



What Science looks like at Ledbury Primary School

We plan our creative curriculum so the children build a sense of belonging and being in the world in order to become skilled citizens.

Curriculum Intent

What Science looks like in our school:

- A variety of activities which take place inside and outside of the classroom to engage children about the world around them
- Investigations/practical explorations with the children being able to plan, record, carry out and conclude their learning
- Opportunities to work individually, in pairs or groups
- A range of scientific resources to enable the children to carry out engaging experiments
- Subject specific vocabulary which is focused upon within each topic and embedded within each lesson
- Different aspect of Science are focused upon such as Biology, Chemistry or Physics
- Using a range of media where possible to help the children to learn about a modern world
- Children as science ambassadors who help run a weekly science club, present a science show or assembly, support lessons and raise the profile of science across the school
- The decision has been made that worksheets may be used in order to allow time to acquire skills

This is our philosophy:

- S. subject knowledge focus
- C. cross-curricular links
- I. interesting, relevant and challenging
- E. enquiry led
- N. new vocabulary
- C. careers, scientists and real-life applications
- E. encouraging curiosity

This is the knowledge and understanding gained at each stage:

By the end of EYFS pupils will:

- 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 Key Stage 1 pupils will:

- Experience and observe phenomena, looking more closely at the natural and humanly constructed world around them
- Be encouraged to be curious and ask questions about what they notice.
- 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
- 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.
- Carry out first-hand practical experiences
- Use appropriate secondary sources, such as books, photographs and videos to support their learning
- Read and spell scientific vocabulary at a level consistent with their increasing word-reading and spelling knowledge at key stage 1

When Working Scientifically Lower Key Stage 2 pupils will:

- Ask simple questions and recognising 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 Lower Key Stage 2 pupils will:

- Enable pupils to broaden their scientific view of the world around them.
- Explore, talk about, test and develop 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
- 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

- Draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.
- Work scientifically
- Read and spell scientific vocabulary correctly and with confidence, using their growing word-reading and spelling knowledge

When Working Scientifically Lower Key Stage 2 pupils will:

- Ask relevant questions and use different types of scientific enquiries to answer them
- Set up simple practical enquiries, comparative and fair tests.
- Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, use a range of equipment, include thermometers and data loggers
- Gather, record, classify and present data in a variety of ways to help in answering questions
- Record findings use simple scientific language, draw, label diagrams, keys, bar charts, and tables
- Report on findings from enquiries; include oral and written explanations, displays or presentations of results and conclusions.
- Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- Identify differences, similarities or changes related to simple scientific ideas and processes
- Use straightforward scientific evidence to answer questions or to support their findings

By the end of Upper Key Stage 2 pupils will:

- Enable pupils to develop a deeper understanding of a wide range of scientific ideas
- Explore and talk about their ideas; ask their own questions about scientific phenomena; and analyse functions, relationships and interactions more systematically
- Encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates
- Recognise that scientific ideas change and develop over time.
- 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

When Working Scientifically Upper Key Stage 2 pupils will:

- Plan different types of scientific enquiries to answer questions, include recognise and control variables where necessary
- Take measurements, use 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 present 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
- Identify scientific evidence that has been used to support or refute ideas or arguments

Cultural Capital in Science

Physics

Children will gain an understanding of materials, objects and their properties.

Pupils may demonstrate knowledge of a variety of environments and the physical features surrounding it.

They will have a knowledge of diverse environments around the world and how materials, matter and objects differ in different environment.

Chemistry

Children will gain an understanding of aspects of chemistry. Pupils may demonstrate knowledge of a variety of experiments linked to chemical reactions and properties.

They will have a knowledge of chemical elements, and how these elements can change if subject to a range of tests.

Children will learn about testing and how to make a test fair. Their knowledge of chemistry can lead to a wide range of jobs beyond, not just in, science fields.

Biology

Children will gain an understanding of plants and trees and environments they need to flourish.

Pupils may demonstrate knowledge of a variety of plants and trees that live in different environments.

