Hanley St Luke's Church of England Academy

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SCIENCE POLICY	
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Our Vision:

Jesus said: *'I have come that they may have life and have it to the full.'*

Promoting *life-long learning*

Developing *life-giving relationships*

Exploring *life-enhancing faith*

Inspiring *life-enriching aspiration*

This policy outlines the teaching, learning, organisation and management of science at Hanley St Luke's C of E Primary Academy.

At Hanley St Luke's our Mission is to:

- Promote Christian belief and practice and to encourage the moral and spiritual development of all people in our school.
- Develop in each person a sense of self-worth and the necessary qualities to become a full and valuable member of British society
- Encourage the full academic potential of each child.
- In our school we promote honesty, courtesy, kindness, perseverance and respect. We celebrate all our many differences and diversity, believing each individual is special and valued by God.

Science Policy

Introduction

This policy outlines the purpose, nature and management of the Science taught in our school. The school policy for science reflects the consensus of opinion by all the staff. It has been drawn up as a result of staff discussion and has the full agreement of the Governing body. This document was agreed at a meeting of the Governing body and updated as a result of staff consultation.

Purpose of Study

At our school, we believe that a high-quality science education provides children with the foundations they need to understand and make sense of the world around them. Science is an essential part of everyday life and has played a significant role in shaping the modern world. Through the teaching of biology, chemistry and physics, pupils develop knowledge and understanding of the natural world and the ways in which scientific discoveries continue to influence society. We aim to inspire pupils' curiosity and foster a sense of wonder about the world. Through the development of substantive and disciplinary knowledge, children are encouraged to ask questions, investigate ideas and recognise the value of evidence-based reasoning. They learn how scientific explanations are developed and how science can be used to explain phenomena, predict outcomes and solve problems.

In line with the National Curriculum, our science curriculum aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the disciplines of biology, chemistry and physics;
- develop their understanding of the nature, processes and methods of science through a range of scientific enquiries that enable them to answer questions about the world around them;
- acquire the scientific knowledge and skills needed to understand the uses and implications of science, both now and in the future.

Through engaging, practical and enquiry-based learning experiences, we seek to develop confident, inquisitive learners who are equipped with the knowledge, skills and enthusiasm to continue exploring science throughout their lives.

1. The Nature, Processes and Methods of Science

At Hanley St Luke's, we recognise that scientific knowledge and understanding are developed through a range of enquiry skills and investigative approaches. The National Curriculum identifies these skills as 'Working Scientifically', which encompasses the understanding of the nature, processes and methods of science.

'Working Scientifically' is not taught as a discrete element of the curriculum; instead, it is embedded within the teaching of biology, chemistry and physics across all year groups. Through carefully planned learning opportunities, pupils develop the skills needed to think and work as scientists while building their substantive scientific knowledge.

Pupils are taught to use a variety of scientific enquiry approaches to answer questions about the world around them. These include:

• observing changes over time;

• seeking patterns and relationships;

• identifying, classifying and grouping;

• carrying out comparative and fair tests;

• researching using secondary sources.

Through these enquiries, pupils learn to ask questions, make predictions, plan investigations, use scientific equipment appropriately, gather and record evidence, analyse data, draw conclusions and communicate their findings using scientific language.

Opportunities are provided for pupils to collect, present and interpret data in a variety of ways, enabling them to develop confidence in using evidence to support their ideas and explanations. As pupils progress through Key Stages 1 and 2, they are encouraged to become increasingly independent in selecting enquiry approaches, making observations, recording results and evaluating their findings.

By embedding 'Working Scientifically' throughout the science curriculum, we ensure that pupils develop curiosity, resilience and critical thinking skills, enabling them to deepen their understanding of the world around them and become confident young scientists.

Whole School Science Provision

2. Entitlement

At Hanley St Luke's, all pupils are entitled to a broad, balanced and ambitious science curriculum that follows the National Curriculum for England. Our science curriculum is accessible to all learners and provides opportunities for pupils to develop both substantive scientific knowledge and the disciplinary skills required to work scientifically.

Throughout Key Stages 1 and 2, pupils study a range of scientific topics, including: Animals, Including Humans; Living Things and Their Habitats; Plants; Materials; Forces and Electricity; Light and Sound; Earth and Space; and Evolution and Inheritance. The programme of study is carefully sequenced to ensure progression in knowledge, understanding and skills as pupils move through the school.

