

Lanesfield Primary School



Science Policy 2024 - 2025

Review date: September 2025

This policy was updated and reviewed by T. Roberts January 2025

Intent

At Lanesfield Primary we want our children to develop a natural curiosity of the world around them. We want to embrace their sense of wonder about natural phenomena and guide them into becoming enquiry-based learners. The 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. We want our children to develop an understanding of the uses and implications of Science, how it has changed and shaped our lives and how vital it is to the world's future prosperity.

Scientific enquiry skills are embedded in each topic the children study and these topics are revisited and developed throughout their time at school. Topics, such as Plants, are taught in Key Stage One and studied again in further detail throughout Key Stage Two. Thus allowing the children to grow in their understanding, building upon their prior knowledge and increasing their enthusiasm for the topics whilst embedding this procedural knowledge into the long-term memory.

Science teaching at Lanesfield involves adapting and extending the curriculum to match all pupils' needs to ensure they are challenged and achieve success, regardless of their starting point. Science is taught weekly and ensures coverage in line with the National Curriculum requirements. Another key aspect of our Science curriculum at Lanesfield is the implementation of the Cornerstone's approach to learning (Thinking Actively in Social Context) because we believe science encompasses the acquisition of knowledge, concepts and skills through communication. This model allows children to build upon their prior knowledge and increases their enthusiasm for the topics whilst embedding this procedural knowledge into the long-term memory and develop their independence skills. Furthermore, teachers plan strategically to suit their children's interests, include current events and utilise our digital and practical resources in school.

Aims

In accordance with the 2014 National Curriculum for science, at Lanesfield we aim 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 prepared and equipped with the scientific skills required for life in an increasingly scientific and technological world today and in the future.

Therefore, at Lanesfield, our Science curriculum is designed to allow each pupil to:

- ✓ Achieve the best possible standards and achievements, whatever their starting point.
- ✓ Help develop and extend our children's scientific concept of their world.
- ✓ Build on our children's natural curiosity and developing a scientific approach to problems.
- ✓ Encouraging open-mindedness, self-assessment, resilience and developing the skills of investigation - including: observing, measuring, predicting, hypothesising, experimenting, communicating, interpreting, explaining and evaluating.
- ✓ Develop the use of scientific language, recording and techniques.
- ✓ Develop the use of computing in investigating and recording.
- ✓ Make links between science and other subjects.
- ✓ Develop collaboration skills through half-termly TASC investigations.

Implementation

Science is taught weekly throughout the school by class teachers. As we want

teachers to feel inspired in their planning, we do not follow a specific scheme of work. However, we do incorporate Cornerstone TASCs within our planning to inspire our pupils and encourage independent learning in social context. Careful consideration of specific TASCs, which cover units of study linked to the NC, have been implemented within the Medium term plan and supports teachers with their lesson planning. Our whole school approach to the teaching and learning of science involves the following:

- Science is taught, planned and arranged in topic blocks by the class teacher, to have an investigation-based approach.
- Planning involves problem solving opportunities that allow children to apply their knowledge, and find solutions independently.
- Children are encouraged to develop their own questions and be given opportunities to use their digital resources to discover the answers within peer groups.
- Opportunities to learn through real, first-hand and rich science experiences to promote: exploration, questioning, predicting, planning, conducting, observing and evaluating practice and skills.
- Precise questioning by teachers to test conceptual knowledge and skills, and regular assessment of pupils to identify and address learning gaps.
- An embedded progressive science curriculum to support planning.
- Collaborative learning opportunities (TASC) embedded half-termly to support independent learning and practise of scientific skills.
- Working scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career.
- Progressive vocabulary are introduced through direct teaching. This is developed and built on through the years.
- Annual parent afternoons where parents are invited to join their child during their Science lesson in the Spring term.

Inclusion

At Lanesfield, we believe that differentiation is ensuring all children make progress regardless of their starting points. We understand the importance of making

mistakes across every subject and developing the intrinsic satisfaction of solving problems. Therefore, our dedicated staff work hard to take reasonable steps to meet the needs of those pupils with: special educational needs; disabilities; special gifts and talents; and those learning English as an additional language.

- We value 'Thinking Actively in Social Context (TASC)', meaning we value using prior knowledge and working together to solve problems.
- We plan lessons into fragmented activities to encourage all children move through their learning together.
- Having a sound understanding of our curriculum in order to adapt the lessons in real time to either further support or challenge specific pupils/groups.
- Be clear and specific in modelling more difficult concepts where appropriate
- Utilizing our digital resources to navigate pupils to appropriate resources where needed to support or challenge them.
- Using a range of questions to target specific individuals. For example, if Jack is really understanding the process of the organs involved in the digestive system whilst Jill is struggling with the names of each bodily part then having a glossary bank will be more beneficial for Jill for now. Ultimately, both Jack and Jill will need to answer the same questions in the end, but they may just take slightly different journeys to get there.

