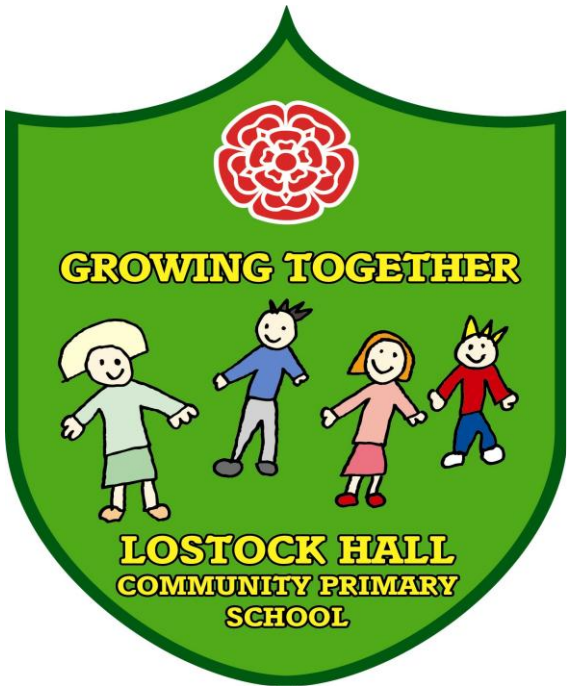
Lostock Hall Community Primary School



Science Policy

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1. Intent

Science at Lostock Hall Community Primary School aims to inspire pupils to become curious, inquisitive and analytical thinkers with a broad understanding of the natural world – in other words, to think like scientists. The intention is for pupils to develop the confidence to ask questions, make observations, carry out investigations, record data in a variety of ways and analyse and present their findings.

Our scheme of learning aims to build an awareness of how science influences everyday life and drives progress in society. The hope is to encourage pupils to become reflective, responsible individuals who use scientific knowledge and skills to make informed decisions and contribute positively to the world around them.

Our scheme supports teachers in developing their subject knowledge and skills, enabling the delivery of engaging, well-informed lessons with confidence. The curriculum is designed to be both accessible and ambitious, ensuring all learners' full participation and potential achievement.

At Lostock Hall Community Primary School, we follow the Kapow Primary's standard schemes of work to help us to fulfil the statutory requirements for Science outlined in the National curriculum (2014), with the standard Science schemes being based on principles outlined in Ofsted's Science research review.

The Science schemes are continually evaluated and refined through regular curriculum reviews, internal audits and feedback from other subscribing schools.

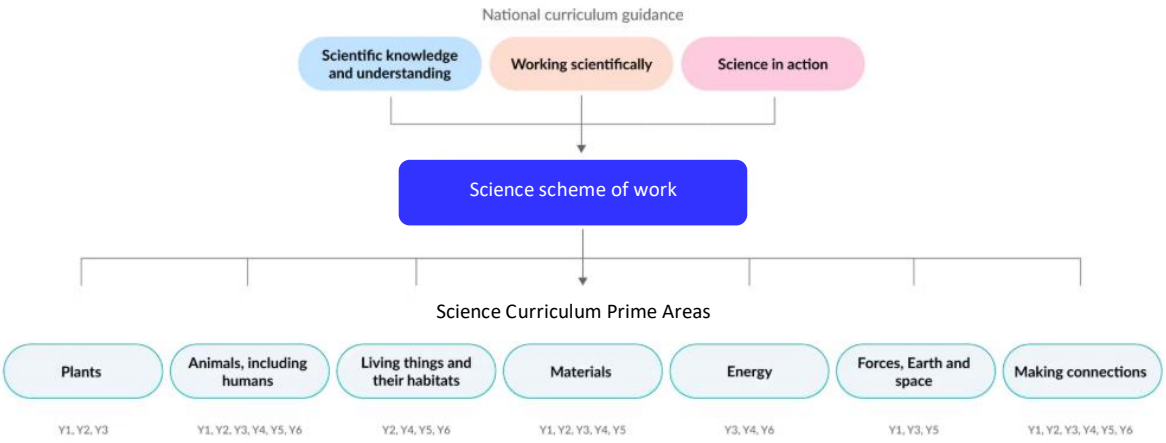
Updates are informed by the latest subject-specific research, changes to National curriculum guidance and developments in pedagogy. This ensures the curriculum remains current, effective and relevant.