As scientists, pupils are provided with regular opportunities to:

• ask questions and develop their own lines of enquiry;

• collect, record and interpret data;

• make predictions and test ideas through practical investigations;

• use models and scientific evidence to support explanations;

• select and use appropriate equipment and apparatus safely and accurately;

• apply their scientific understanding to real-life contexts;

• evaluate findings and draw conclusions based on evidence.

Through science, pupils also develop a range of wider learning skills that support their education across the curriculum. These include:

• communication and scientific vocabulary;

• mathematical skills, including measuring, recording and analysing data;

• computing and the use of digital technology to support enquiry and presentation;

• collaboration and teamwork;

• problem-solving and critical thinking;

• reasoning, decision-making and reflective learning.

By providing these opportunities, we aim to develop confident, curious and resilient learners who are equipped with the knowledge, skills and understanding needed to engage with science both in school and beyond.

3. Implementation

SCIENCE CURRICULUM OVERVIEW

Our science curriculum inspires curiosity, develops knowledge and skills and enables all children to explore and understand the world around them.

YEAR GROUP	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
Nursery	People Who Help Us in School & All About Me	Fabulous Festivals	Traditional Tales	Dinosaur Roar	Ready Steady Grow!	Paws, Claws and Whiskers
Reception	Fabulous Friends, People Who Help Us	Let's Celebrate	Bruno Bear Travel With Me	Superheroes in the Super Supermarket	Under the Sea	Twisted Tales
Year 1	Animals Including Humans: Human Body	Everyday Materials	Seasonal Changes (Winter)	Plants	Animals Including Humans	Seasonal Changes (Summer)
Year 2	Animals Including Humans	Use of Everyday Materials		Plants	Living Things and Their Habitats	
Year 3	Light		Rocks	Plants	Animals Including Humans	Forces and Magnets
Year 4	Electricity	States of Matter	Sound	Living Things and Their Habitats	Animals Including Humans	
Year 5	Forces	Earth and Space	Properties and Changes of Materials		Animals Including Humans and Health Education	Living Things and Their Habitats
Year 6	Living Things and Their Habitats	Animals Including Humans	Evolution and Inheritance	Electricity	Light	

This overview is based on the school's long-term science curriculum.

Long term plans that monitor breadth of coverage and rotations are held by the science leader. These are devised to ensure that there is breath of coverage for each year group and that equipment demands are manageable.

KS1 and KS2 practitioners use the Science Curriculum document to provide an outline for planning. The Foundation Stage use the EYFS document. Medium and short term plans are drawn from this guidance by year group teams, with careful consideration given to skills progression from KS1 – LKS2 – UKS2. Each plan clearly identifies the learning intention, differentiation, learning outcomes and activity appropriate to engage pupils. These are uploaded onto a central file for ongoing monitoring purposes. Short term planning is the responsibility of the year group teams, supported by the science subject lead and draws ideas from a range of resources, including White Rose Science, STEM learning, Grammarsaurus and Nicky Waller's Creative Approach to science.

Resources are managed by the Science subject lead and pupil STEM Ambassadors. Specific texts and teacher support materials are directed to classes as relevant but general equipment is maintained centrally for access for all, in the STEM Lab. Each science resource draw details contents which are clearly labelled. Potentially harmful materials e.g. vinegar and salt are stored in a cupboard within an additional storage room in accordance with health and safety guidelines.

4. Expectations

At Hanley St Luke's, we have high expectations for all pupils in science. We believe that every child can develop as a successful scientist and should be provided with the support and challenge needed to achieve their full potential.

The science curriculum is carefully sequenced to ensure that pupils develop secure knowledge, understanding and skills over time. While progress is important, we recognise that genuine progression relies on pupils developing a deep and secure understanding of the key concepts within each unit of learning. New knowledge is built upon prior learning, enabling pupils to make meaningful connections and apply their understanding in a range of contexts.

Teachers are expected to identify and address misconceptions promptly to ensure that pupils develop accurate scientific understanding. Learning opportunities are designed to revisit and build upon previously taught concepts, helping pupils to retain knowledge and develop long-term understanding.

Pupils are encouraged to communicate their scientific understanding using both everyday language and accurate scientific vocabulary. As they progress through the school, they are expected to develop and use an increasingly sophisticated scientific vocabulary, applying terminology appropriately when discussing, recording and explaining their learning.