They will develop their understanding of the importance of plants and trees throughout the world and know the effect of global change on these plants and trees.

Children will gain an understanding of humans they need to flourish, how they work and what they need to stay healthy.

Pupils may demonstrate knowledge of a variety of parts of the human body and how they work and what their purpose is.

	They will develop their understanding of the importance of the human body and how it functions. This could encourage a career in medicine. Children will gain an understanding of animals and their habitats. Pupils may demonstrate knowledge of a variety of environments and the animals that live there. They will have a knowledge of diverse environments around the world and know the effect of global change on these environments. Investigation Children may demonstrate an understanding of a fair test and following key enquiry questions, and know that the fundamental principles of meaningful science and that throughout time, scientists have developed and refined this method with peer review. Scientists throughout history such as Copernicus, Darwin, Newton and Higgs & Boson have advanced this endeavour despite opposition and resistance from society and faith bodies.
Curriculum Implementation	This is how it works: • Knowledge and understanding taught in blocks of work with a new topic each term/half term • Science/STEM taught every Friday morning across the school • Where possible links made with other subjects to enrich learning through our creative curriculum • Regular opportunities for children to develop their investigative skills focusing on different aspects of enquiry • Incorporate the use of technology where appropriate • Regular practical lessons • Teachers use LSPs to help support children when needed • Teaching of scientific vocabulary during the topic • Provide a range of engaging resources to enable the children to carry out fun and exciting experiments to deepen their learning and develop their understanding of the concept that is being taught • Opportunities for paired, group and class discussion/debate to consolidate learning • Use of STEM ambassadors, visitors, parents and online resources to raise the children's Science Capital • The decision has been made that worksheets may be used in order to allow time to acquire scientific skills This is what adults do: • Plan a series of lessons which build on areas previously taught in other year groups that show progression • Create knowledge organisers are used as a tool to support teaching and learning. However, there is not an expectation that every fact is learned by the children. • Ensure lessons meet the needs of all learners by scaffolding and extending as appropriate

	• Engage the pupils through the use of engaging resources and use of media to carry out practical sessions • Book scrutinies, pupil perceptions and planning checks • Support, encourage, foster and nurture a love of Science • Research innovative, engaging practice and new techniques This is how we support and ensure access for all children, including SEND, EAL and PP: • Support in learning the vocabulary for EAL and SEN pupils in order for them to join in with discussion • Work will incorporate support and scaffolding so that all children can meet the Learning Objectives • Teachers to identify which children will need support during different lessons • Experiment resources to be checked to ensure they are safe and can be used with the children • Children who have SEN or EAL needs are supported with key vocabulary • Seating children alongside good role models to support one another • By providing visual/practical prompts • Teaching lessons using a range of different techniques e.g. videos, drama, artefacts, texts etc. This is how we challenge: • Small group work to further challenge • Open-ended tasks • Through questioning • Encouraging self-evaluation and testing of ideas
Curriculum Impact	This is what you might typically see: • Engaged learners • Open and closed questioning • Children posing their own questions and hypothesis for investigation • Paired/group work • Varied activities • Practical investigations • Children discussing, reflecting and sharing their learning

This is how we know how well our pupils are doing:

- Verbal feedback recorded in feedback books which informs next lessons
- Lessons are planned based on work done in previous year groups to ensure children are progressing
- Formative assessment through questioning during lessons and investigations
- Observations of children during investigation and exploration
- Photographic/video evidence
- Assessment tracked at the end of each block of work

This is the impact of teaching:

- Confident children who can talk about their science lessons and discoveries they've made
- Children are able to use and explain the meaning of scientific vocabulary
- Children who can confidently explain what they have learnt
- Children who are prepared to take risks
- Children who enjoy science lessons

Pupils at Ledbury Primary School develop detailed knowledge and skills and, as a result, achieve well. This is reflected in the work the pupils produce. Pupils are ready for the next stage of education. Pupils with SEND achieve the best possible outcome from their starting point.