Impact

The successful approach at Lanesfield results in a fun, engaging, high-quality science education, that provides children with the foundations and knowledge for understanding the world. Additionally, our early year curriculum encourages engagement with their local environment and ensures that children learn through varied and first-hand experiences of the world around them. Furthermore, frequent, continuous and progressive learning outside the classroom is embedded throughout the science curriculum. This includes our lunchtime as OPAL gives children the opportunity to further explore their surroundings and make judgements. Most importantly, children at Lanesfield thoroughly enjoy science and this results in motivated learners with sound scientific understanding, who can make clear links to previous learning.

Teaching and Learning

Early Years Foundation Stage (EYFS)

In the foundation stage, teachers use Development Matters, specifically

'Understanding of the World Around them' scheme of work. This planning aims to develop the crucial knowledge, skills and understanding that help our young learners make sense of the world. It provides opportunities for pupils to carry out activities based on first hand experiences that encourage exploration, observation, problem solving, prediction, critical thinking, decision making and discussion. It provides the crucial foundations to be further developed in KS1 and KS2 and is achieved by:

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

Key Stage One (KS1)

The principal focus of science teaching in KS1 is to enable pupils to experience and observe phenomena looking more closely at the natural and humanly-constructed world around them. During years 1 and 2, pupils are taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- ✓ Asking simple questions and recognising that they can be answered in different ways.
- ✓ Closely making observations using simple equipment.
- ✓ Performing simple tests.
- ✓ Identifying and classifying.
- ✓ Using their observations and ideas to suggest answers to questions
- ✓ Gathering and recording data to help in answering questions.

These will be taught through the following topics: Plants, animals including humans, seasonal changes, living things and their habitats, uses of everyday materials.

Lower Key Stage Two (LKS2)

The principal focus of science teaching in LKS2 is to enable pupils to broaden their scientific view of the world around them and link their prior knowledge to new, more complex, problems. They will achieve this by:

- ✓ Setting up simple practical enquiries, comparative and fair tests.
- ✓ Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
- ✓ Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
- ✓ Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- ✓ Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- ✓ Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- ✓ Identifying differences, similarities or changes related to simple scientific ideas and processes.
- ✓ Using straightforward scientific evidence to answer questions or to support their findings.

These will be taught through the following topics: Plants, animals including humans, everyday materials, rocks, light, forces and magnets, living things and their habitats, electricity, sound and state of matter.

Upper Key Stage 2 (UKS2)

The principal focus of science teaching in UKS2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas and make further links to their prior knowledge to new, more complex, problems. They will achieve this by:

- ✓ 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 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.

These will be taught through the following topics: Living things and their habitats, animals including humans, earth and space, properties and changes of materials, forces, evolution and inheritance, light and electricity.

For a clear vision of our scientific progressive curriculum, please view our: progression of skills and knowledge and progression of scientific skills document on our school website.

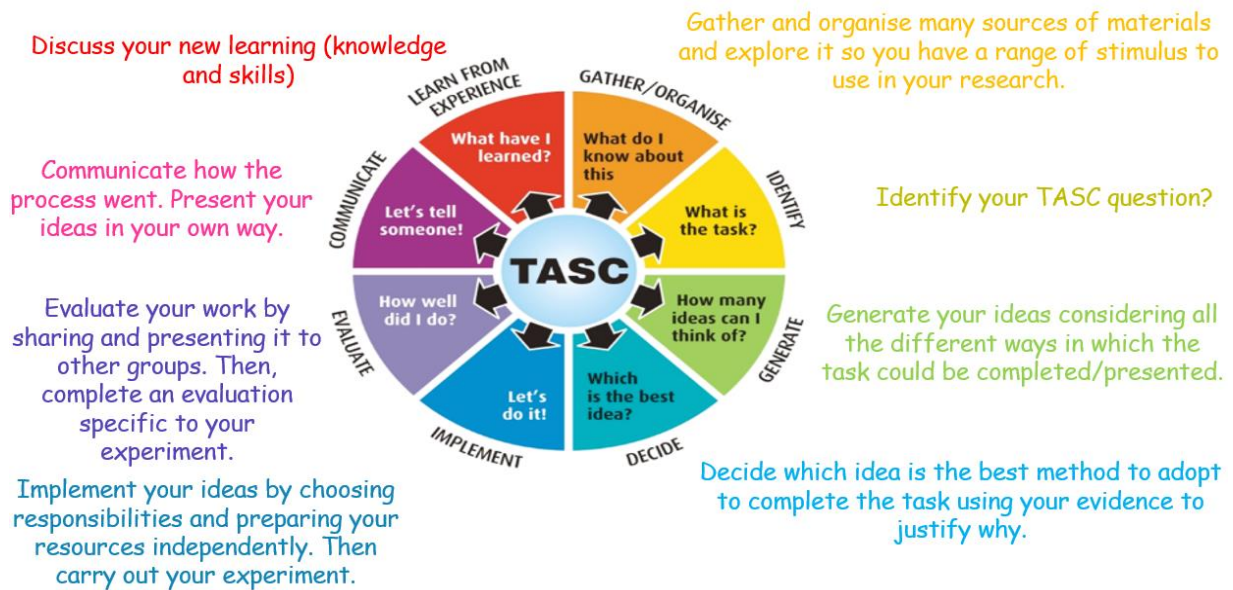
Scientific Knowledge and Conceptual Understanding