Science also provides opportunities for pupils to apply their mathematical knowledge and skills. Pupils are expected to use mathematics when collecting, presenting and interpreting data, taking measurements, recognising patterns and drawing conclusions from evidence.

Teachers are encouraged to provide engaging and relevant contexts for learning that help pupils understand the importance of science in everyday life and the wider world. These contexts support curiosity, motivation and a positive attitude towards science while maintaining a strong focus on the acquisition of scientific knowledge and understanding.

By the end of Key Stage 1, the majority of pupils are expected to have met the end-of-year expectations outlined in the National Curriculum programme of study.

By the end of Key Stage 2, the majority of pupils are expected to have met the end-of-year expectations outlined in the National Curriculum programme of study.

By the end of each key stage, pupils should know, apply and understand the knowledge, skills and processes specified within the relevant National Curriculum programme of study and be able to use these confidently in a range of scientific contexts.

5. The Learning Environment

At Hanley St Luke's, we strive to create a stimulating and engaging learning environment that promotes curiosity, enquiry and a love of science. Classrooms and shared learning spaces are designed to support pupils in developing both their scientific knowledge and their understanding of how scientists work.

Every classroom has an active Science Working Wall that reflects current learning and is used as a teaching and learning tool throughout each unit. Science Working Walls include:

• key scientific vocabulary that is explicitly taught and regularly referred to during lessons;

• the five types of scientific enquiry to support pupils in understanding how scientists investigate questions;

• learning from the current unit;

• images and information about a key figure linked to the topic being studied.

Resources and information sources relevant to the current unit of work are readily available for pupils to access independently. These resources support pupils in developing their scientific understanding, conducting enquiries and using scientific vocabulary accurately.

In addition to classroom provision, the school benefits from a dedicated STEM Lab. This specialist learning space is available to all classes and provides opportunities for pupils to engage in practical investigations and scientific enquiry. The STEM Lab houses a wide range of scientific equipment and resources, enabling pupils to carry out investigations safely and effectively while developing their practical scientific skills.

Through high-quality learning environments, accessible resources and engaging displays, we aim to inspire pupils to think, question and learn as scientists.

6. Equal opportunities and British Values:

At Hanley St Luke's, we are committed to providing an inclusive science curriculum that is accessible to all pupils, regardless of gender, ethnicity, religion, disability, special educational needs, background or attainment. We believe that every child should have the opportunity to develop scientific knowledge, skills and understanding and to achieve their full potential in science.

Teachers plan and deliver science lessons that meet the needs of all learners. Where appropriate, learning is adapted to provide support, challenge and accessibility for all pupils. Additional support may be provided through targeted interventions, adapted resources, adult support or alternative methods of recording. Pupils who demonstrate a particular aptitude or interest in science are provided with opportunities to deepen their understanding and engage in suitably challenging learning experiences and can take part in many different enrichment opportunities. The progress and attainment of all pupils are monitored

regularly to ensure that all groups of learners are making progress and that any barriers to learning are identified and addressed promptly.

Science also provides valuable opportunities to promote the fundamental British Values of democracy, the rule of law, individual liberty, mutual respect and tolerance of those with different faiths and beliefs. Through collaborative investigations, discussion and scientific enquiry, pupils learn to listen to the views of others, work respectfully as part of a team and evaluate evidence before reaching conclusions. Pupils are encouraged to ask questions, challenge ideas respectfully and recognise that scientific understanding develops through investigation, evidence and open-minded thinking.

By providing an inclusive and supportive learning environment, we aim to ensure that all pupils develop confidence, curiosity and a lifelong interest in science.

7. STEM Ambassadors and STEM Club

At Hanley St Luke's, we provide opportunities for pupils to further develop their interest and enthusiasm for science, technology, engineering and mathematics (STEM) through our STEM Ambassador programme and after-school STEM Club.

STEM Ambassadors are elected during Transition Week before the end of the academic year. This ensures that pupils begin their ambassadorial role at the start of the new school year and are able to contribute to the development of STEM across the school. STEM Ambassadors act as role models for science and support the promotion of STEM activities and events throughout the year.

STEM Ambassadors meet regularly with both the Science Subject Leader and the STEM Strategic Lead. These meetings provide opportunities for pupils to share ideas, contribute to the development of STEM provision, discuss upcoming events and help shape enrichment opportunities across the school.