1.1 The three strands

Based on the National curriculum, the following three strands have been identified, which run throughout the Science curriculum:

- Scientific knowledge and understanding.
- Working scientifically.
- Science in action.

The Science curriculum has been planned with these strands running through each unit, ensuring balanced coverage of the different areas of Science and both substantive and disciplinary knowledge.



1.2 Progression of skills and knowledge

The Science: Progression of skills and knowledge document provides an overview of the skills and knowledge covered in each phase and strand.

It explains how Science skills and knowledge are developed to support pupils in reaching the key stage outcomes as outlined in the National curriculum.

New learning is weighted toward the start of each key stage, allowing ample opportunity for it to be revisited and applied in later years. As a result, knowledge accumulation may look heavier in some year groups than others.

1.3 Progression of vocabulary

Our scheme has a progression of vocabulary for Science and focuses on the essential words and terms for understanding the subject. These words are carefully selected to help pupils grasp concepts and ideas outlined in our scheme.

Science vocabulary is categorised under three curriculum strands: Working scientifically, Science in action and Scientific knowledge and understanding.

1.4 Spiral curriculum

Our Science scheme of work has been designed as a spiral curriculum with the following key principles in mind:

- **Cyclical** – pupils return to the key knowledge and skills again and again during their time in primary school.
- **Increasing depth** – each time a skill is revisited, it is covered with greater complexity.
- **Prior knowledge** – pupils build upon previous foundations rather than starting again.

This approach allows them to make meaningful connections, reinforce their learning and achieve mastery over time.

- **Revisiting key concepts** – pupils encounter the same ideas multiple times throughout their education, with each revisit adding more complexity.
- **Progressive depth** – concepts are not just repeated but expanded upon, helping pupils to make connections and develop a richer understanding over time.
- **Knowledge retention** – regular exposure to key ideas strengthens memory and prevents knowledge from being forgotten.
- **Skill development** – pupils refine and apply their skills in different contexts, improving their ability to think critically and solve problems.
- **Adaptive learning** – by building on prior knowledge, the curriculum meets pupils at their current level and supports all learners, including those who need extra reinforcement and those who are ready for greater challenges.

1.5 Broadening horizons

The process of broadening horizons involves starting with familiar contexts, such as the pupils' local area, and concrete experiences with materials, animals and plants, before learning to explain phenomena using scientific language, models, and evidence. Our science scheme of learning supports pupils' development from direct observation and exploration towards a deeper understanding of abstract scientific concepts and the nature of scientific enquiry.

1.6 Types of knowledge

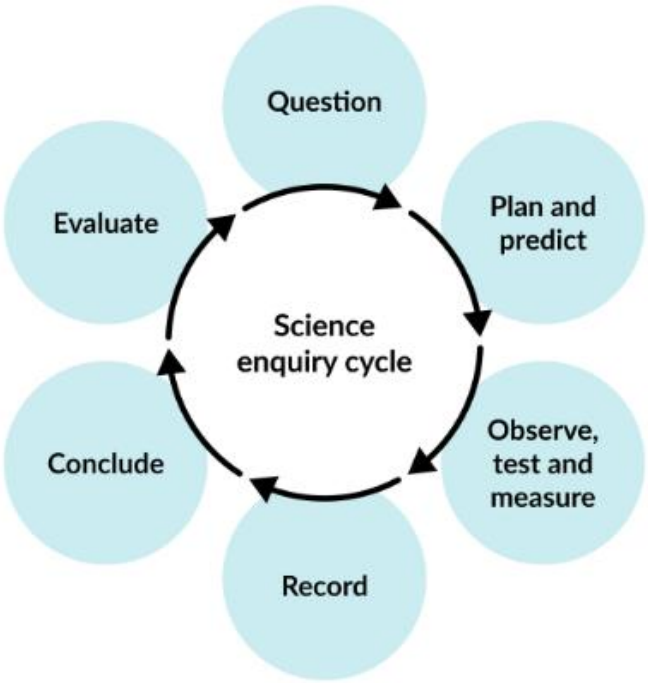
Knowledge is defined differently depending on the subject in question. Ofsted's Science research review helps to define Science knowledge as:

