and questioning.

Intermediate investigation – where the teacher models parts of the investigation and then the children complete key parts themselves e.g. teacher models planning but the children predict for themselves. This allows the teacher to focus on teaching the key skills needed to complete different aspects of the investigative process.

Supported independent investigation – where the children undertake the whole investigative process and have guidance from the teacher where necessary.

In Key Stage 1 children use a planning format to support them in planning investigative work. As children move into key stage 2 they begin to develop their recording of investigative work through more formal planning frames.

It is important that teachers plan for a balance of each type of investigation over a term. Clearly the modelled and intermediate investigations will take less time as the teacher is taking the lead.

Continuity and Progression

The schemes of work have been organised to ensure that there will be progression. Where children are visiting the same attainment targets more than once, progression is planned for through the identification of key learning objectives and relevant aspects of the programmes of study at each stage. Some of the units of work have been linked to other curriculum areas to create meaningful contexts. In some cases, science work may be done discretely.

Progress in Science can be characterised by:

- the graduation from using everyday language to the increasingly precise use of technical and scientific vocabulary, notation and symbols
- the development from personal knowledge to understanding a wide range of scientific knowledge
- the advancement from participating in practical scientific activities to building increasingly abstract models of real situations
- the improvement from unstructured exploration to more systematic investigations.

Cross – curricular links

Science is seen as having particular links to work in other curriculum areas, including Geography, Mathematics, English, Design and Technology, ICT, Music, and Art and Design. Science provides opportunities for teaching the following areas.

- Environmental awareness.
- Economic and industrial understanding.
- Health education.
- Careers education.
- Citizenship.
- Personal, Social and Health Education.

Teaching staff are encouraged to use these links and use science to support their creative curriculum planning.

Resources

There are a range of school-based resources for use in science work which are updated on a regular basis.

Science equipment and materials are labelled and stored in the resources cupboard and should only be accessed by teaching staff. The teachers should ensure that they are kept tidy and that equipment is returned promptly.

Books and posters are also stored in the resources cupboard. Teachers may also request project loans from the Schools Library Service to provide both written and audio-visual resources for a topic. There is a growing stock of reference books for each Science topic in the library area.

As gold members of the library service, we can access www.curriculumvisions.com which has a wide range of reading and video materials that the children can access at school and at home to widen their scientific knowledge.

Equal opportunities

It is important that all children have access to the science curriculum regardless of disabilities or gender and racial issues. This will be done in line with the school's equal opportunities policy. Teachers will also need to refer to the SEND policy to ensure support for less able scientists. It is essential that children with difficulties in literacy are not held back in their science work through recording their work. Teachers may feel it is appropriate on occasions to scribe for a child to ensure that it is their scientific thinking that is recorded and assessed and not literacy skills.

Assessment and reporting

All children will be assessed in Science throughout each topic. This begins with children completing a mind map of current knowledge (which is added to throughout a unit) and an end of topic test or quiz. The assessment will be of the child's substantive knowledge and how they work scientifically – their disciplinary knowledge.

When planning investigations, teacher's should choose an area of assessment to focus on, for example, recording results, and use the child's work to assess if they are working towards age related expectations, have achieved age related expectations or are greater depth in that area. Children who are working at greater depth are identified for the purposes of internal tracking. Appropriate targets are then to be set for the child to work towards.

There is a school data dashboard for recording assessment of scientific knowledge and skills. The science assessments will be kept electronically and will move through the school

with the class indicating progress. They clearly indicate new learning along with repetition of substantive and disciplinary and knowledge as the children move through school. Gaps are clearly identified and children will receive boosters to try and fill those gaps.

There is an opportunity to share assessment details and targets with children and parents at parent evenings. There will also be a formal report on children's individual development and progress in Science in the end of year reports. Greater depth is not a requirement to report at the end of Key Stages 1 and 2. However, in order to provide a curriculum which is challenging and appropriate for all children, we track greater depth children internally.

Homework

On occasion, teachers may feel it appropriate to set homework in science. This is under the teacher's discretion and may take the form of research in a specific area of science or form the basis of finding out what children know already in a specific area. All homework set should be in line with the school's homework policy.

Role of the Co-ordinator

The co-ordinator will take responsibility for the following tasks:

- Attending Science conferences led by Keele University and county advisors, and any other relevant CPD opportunities
- Attend termly Science updates
- Completing the Annual Science Review which may include – lesson observations, book monitoring, pupil voice and the review of planning
- Organisation and ordering of resources
- Organisation / leading of in school training in science
- Provide advice and help to colleagues when needed
- Lead staff meetings
- Track and analyse internal data.

Success Criteria

- Are the schemes of work being followed in each year group?
- Is Science being taught every week?
- Is there progression and continuity in the teaching and assessment of Science?
- Are all teachers completing the required number of investigations?
- Are children interested and motivated in Science work?

Policy approved by Governors

Signed Head Teacher……..Date…….

Signed Chair of Governors……Date…….