

LPS Science Policy Statement 2021

Science stimulates and excites pupils' curiosity about phenomena and events in the world around them as well as giving them the opportunities to develop their understanding and increase their knowledge.

Ludlow Primary School promotes the development of enquiry, exploration and observation within a meaningful context. Working independently and in groups the children are encouraged to ask questions and investigate why things happen. Children develop an understanding of the way science contributes to today's world and how it can impact on their future and of science in practical contexts related future career choices.

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

By the end of EYFS pupils should be able to:

- Explore the natural world around them, making observations and drawing pictures of animals and plants.
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

By the end of KS1 pupils should be able to:

- ask simple questions and recognise that they can be answered in different ways
- observe closely, using simple equipment
- perform simple tests
- identify and classify
- use their observations and ideas to suggest answers to questions
- gather and record data to help in answering questions

By the end of KS2 pupils should be able to:

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

Quigley Science

Ludlow Primary School use Chris Quigley Science to secure greater depth in science. It is important that pupils first have solid fundamental foundations. Fundamental foundations should not be rushed and so the notion of 'rapid progress' must be dismissed. Instead, the goal of repetition should be seen as both useful and necessary. Therefore, we have taken the approach to teach all areas of science in each year group so that children are able to build on their knowledge year on year.

Children will cover science topics across a two-year cycle (a milestone). Each milestone should be seen as containing two phases. In the first phase, pupils should repeat the content a sufficient number of times to secure fundamental foundations; in the second phase, they should apply the foundations in order to reach the 'expected' standard. If they reach this before the end of the second phase, they should move on to tasks that will secure greater depth.

Milestone 1 – Year 1 and Year 2, Milestone 2 – Year 3 and Year 4, Milestone 3 – Year 5 and Year 6

Chris Quigley's Essentials Curriculum defines the essential characteristics of scientists as follows:

- The ability to think independently and raise questions about working scientifically and understand the knowledge and skills that questioning brings
- Confidence and competence in the full range of practical skills, taking the initiative in, for example, planning and carrying out scientific investigations
- Excellent scientific knowledge and understanding which is demonstrated in written and verbal explanations, solving challenging problems and reporting scientific findings
- High levels of originality, imagination or innovation in the application of skills
- The ability to undertake practical work in a variety of contexts, including fieldwork
- A passion for science and its application in past, present and future technologies.

How is Science taught at a subject and classroom level?

Delivery

Science lessons are delivered discretely on a weekly basis by class teachers. Where possible, teachers will seek opportunities to make effective links between the other curriculum areas.

All science topics are explored in each year group to ensure that children are experiencing all areas of science year on year. Science days and half days are used to cover additional science topics that may not be on the National Curriculum for a year group.

All lessons have clear learning objectives, identified from the National Curriculum (2014) and Quigley Milestones, which are shared and reviewed with the pupils effectively. Learning objectives are directly linked to a science skill.

A variety of strategies, including questioning, quizzes and discussions are used to assess progress. This enables next steps to be identified.

Lessons are designed to inspire the pupils to investigate the world around them; enabling them to raise their own questions such as "Why...?", "How...?" and "What happens if...?" A range of investigative opportunities will be provided in Science.

Learning develops the skills of enquiry, observation and research. Children will be encouraged to select appropriate equipment and use it safely. They will learn the importance of fair testing; measuring and checking results accurately, making comparisons and communicating results and findings.

Teachers will ensure the appropriate lessons are taught. Each year group having a core set of lessons that ensures progression and an incremental acquisition of skills.

Lessons will be engaging, challenging, motivating and extend pupils' learning.

Planning

Each lesson has a clear learning objective, identified from the National Curriculum (2014) and Quigley Milestones, which are directly linked to a science skill. Planning is recorded for each year group, termly and are saved on the Share Point system for monitoring purposes. Teachers can Quigley milestones, Hamilton Trust and Ogden Trust to plan challenging and exciting lessons.

At least once every half term, teachers plan for investigation with a focus on one of the enquiry skills (all 7 enquiry skills must be covered across the year). These investigations can be taken from the Ogden Trust 'Big Questions' or teachers can design their own. All investigations must be carried out and recorded using the Big Question Experiment Template. These can either be printed off, and stuck in books, or children in Upper KS2 can record directly into their books.

