# LITTLE CHALFONT PRIMARY SCHOOL

# Science POLICY

*Ready, Respectful, Resilient*

**November 2021**

1. Introduction.

This policy outlines the teaching, organisation and management of science at Little Chalfont Primary School with the aim to ensure consistency in teaching and learning. It also aims to ensure that our pupils are equipped with the ability to explore, discover and investigate through first-hand experiences, which will in turn enable them to understand more about the world they live in.

The school's policy for Science follows the National Curriculum 2014 for Science Guidelines and the Early Years Foundation Stage Framework.

2. Aims:

- 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 a variety of different scientific enquiries that help them to answer 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.
- are encouraged to understand how Science can be used to explain what is occurring, predict how things will behave, analyse causes and evaluate outcomes.

Science is a body of knowledge built up through the experimental testing of ideas. Science is also methodology, a practical way of finding reliable answers to questions we may ask about the world around us. Therefore, science in our school is about developing children's ideas and ways of working that enable them to make sense of the world in which they live through investigation, as well as using and applying process skills. Our pupils will be encouraged to see science as a collaborative activity where ideas and suggestions are shared, valued and investigated together. Through practical activities and team work, children will experience and learn how to work together, have mutual respect for one another and value social cohesion.

We believe that a broad and balanced science education is the entitlement of all children, regardless of ethnic origin, gender, class, aptitude or disability. Our aims in teaching science include:

- to prepare our pupils for life in an increasingly scientific and technological world.
- to help our pupils acquire a growing understanding of scientific ideas and encourage the development of positive attitudes to science.
- Build our pupils's self-confidence to enable them to work independently and develop their social skills to work cooperatively with others.
- to develop pupils' enjoyment and interest in science and an appreciation of its contribution to all aspects of everyday life.
- to build on pupils' curiosity and sense of awe of the natural world.
- to use a planned range of investigations and practical activities to give pupils a greater understanding of the concepts and knowledge of science.
- To develop pupils use of language and vocabulary of science through talking about their work and presenting their findings.
- to develop pupils' practical skills and their ability to make accurate and appropriate predictions, measurements and evaluations.
- for pupils to develop responsibility for their own health and safety and that of others when undertaking scientific activities
- for pupils to use progressively technical scientific and mathematical vocabulary and draw diagrams and charts to communicate scientific ideas.
- to develop pupils' use of computing in their science studies.

- to extend the learning environment for our pupils via our environmental areas and the locality.
- Support pupils to make links between science and other subjects.
- Provide our pupils with an enjoyable experience of science, so that they will develop a deep and lasting interest and may be motivated to study science further

3. Intent

At LCPS we do more than encourage pupils to be curious and to think like scientists; we encourage them to BE A SCIENTIST! Our curriculum is designed to ensure that every pupil is able to acquire key scientific knowledge through practical experiences; asking questions, using equipment, conducting experiments, building arguments and explaining concepts confidently. It is our intent to instil a lifelong love of science within our pupils; an understanding of how science has changed our lives and that is vital for the future. Our science curriculum aims to give all pupils a strong understanding of the world around them, developing **empathy** as they discover the differing place, impact, roles and responsibilities we have within our environment. Our lessons are practical, hands-on and pupil led. Our pupils will have **courage** to explore ideas, ask questions and test their own theories; carrying out investigations and presenting findings with **integrity.** We will embed curiosity and a want for answers with lessons that link prior learning, build knowledge, develop vocabulary and give pupils tools and skills to use when exploring the world around them.

4. Implementation

The knowledge and content prescribed in the National Curriculum (2014) and Early Years Framework (2021) will be introduced in a progressive and coherent way. Foundation Stage pupils will investigate science as part of Understanding of the World, pupils in Key Stage 1 will be introduced to science through focused observations and explorations of the world around them and through careful planning, pupils' scientific skills and knowledge gained at Key Stage 1 will be consolidated and developed during Key Stage 2. Where possible, purposeful, objective-led practical sessions which enable the pupil to take the lead, make decisions and discuss their findings will form the basis of our science lessons. Pupils will be encouraged to investigate through practical experiences with teachers guiding them and planning opportunities that allow the them to experience and learn whilst experimenting for themselves.