The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is equally important that they develop secure understanding of each block of knowledge and concepts in order to progress to the next stage. Therefore, children's starting points are identified prior to each new topic through collaborative planning and previous assessments. Consequently, at the end of each block, children's knowledge is re-assessed and recorded. Furthermore, it is expected for pupils to be able to describe associated processes

and key characteristics in 'common' language, but they should also be familiar with, and use, technical terminology accurately and precisely. Their language will then continue to develop within each lesson and throughout their science career. Finally, children have plenty of opportunities to model their understanding of their topics through their TASC experiments where they use what they know about their topic to develop an independent experiment. This also includes using mathematical knowledge, specifically: collecting, measuring, presenting and analysing data.

Thinking Actively in Social Context (TASC)

At Lanesfield, we include half-termly TASC investigations where children are able to demonstrate their taught skills scientifically. To do this, children use their procedural knowledge and work collaboratively to answer a scientific hypothesis with little adult input. Their TASC wheel supports their learning during these lessons and photos and recordings of their lesson are recorded on Showbie. Towards the end of the lesson, children present and share their findings and discuss the skills they have used and whether they were successful in their efforts.



We understand at Lanesfield that 'working scientifically' specifies the understanding of the nature, processes and methods of science for each year group and this is embedded within lessons and focuses on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing; and researching using secondary sources. Pupils are given opportunity to seek answers to questions through collecting, analysing and presenting data.

Our staff at Lanesfield adopted this approach as the National Curriculum for science reflects the importance of spoken language in pupils' development across the whole curriculum, cognitively, socially and linguistically. At Lanesfield, science lessons provide a quality and variety of subject specific language to enable the development of children's confidence and accurate use of scientific vocabulary and their ability to articulate scientific concepts clearly and precisely. They are encouraged and assisted in making their thinking clear, both to themselves and others, and teachers ensure that pupils build secure foundations by using discussion and remedying their misconceptions.

Curriculum links

✓ English

Science contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. Therefore, children develop oral skills in science lessons through discussions and through recounting their observations of scientific experiments. They also develop their writing skills through writing reports and projects and by recording information.

✓ Mathematics

Science contributes to the teaching of mathematics in a number of ways: different forms of measurements; application of number; estimation; prediction; observation; statistics; reading, interpreting and presenting data.