Assessment

Assessment is used to inform the planning and teaching of science.

Key learning objectives for science are identified from the National Curriculum (2014) and Quigley Milestones and are translated into learning outcomes.

Pupils' progress is assessed by teachers during science lessons through questioning and quizzes. Teachers may also use Quigley PoP (Proof of Progress) tasks to further assess children. Teachers can use 'deeper thinking' questions to assess knowledge at the end of a unit/lesson.

Teachers use retrieval practise to assess children's long-term knowledge. Tasks have been created from Kate Jones' *Retrieval Practice* for teachers to use as starters for lessons. As research suggests, retrieval practise encourages children to pull their knowledge "out". By asking children to recall information, teachers can assess their knowledge of previous topics, and identify any gaps in learning. This may be achieved through retrieval quizzes, questioning, linking/sorting activities and analysing and connecting images. Class teachers can decide if these are carried out verbally or recorded.

Inclusion

All our children have equal access to science provision and to the resources available. We recognise that some children take longer to develop the necessary learning skills. For these children, teachers create lessons where the content and skills taught are not reduced, but rather are delivered in a way that is more accessible for them. SEND pupils are catered for, and progress is monitored according to their individual action plans. All teaching staff have received training on how to support children with dyslexia. Pictorial stimulus or activities can also be used to support SEND/EAL pupils.

More-able pupils are provided with science materials suited to their abilities in order to challenge them and keep them interested in learning science. During lessons, more-able pupils are provided with alternative or additional questions, where appropriate, to ensure that they are sufficiently challenged.

Science Environment

In classrooms, teachers have displays that focus on the topic for that term and develop the 7 enquiry skills. Specific scientific vocabulary is on display for children to refer to. Vocabulary is changed termly to match the topic and is added to the back of books for children to use each lesson. SEND/EAL pupils are supported with visual representations and scientific equipment and resources are accessible for children where possible.

How is Science measured at Ludlow Primary School?

Outcomes for pupils

By the time children leave Ludlow Primary School, our aim is for them to be curious scientists who are able to confidently participate in discussions and answer questions about phenomena and events in the world around them.

It is our aim that children leave with a high level of enquiry, exploration and observation within a meaningful context and are able to apply this to their future learning.

Subject Leadership

The Science Leaders are responsible for:

- Ensuring all teachers have familiarised themselves with the Science Policy.
- Supporting colleagues with any aspect of the Science Policy.
- When required, assist with the planning and selection of new resources.
- Inform staff of any updates to the Science Policy.
- Accept responsibility for science resources and keeping colleagues informed of available resources.
- Reviewing and scrutinising class and year group planning and teaching to ensure science is being delivered correctly and consistently.
- Offering feedback to staff on the progress of science within year groups and across the school.

Monitoring and Evaluation

At Ludlow Primary School, we measure impact by conducting learning walks, lesson observations, pupil interviews and book monitoring throughout the year. These inform future areas for improvement and the impact of new initiatives. Staff are keen to act quickly on any feedback given in order to ensure they are providing children at Ludlow Primary School with high-quality teaching.

Pupil voice plays a huge role in monitoring the successfulness of our implementation of science. In particular, we monitor the articulation and enthusiasm of children, whilst noting the use of scientific language.

In addition to this, our School Improvement Advisor works closely with the school on supporting the teaching and learning. When visiting, she will observe teaching, carry out pupil voice interviews, look through books and meet with staff to discuss science.

CPD

Continual professional development is an important part of developing science at Ludlow Primary School. Teachers are regularly offered opportunities for CPD.

Leaders regularly meet and discuss science with other DH MAT schools and schools which are part of the Wye Valley Learning Network (WVLN). Here, they are able to share and discuss ideas to support science in school.

Staff meetings on science take place where staff are able to discuss science in school and evaluate the impact. This is also an opportunity for leaders to feedback any useful ideas / information they have received through their meetings with other schools. Here, staff are also able to feedback on any relevant training they have received.

Date reviewed: September 2021