1.61 Substantive knowledge.

This refers to scientific understanding, including concepts, laws, theories and models. It is referred to as 'Scientific knowledge and conceptual understanding' in the National curriculum and 'Scientific knowledge and understanding' in the Kapow Primary Science scheme. In the Science: Progression of skills and knowledge document, the National curriculum attainment targets are broken down into knowledge components, showing how they build over time to develop pupils' understanding of key scientific concepts.

1.62 Disciplinary knowledge.

'Working scientifically' specifies the understanding of the nature, processes and methods of Science for each year group. It is covered alongside the 'Scientific knowledge and understanding' strand in every unit, not in isolation. The 'Working scientifically' statements from the National curriculum have been further broken down to ensure gradual progression in skills development. This also allows teaching to focus on the component disciplinary knowledge that pupils need to successfully perform these skills.



1.7 Wider Knowledge and Skills

1.71 Digital literacy

Our science scheme integrates technology through digital representations, research tasks and interactive activities.
This helps develop the children's ability to find, evaluate and use scientific information effectively.

1.72 Oracy

Lessons encourage discussion, debate and presentations on scientific topics. This enables pupils to articulate their understanding, justify their opinions and engage in collaborative learning.
Throughout the Science scheme, pupils use oracy to enhance their learning by thinking aloud, questioning and discussing activities.
They develop essential skills such as choosing appropriate vocabulary, organising their ideas and listening effectively.

1.73 Sustainability

The Science curriculum promotes awareness of environmental issues by enabling pupils to explore topics such as climate change, the use of natural resources, biodiversity and the impact of human activity on ecosystems.
Through practical enquiry and real-world contexts, pupils develop a scientific understanding of sustainability and the importance of caring for the natural world.

Understanding climate change is crucial for comprehending the interconnected systems that sustain life on Earth. As outlined in the Department for Education's 2023 guidance, educating pupils about the planet's evolving conditions is a national priority. The guidance encourages all schools to create climate action plans and provide sustainability-rich learning environments.

By investigating environmental issues through Science, pupils are encouraged to think critically, act responsibly and feel empowered to contribute to a more sustainable future.

1.74 Critical thinking

Pupils analyse scientific data, compare different perspectives and draw conclusions from findings.
This helps them question assumptions and form reasoned conclusions based on their discoveries.

1.8 Personal Development in Science

1.81 SMSC

The Science scheme supports Spiritual, Moral, Social and Cultural (SMSC) development by encouraging pupils to:

- Explore different perspectives.
- Reflect on ethical issues.
- Collaborate with others.
- Appreciate cultural diversity through subject-specific content.

1.82 British values

Lessons promote British values (democracy, the rule of law, individual liberty, mutual respect and tolerance) by incorporating activities that encourage debate, respect for differing opinions and an understanding of societal structures.

1.83 Cultural capital

Our science curriculum broadens children's experiences by introducing them to key scientists, significant discoveries and diverse scientific contexts. The scheme helps ensure they gain the knowledge and skills needed to understand the world around them and engage meaningfully with science in everyday life.