✓ Computing

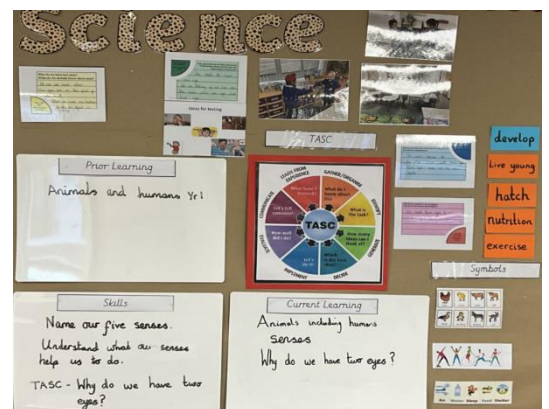
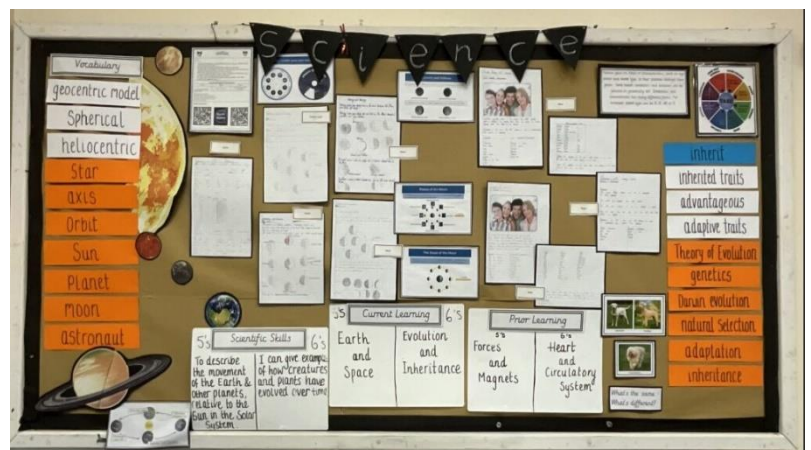
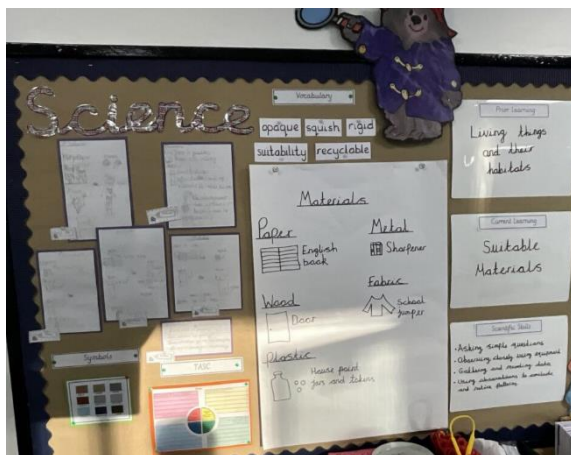
Children use computing in science lessons to support their work by learning how to research, select, and analyse information on the internet safely. Children also use their 1:1 iPads to record, present and interpret data to then review, modify and evaluate.

✓ Personal, social and health education (PSHE)

Science makes a significant contribution to the teaching of PSHE: raising matters of citizenship and social welfare (children study the way people recycle material and how environments are changed for better or worse); and it gives them opportunities to take part in debates and discussions. It also offers children many opportunities to examine some of the fundamental questions in life, for example, the evolution of living things and how the world was created. Through many of the amazing processes that affect living things, children develop a sense of curiosity regarding the nature of our world but it also raises many social and moral questions. It also teaches children about the reasons why people are different and, by developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people.

Environment

At Lanesfield, we pride ourselves in promoting an engaging environment where children can access current learning materials. Therefore, we understand the importance of showcasing: prior and current learning; expected scientific skills; vocabulary; and symbols. We also display the TASC wheel to remind children the importance of collaborative learning throughout their lessons. Finally, as their topic develops, we feel it is important to demonstrate examples of practical activities and excellent examples of scientific understanding. To ensure our boards are continuously supportive of our children, we ensure they are updated according to each topic change.



Assessment

Children's progress is continually monitored throughout their time at Lanesfield Primary School and is used to inform future teaching and learning. By the end of

each key stage, pupils are expected to know, apply and understand the matter, skills and processes specified in the relevant programme of study as set out in the National Curriculum. These are set out as statutory requirements. We also draw on the non-statutory requirements to extend our children and provide an appropriate level of challenge. Children receive effective feedback through teacher assessment, both orally and through written feedback in line with the success criteria. Children are guided towards achievement of the main objective through the use of process based success criteria, provided by and explained by the teacher. Children will have these to refer to in the lesson, where they will be evident in their books or Showbie and used to identify areas of difficulty by children and teachers when reviewing and assessing work. Assessment for learning is continuous throughout the planning, teaching and learning cycle. However, children are more formally assessed half termly in KS1 and KS2 using a variety of methods:

- Observing children at work, individually, in pairs, in a group, and in classes
- Questioning, talking and actively listening to children
- Considering work/materials/investigations produced by children together with discussion about this with them.
- Summative and formative assessment using Century
- Using early learning goal assessment guidelines for understanding the word around us.
- Using the DfE assessment framework for KS1 and KS2.

Planning and Resources

Planning is a process in which all teachers are involved. Planning should be done with parallel teachers, including mixed year groups, using the MTP to support them and ensure National Curriculum coverage and progression. Additionally, teachers embed the Cornerstone Science scheme of work within their planning to assist our children's TASC investigations.

Roles and responsibilities

It is the role of the Science leader, under the guidance of the Head teacher:

- To organise Science coverage within the curriculum and to ensure progression and development.

- To advise, assist with and monitor planning and quality of delivery within the curriculum where needed.
- To review standards of work within the school by reviewing samples of work from learning journals, display work, showbie and pupil interviews.
- To ensure resources and equipment are available to staff.
- To plan science activities in and around school.

Review: This policy will be reviewed in September 2025.