As pupils move through EYFS and Key Stages 1 and 2, teaching should provide opportunities for pupils to progress:

- from using everyday language to increasingly precise use of technical and scientific vocabulary, notation and symbols;
- from personal scientific knowledge in a few areas to understanding in a wider range of areas and of links between areas;
- from describing events and phenomena in terms of their own ideas to explaining phenomena in terms of accepted ideas or models;
- from participating in practical science activities to building increasingly abstract models of real situations;
- from unstructured exploration to more systematic and fair investigation of a question;
- from using simple drawings, diagrams and charts to represent and communicate scientific information to using more conventional diagrams and graphs.

Scientific vocabulary is to be taught with each unit of work to enable pupils to articulate scientific concepts clearly and precisely.

5. Impact

The impact and measure of this is to ensure pupils not only acquire the appropriate age-related knowledge linked to the science curriculum, but also skills which equip them to progress from their starting points, and within their everyday lives.

All pupils will have:

- A wider variety of skills linked to both scientific knowledge and understanding and scientific enquiry/investigative skills.
- A richer vocabulary which will enable to articulate their understanding of taught concepts.
- High aspirations, which will see them through to further study, work and a successful adult life.
- An enjoyable experience of science, so that they will develop a deep and lasting interest and may be motivated to study science further.

6. Teaching and Learning

Planning for science is a process in which all teaching staff are involved. Our curriculum ensures progression between year groups and guarantees topics are revisited. It also places an emphasis on actively teaching science skills and reinforcing learning with hands-on practical tasks with children taking increasing responsibility for planning, conducting and recording/interpreting the results. Teachers adapt and modify the unit overviews (based on ASE Plan) to suit their children's interests, current events, their own teaching style, the use of any support staff and the resources available. As a maintained school we ensure that any modification does not omit any of the NC.

To provide adequate time for developing scientific knowledge, skills and understanding, each teacher will provide regular Science lessons on a Monday morning. Teachers will ensure that pupil's scientific knowledge is developed and deepened using a variety of teaching and learning styles while also ensuring that all pupils will be given the opportunity to work scientifically and to experience different types of scientific enquiries, including practical activities, and begin to recognise ways in which they might answer scientific questions. They will be given the opportunity to gather data through simple tests, to record this data and to talk about what they have found out as a result of their investigations. Through teacher modelling, peer discussions and the opportunity to present work to the rest of the class, pupils will begin to use and understand age-appropriate scientific vocabulary. Where appropriate, pupils will use ICT in lessons to enhance their learning. Delivering a broad and balanced science education to our children is a core principle of our 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.

We also recognise that there are pupils of differing scientific abilities and learning styles in all classes, and we aim to provide suitable learning opportunities for all pupils by matching the challenge of the task to the ability of the pupil. This is achieved through a variety of ways, such as setting open ended tasks, differentiating the tasks according to ability and using adults to support individuals or groups of pupils.

Early Years Foundation stage teachers will plan opportunities to ensure pupils are gaining first hand experiences to investigate, make observations and discover knowledge about their world. They will ensure pupils are able to comment upon and raise their own questions about the world around them.

In Key Stage 1, the main 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 should be encouraged to be curious and ask questions about what they notice. They should be 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 should 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, but there should also be some use of appropriate secondary sources, such as books, photographs and videos. Pupils should read and spell scientific vocabulary at a stage consistent with their current reading and spelling knowledge.

In Lower Key Stage 2 (Years 3 and 4), the main focus of Science teaching is to enable pupils to broaden their scientific view of the world around them. They should 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 should 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 fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. 'Working scientifically' must always be taught through and clearly related to substantive Science content in the programme of study. Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing reading and spelling knowledge.

In Upper Key Stage 2 (Years 5-6), the main focus of Science teaching is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should 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 should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should 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 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. Pupils should read, spell and pronounce scientific vocabulary correctly. 'Working and thinking scientifically' must always be taught through and clearly related to substantive Science content in the programme of study.

7. Assessment & Marking

Assessment is applied in three ways: assessment for learning, assessment of learning and assessment as learning.

- Topics begin with an assessment of what children already know (KWL table).
- A variety of strategies, including questioning, discussion, marking and end of unit tests, are used to assess progress.
- We assess for learning (AfL). 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.
- We mark work positively, making it clear verbally, or on paper, where the work is good, and how it could be further improved. We allow pupils time to reflect on their learning and understand how they can make further progress.