1.9 Continuity of learning

Our science scheme aligns with the statutory EYFS (Reception) guidance. Key themes and skills introduced in EYFS (Reception) are revisited and developed further in KS1, ensuring continuity and progression. This transition is aided by the continuity of learning created by the curriculum strands, which run from EYFS (Reception) to Year 6. Subject leaders can pinpoint how knowledge develops in Reception and how this creates the foundation for learning in KS1.

1.91 Building on early experiences

Lessons build on curiosity, exploration and discussion, which are central to EYFS (Reception) learning. As pupils move into Year 1, more structured activities are gradually introduced. In KS1, oracy, questioning and storytelling help pupils transition from informal to more formal subject-based learning.

1.92 Development of key skills

The Science scheme supports the progressive development of skills, such as observation, reasoning and problem-solving, which are introduced in EYFS (Reception) and strengthened in KS1. Adaptive teaching strategies ensure all learners are supported as they transition to more formal learning approaches.

1.93 Cross-curricular links

The Science scheme aligns with the EYFS Early Learning Goals, making connections with communication and language, understanding the world and expressive arts to create a seamless transition. It promotes independence and confidence, supporting pupils as they adapt to the expectations of KS1 learning.

1.10 Inclusion and diversity

Our science scheme has been designed to represent a wide range of cultures, communities and perspectives.

- Where appropriate, the contributions of scientists from diverse backgrounds and the historical context of scientific discoveries are explored.
- The scheme's visual and textual content is inclusive and representative of diverse people and fields of study, challenging stereotypes and outdated ideologies.
- Within sensitive units, questions are included to support pupils' lived experiences and backgrounds.
- Resources and case studies are carefully selected to encourage children to think about their role in society and to respect the many ways in which Science has shaped and continues to shape people's lives.

2. Implementation

2.1 Timetabling

Our science scheme is designed to be taught in discrete weekly lessons. Approximately 2 hours per week is spent on science during KS2 and 1 ½ hours per week at KS1. This ensures that National curriculum requirements are met.

2.2 CPD

Our selected scheme supports teachers in delivering the Science curriculum effectively through clear and informative CPD videos. The videos are designed to help teachers feel confident in their role by providing guidance on key concepts, teaching strategies and best practices.

2.3 Lesson Structure

2.31 Revisit
Each lesson begins with a short activity revisiting prior learning. This helps reinforce key knowledge, activate long-term memory and create connections between past and new learning.
Recap and recall activities are varied to keep the start of the lesson engaging and fun while still supporting active recall.

2.32 New Learning
Each lesson contains an attention grabber. A short, engaging activity designed to hook pupils into the new learning in the lesson. This could be a thought-provoking question, a quick investigation or an interactive discussion to spark curiosity and enthusiasm for the topic. The core part of the lesson follows, where children engage in activities that develop their understanding of the learning objective.

2.33 Main activity
This can include a mixture of teacher modelling, guided practice and independent or collaborative tasks tailored to support all pupils in achieving the learning objective.

2.34 Plenary
A final reflective activity that consolidates learning. This could involve reviewing the success criteria, discussing key learning or applying knowledge in a different context to assess understanding and encourage deeper thinking.

2.4 Inclusion

The Science scheme of work is designed to be fully adaptable for pupils with SEND. Every lesson includes an adaptive teaching section, providing clear guidance on how activities can be modified to meet the needs of all learners.
Children learn in various ways. As such, Science lessons include a range of strategies to support and challenge every pupil, such as:

- **Scaffolding** – activities are designed with flexibility in mind, allowing for additional support or challenge where needed.
- **Multi-sensory approaches** – lessons incorporate different elements to engage all learners.
- **Clear instructions and structured tasks** – ensuring clarity and reducing cognitive load for pupils who benefit from additional support.
- **Opportunities for collaborative and independent learning** – allowing pupils to work at their own pace while building confidence and independence.