During the Autumn Term, STEM Ambassadors participate in the after-school STEM Club and receive training from the Science Subject Leader. Through this training, they develop their scientific knowledge, leadership skills and confidence in leading practical activities. They are supported to become experts in a range of STEM activities and investigations.

During the Spring and Summer Terms, STEM Ambassadors work alongside the Science Subject Leader to help deliver STEM Club for other pupils across Key Stage 2. They support the planning, organisation and delivery of practical investigations, engineering challenges, technology-based activities and real-world problem-solving tasks. This leadership role enables pupils to develop communication, teamwork and problem-solving skills whilst promoting a positive culture of scientific enquiry throughout the school.

The STEM Club provides opportunities for pupils to engage with science beyond the classroom and to develop curiosity, creativity and resilience through hands-on learning experiences. Where possible, links are made to STEM careers, current scientific developments and enrichment opportunities, helping pupils to understand the relevance of STEM in the wider world and raising aspirations for future learning and employment.

Through the STEM Ambassador programme and STEM Club, we aim to foster curiosity, creativity, leadership and a lifelong enthusiasm for science and related disciplines.

8. Health and Safety

At Hanley St Luke's, the health and safety of pupils, staff and visitors is of paramount importance. All science activities are carried out in accordance with the school's Health and Safety Policy and relevant risk assessments to ensure that learning takes place in a safe and secure environment.

Pupils are taught the importance of working safely during science lessons and are encouraged to take responsibility for their own safety and the safety of others when carrying out practical activities. Appropriate safety procedures and expectations are explained before investigations take place, and pupils are expected to follow these at all times.

Science investigations are supported by specific risk assessments where necessary. Teachers carefully consider potential hazards when planning practical activities and ensure that appropriate control measures are in place. Scientific equipment is stored securely within the STEM Lab and is maintained to ensure it remains safe and suitable for use.

The school regularly welcomes science experts, STEM professionals and representatives from external organisations, including local universities and other educational partners, to lead workshops, demonstrations and enrichment activities. All visits and activities are risk assessed to ensure they can be delivered safely within classrooms, the school hall, the STEM Lab or the outdoor learning environment. These visitors also contribute to the school's wider enrichment programme, including Careers Week, where they help to promote science and STEM-related careers.

Hanley St Luke's maintains a subscription to the CLEAPSS advisory service, which provides guidance and support on health and safety in primary science. CLEAPSS offers a range of resources, publications and updates, including the Primary Science and Technology newsletter, to support staff in delivering safe and effective science lessons. The Science Subject Leader is responsible for ensuring that relevant guidance is shared with staff where appropriate.

All new members of staff receive guidance on safe science practice as part of their induction programme. This includes an introduction to the school's science procedures, available resources and health and safety expectations. Ongoing support and advice are provided by the Science Subject Leader to ensure that science is taught safely and effectively throughout the school.

By promoting safe working practices and a culture of responsibility, we enable pupils to participate confidently in practical science and develop the skills needed to work safely as young scientists.

9. Assessment

Assessment in science at Hanley St Luke's is consistent with the school's Assessment, Feedback and Marking Policies and is used to inform teaching, identify misconceptions and ensure that all pupils make progress in both substantive and disciplinary knowledge.

Assessment begins at the start of every lesson through retrieval practice. Teachers use White Rose Science Flashback 4 activities to revisit learning from previous lessons, units and, where appropriate, previous year groups. This enables teachers to assess prior knowledge, identify misconceptions and adapt teaching to meet the needs of the class. Misconceptions are addressed through practical investigation, high-quality questioning, discussion and exploration both inside and outside the classroom.

Throughout each unit, teachers use ongoing formative assessment to monitor pupils' understanding. This includes observation of practical work, questioning, discussion, pupil responses and evidence recorded in

science books. Assessment focuses on both pupils' scientific knowledge and their ability to work scientifically.

Hanley St Luke's uses Teacher Assessment in Primary Science (TAPS) to support the assessment of 'Working Scientifically'. TAPS assessment activities provide opportunities for teachers to make accurate judgements about pupils' scientific enquiry skills while informing future planning and teaching.

At the end of each unit, pupils complete a low-stakes summative assessment using a Kahoot! quiz. These quizzes assess pupils' understanding of the key knowledge taught throughout the unit and provide immediate feedback to both pupils and teachers. The outcomes are used alongside formative assessment to inform teacher judgements and identify areas requiring further consolidation.