- Children's work is compared with age appropriate exemplification. We moderate children's work termly to ensure consistency.
- We have a tracking system to follow children's progress. All teachers will regularly update Insight and the data is discussed during Pupil Progress Meetings.
- The school science coordinator monitors progress through the school by sampling children's work at regular intervals. Children who are not succeeding, or children who demonstrate high ability in science, are identified and supported.
- The school uses end-of-unit tests to assess summatively (half-termly). Assessment data is used to highlight areas where intervention or catch-up work is needed. Equally important is the continuous assessment of children's work, much of which is informal. This assessment is used to inform teaching throughout the school.
- The Y2 & Y6 staff assess children's attainment and progress at the end of each key stage. This is based on assessment records and work samples from across the key stage and is support by the science coordinator and previous class teachers if needed.
- Evidence Me will be used as a formative assessment tool in Early Years to show the impact of children's learning by capturing learner's experiences whilst monitoring development.
- A written report to parents describes each child's attitude to science, his/her progress in scientific enquiry and understanding of the content of science.

8. Equal Opportunity

Science is taught within the guidelines of the school's equal-opportunities policy; all pupils have equal access to the Science Curriculum, its teaching and learning, throughout any one year and this will be monitored by analysing pupil performance throughout the school to ensure that there is no disparity between groups. Furthermore, the SLT, Class Teachers and LSAs at Little Chalfont Primary School are responsible for ensuring that all pupils, irrespective of gender, learning ability, physical disability, ethnicity and social circumstances, have access to the whole curriculum and make the greatest possible progress

- 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. Gender and cultural differences will be reflected positively in the teaching materials used.
- 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.
- We draw examples from other cultures, recognising that simple technology may be superior to complex solutions.
- 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 and mathematics.
- All pupils have equal access to the science curriculum and its associated practical activities and we recognise the particular importance of first-hand experience for motivating children with learning difficulties.
- Where appropriate, work will be adapted to meet pupils' needs and, if appropriate, extra support given.
- We exploit science's special contribution to children's developing creativity; we develop this by asking and encouraging challenging questions and encouraging original thinking.

9. Health and safety

The school has adopted a model policy from CLEAPSS, which has further information about responsibilities, advice, risk assessments, supervision, resources, procedures and training.

Lessons will be planned with due regard for potential hazards and risks of injury that may be encountered during them. A simple risk assessment will be carried out for all practical activities any perceived hazards will be reported to the subject leader who will determine the appropriateness of said activity. Staff will also seek advice from CLEAPSS and ASE Be Safe when planning and delivering practical activities.

It is the teacher's responsibility to make sure that all helpers (LSAs, parents etc.) are aware of safety implications connected with any Science activity they are undertaking and check equipment regularly, reporting any damage and taking defective equipment out of action. Appropriate steps will be taken to avoid injury and ensure safety at all times. Pupils will be trained in the correct and safe use of all equipment before being allowed access to it. When engaged in practical science work pupils are expected to behave in a responsible and considerate manner, showing respect for other people and the equipment. During lessons, pupils will also be encouraged to discuss safety matters concerning themselves and others.

10. Resources

- The school holds a central bank of frequently used resources including hand lenses, magnets, thermometers and measuring equipment.
- Pupils are encouraged to choose from a range of equipment and are trained in the safe use of these. Considerate use of animals, plants and consumable materials. Expensive and less frequently used items are also kept within the central store.
- The Science coordinator is responsible for maintaining this area and ordering any necessary items that have been identified as a need.
- All staff members have a shared responsibility for collecting and returning necessary items to the correct place to ensure that resources are easy for all staff to access.
- All staff have a shared responsibility to check the resources they are using prior to the lesson and report damaged/missing items to the subject leader.

11. Monitoring

The Science curriculum is monitored by the science co-ordinator through staff meetings, observation of teaching, monitoring of planning, book looks, pupil's work, pupil voice, staff surveys and analysis of data.

The co-ordinator supports colleagues in the teaching of science by addressing CPD needs and by giving them information about current developments in the subject, and by providing a strategic lead and direction for the subject in the school. The subject co-ordinator is also responsible for reviewing developments for Science identified on the School Development Plan, evaluating strengths and weaknesses in the subject, and indicating areas for further improvement.

SLT will work with the subject leader and teacher to provide high standards of teaching and learning. They will use a range of monitoring strategies alongside thorough data analysis using information on the Insight tracking software. SLT will provide support and challenge for the teaching team to ensure high standards across the curriculum.

Review

This science policy will be reviewed by the science curriculum leader and the senior management team.

Date for next review of this document: November 2023