By embedding adaptive teaching throughout, the scheme ensures that all pupils, regardless of their starting points, can access and succeed in their learning.
In addition, the step-by-step curriculum design supports pupils with SEND, avoiding sudden jumps in complexity at transition points and allowing for steady, manageable progression. The Science subject leader has ensured that inclusion is at the forefront of Science learning using guidance from NASEN to produce an 'Inclusion in Science' document to support staff in ensuring all children are able to access the Science learning.

2.5 Cross Curricular Learning

The Science scheme of work supports cross-curricular learning by making clear connections between subjects, helping pupils develop a broader understanding of key concepts and skills.
Cross-curricular links are explicitly highlighted: each unit includes identified cross-curricular connections, detailed in the unit hub and long-term plans. These allow teachers to integrate learning across different subjects.
In addition, each lesson has a Cross-curricular links section that shows the links to the National Curriculum in subjects other than Science

2.6 Role of the subject leader

The Science subject leader is responsible for ensuring that all staff are adequately trained so that they are able to deliver the curriculum effectively. This will include: organising CPD; leading staff meetings; sharing resources for planning and teaching; supporting colleagues. Regular communication with staff is sustained and all staff can speak to the subject leader if they require any further support.

2.7 Resources

- All resources are stored centrally in the science cupboard.
- Resources are organised in boxes.
- Consumable, generic and large resources are stored separately within the cupboard.
- Staff are responsible for informing the Science coordinator, when extra resources are needed, when there are breakages and when consumables are running low.
- The Science Coordinator will update and replenish resources when needed.

3. Impact

3.1 Assessment

Formative assessment is embedded throughout science lessons to enable teachers to gauge pupils' understanding in real-time and adapt their teaching accordingly.

- Questioning – lesson plans include targeted and open-ended questions to check understanding, promote critical thinking and address misconceptions.
- Observation – teachers are supported to observe pupils during tasks, noting how they approach activities, collaborate and apply scientific skills.
- Discussion and peer interaction – pair and group discussions are built into lessons, providing opportunities for pupils to articulate their thinking and for teachers to assess understanding through dialogue.
- Lesson pauses – plans include strategic pause points for checking comprehension, summarising learning and addressing any common errors before progressing.
- Retrieval practice – recap activities such as short recall tasks and oral explanations are embedded to reinforce prior knowledge and assess retention.
- Use of success criteria – success criteria are shared within lessons, allowing pupils to self-assess or peer-assess their work and reflect on their progress.
- Short reflections in the Wrapping up – lessons conclude with brief written or verbal reflections, enabling pupils to consolidate their learning and teachers to gauge their understanding.

Regarding Summative Assessment, each unit provides an *Assessment quiz* and/or *Knowledge catcher*, which allow teachers to measure pupils' understanding at key points. These tools help gauge how well pupils have retained key knowledge and skills over time to allow teachers to make a judgement on summative assessment during our data drops in Spring and Summer terms.

3.2 Teacher confidence

Our science scheme is designed to boost teacher confidence and support whole-school improvement by providing high-quality, accessible resources that empower teachers to deliver engaging and effective lessons.
The scheme supports teacher confidence using:

- **Clear lesson plans and subject knowledge support** – step-by-step guidance ensures teachers feel well-prepared, even if they are not subject specialists.
- **CPD videos** – short, expert-led training videos help subject leaders develop their expertise and support their colleagues.
- **Adaptive teaching strategies –** practical suggestions for differentiation ensure that teachers can confidently meet the needs of all learners.

3.3 School improvement

The scheme supports school improvement using:

- **Consistent, high-quality teaching** – a structured scheme ensures a coherent approach across year groups, supporting curriculum progression.
- **Assessment and evidence tracking** – built-in assessment materials help teachers monitor progress and demonstrate impact.
- **Alignment with Ofsted expectations** – the scheme supports personal development, broadens pupils' horizons and ensures a knowledge-rich curriculum, helping schools meet inspection criteria.

By reducing workload, building teacher expertise and ensuring high teaching standards, our scheme contributes to a confident teaching staff and a well-structured, effective curriculum that supports whole-school improvement.