Assessment information is reviewed regularly by class teachers and shared with the Science Subject Leader on a termly basis to monitor attainment, progress and curriculum coverage across the school. Pupils receive regular feedback through verbal discussion and teacher marking in line with the school's Feedback Policy, enabling them to understand their next steps in learning.

There is a continued whole-school focus on the accurate assessment of Working Scientifically, ensuring that pupils develop the enquiry skills required by the National Curriculum alongside secure scientific knowledge.

To ensure continuity and progression, teachers in Key Stage 2 provide an end-of-year science judgement and transition information for the receiving teacher. This enables learning to build effectively on prior knowledge and supports a smooth transition between year groups.

10. Monitoring and Evaluating

At Hanley St Luke's, the quality of science education is monitored and evaluated regularly to ensure that teaching is of a consistently high standard and that pupils receive a broad, balanced and ambitious science curriculum. Monitoring is led by the Science Subject Leader, working in collaboration with the STEM Team and the Senior Leadership Team.

A range of monitoring activities take place throughout the academic year to evaluate the quality of teaching, learning and assessment in science. These include:

- learning walks to observe the quality of science teaching and the learning environment;
- book looks to monitor curriculum coverage, progression, presentation, feedback and assessment;
- planning reviews to ensure lessons are well-sequenced, ambitious and aligned with the school's curriculum;
- pupil voice to gather pupils' views on their learning, enjoyment of science and understanding of key concepts;
- staff voice to identify strengths, share good practice and inform future professional development.

Monitoring activities are carried out on a half-termly basis in line with the school's monitoring schedule. Findings are analysed by the Science Subject Leader and used to identify strengths, areas for development and priorities for improvement. Outcomes are shared with the Principal and contribute to the school's wider self-evaluation and improvement planning.

The Science Subject Leader also monitors assessment information, curriculum coverage and participation in enrichment opportunities to ensure that all pupils receive high-quality science provision. Where areas for development are identified, appropriate support, coaching and professional development are provided to staff.

Through a cycle of continuous monitoring, evaluation and improvement, Hanley St Luke's is committed to ensuring that science remains an engaging, ambitious and high-quality subject for all pupils.

11. Principles of Science

At Hanley St Luke's, we are committed to continually reviewing and developing our science provision to ensure that it remains ambitious, inclusive and of the highest quality. We believe that all pupils deserve a science curriculum that inspires curiosity, develops scientific understanding and equips them with the knowledge and skills to understand the world around them.

The quality of science education is regularly evaluated through monitoring, assessment and pupil outcomes. This ongoing process enables us to celebrate strengths, identify areas for development and remove any barriers that may prevent pupils from achieving success in science.

Hanley St Luke's has held the Primary Science Quality Mark (PSQM) since 2012, demonstrating our long-standing commitment to excellence in primary science education. Most recently, the school was awarded PSQM Gilt in November 2023 in recognition of the high-quality science provision across the school. We are committed to maintaining these high standards and have begun our next PSQM development cycle, which will be completed during the 2026–2027 academic year.

Our science curriculum is underpinned by the following principles:

1. An ambitious, knowledge-rich curriculum
   Children are taught a carefully sequenced science curriculum that builds progressively on prior learning, enabling them to develop secure substantive and disciplinary knowledge over time.
2. Active and purposeful scientific enquiry
   All children are actively engaged in practical, hands-on learning experiences that encourage them to explore, investigate, question and develop their scientific thinking and communication.
3. High expectations for scientific vocabulary
   Children are explicitly taught accurate scientific vocabulary and are encouraged to use this confidently through structured talk, discussion and carefully planned stem sentences.
4. Retrieval and long-term learning
   Children are given regular opportunities to revisit and retrieve previously taught knowledge and apply it in a range of different contexts, ensuring that learning is retained and built upon over time.
5. High-quality learning environments and resources
   Children have access to a wide range of high-quality resources and learning environments, including the outdoors, Forest School and the school's dedicated STEM Lab. These environments provide meaningful opportunities for practical investigation and real-world scientific learning.

These principles underpin every aspect of science teaching and learning at Hanley St Luke's and ensure that all pupils experience a rich, engaging and ambitious science education that prepares them to become curious, knowledgeable and confident young scientists.