

Hanley St Luke's Church of England Academy

Headteacher: Mrs Z Cooper

Telephone: 01782 234390/1

Email: office@hanleystlukes.com

Website: www.hanleystlukes.com



SCIENCE POLICY

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Subject lead	Carolyn Critchlow
Governor/Committee (where applicable)	David O'Connell

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

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

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.

1. The Nature, processes and methods of science

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. At Hanley St Luke's it is not taught as a separate strand, rather it is embedded within the content of biology, chemistry and physics, focusing 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 (controlled investigations); and researching using secondary sources. Pupils are given the opportunity to seek answers to questions through collecting, analysing and presenting data. 'Working scientifically' will be developed further at key stages 3 and 4, once pupils have built up sufficient understanding of science to engage meaningfully in more sophisticated discussion of experimental design and control.

WHOLE SCHOOL SCIENCE PROVISION

2. Entitlement

At Hanley St Luke's we follow the National Curriculum. It is accessible to all pupils and includes the acquisition of knowledge and opportunities to develop skills of scientific enquiry. The units taught in science can be divided into the areas of: animals including humans, living things and habitats, forces and electricity, light and sound, Earth and beyond, plants and evolution and inheritance. The programme of study for science is set out year-by-year for key stages 1 and 2.

The pupil, as a scientist, will have the opportunity in each year group to learn through the regular experience of; collecting and recording data, putting forward and testing own ideas, having the opportunity to develop models to support explanation, handling apparatus, applying ideas to relevant contexts and evaluating findings.

The pupil, as a learner, will have the opportunity through a science context to develop the skills of; communication, application of number, ICT, working with others, problem solving, thinking skills and decision making.

3. Implementation

			Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Biology	Chemistry	Physics	WORKING SCIENTIFICALLY					
Year 1			Animals including humans		Plants		Everyday materials	
			Seasonal changes		Seasonal changes		Seasonal changes	
Year 2			Animals including humans – habitats		Uses of everyday materials		Plants Living things and their habitats	
			Healthy eating		Healthy eating		Health Education	
Year 3			Animals including humans		Forces and magnets	Plants	Rocks	Light
							Health Education	
Year 4			Electricity	Sound	States of matter	Animals including humans		Health Education
						Living things and their habitats		
Year 5			Earth and space	Forces	Properties and changes of materials		Living things and their habitats	Animals, including humans Health Ed (SRE)
Year 6			All living things and their habitats	Animals including humans	Evolution and inheritance	Electricity	Light	
								Health Education

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 leader and draws ideas from a range of resources. It records in greater detail the necessary differentiation and support required for all learners to experience success, progress and challenge.

Schools are not required by law to teach the content indicated as being 'non-statutory', however most year groups incorporate this in class to provide extra context and breadth within a topic.

Resources are managed by the Science leader and pupil Science Ambassadors. Specific texts and teacher support materials are directed to classes as relevant but general equipment is maintained centrally for access for all. Each science resource cupboard 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.

Health Education is delivered during the summer term.

Science is additionally funded by The Marian Pantin Trust Fund. This money is used for additional resources, enrichment activities and often whole school science initiatives such as British Science Week or The Great Science Share.

4. Expectations

The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Insecure, superficial understanding will not allow genuine progression: pupils may struggle at key points of transition (such as between primary and secondary school), build up serious misconceptions, and/or have significant difficulties in understanding higher-order content.

Pupils should 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. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. The social and economic implications of science are important but, generally, they are taught most appropriately within the wider school curriculum: teachers will wish to use different contexts to maximise their pupils' engagement with and motivation to study science.

By the end of Key Stage 1, the majority of learners should have met end of year expectations.

By the end of Key Stage 2, the majority of learners should have met end of year expectations.

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

5. The Learning Environment

All classrooms have a science display, working wall or corner. Key vocabulary is explicitly taught, displayed and referred to. Resources and other information sources for the unit of work being covered are freely available for the children to access to support them in their learning.

6. Equal Opportunities/British Values

The teaching of science will be in accordance with the whole school policy for equal opportunities. The science experience at this school will enable all pupils, regardless of gender, race, learning needs and disability, to access learning to their potential. This is monitored by analysing pupil performance throughout the school to ensure there is no disparity between groups. Where appropriate, work will be adapted to meet pupils' needs and if appropriate, extra support given. More able pupils will be given suitably challenging activities.

7. Science/STEM Clubs

The science leader implements a lunchtime STEM club in the Autumn term which children in Year 5 & 6 have the opportunity to join. In addition, younger children are given the opportunity to join a lunchtime STEM club facilitated by pupil Science Ambassadors and the Science Lead, later in the school year.

8. Science Ambassadors

Pupils in Year 6 are given the opportunity to become a Science Ambassador. Their role is to represent and promote science, manage science resources and at various points in the year, support science learning across the school, for example during British Science Week.

9. Health and Safety

All children will be made aware of the importance of health and safety when undertaking work in Science. In addition to the whole school health and safety policy, Science Investigation has own risk assessment. We invite scientists into school from local universities or other outside agencies, who lead workshops and demonstrations which are risk assessed to ensure safe for all within a classroom, school hall or outdoor school environment.

As a school, Hanley St Luke's maintains a subscription to CLEAPSS school service (Brunel University, Uxbridge). This organisation produces a termly newsletter, Primary Science and Technology and a wide range of online guides about safe primary science.

New teachers joining the school will be briefed re safe science and responsibilities during the induction process.

9. Assessment

Practice in science is in line with whole school policies for marking, recording and monitoring. Children are assessed by revisiting prior learning from one lesson to the next and from previous years' teaching through formative methods including, multiple choice quiz, talk partners, matching activities. This enables a check of prior knowledge and bring out any misconceptions. These are addressed through child-led investigation, open questioning and exploration in and out of class. Ongoing formative assessment is made throughout the topic and a summative assessment is made at the end of each unit of work using 'Rising Stars'. Information is shared with the science leader termly and at transfer between year groups and pupils are regularly given targets through teacher marking and verbal feedback. There is currently an emphasis on assessment of working scientifically. Class teachers enter science data for pupils onto a tracker throughout the year.

10. Monitoring and Evaluating

Regular evaluation of the science taught is made by the teachers and passed to the science leader. These identify issues relating to the resources, teaching and learning issues, training and assessment moderation. The science leader monitors books termly and offers feedback to individual staff as required.

Pupil voice is carried out by the science lead biannually, shared with staff and used to inform teaching and learning in science.

11. Principles of science

We are continually evaluating and justifying the provision of science at Hanley St Luke's not only to maintain the profile of the subject but to ensure the curriculum is fit for promoting good learning. Our constant review and evaluation of science helps to identify and remove any barriers to pupils learning. We have held a quality mark for science (PSQM) at Hanley St Luke's since 2012. Most recently, we were pleased to be awarded Gilt level in November 2023.

As a staff we have drawn up the following principles for the teaching of science:

1. Children are taught an ambitious and knowledge rich sequential curriculum.
2. All children are actively engaged, allowing them to explore, learn and develop their scientific thinking and talk, through hands on scientific enquiry and investigation.
3. Children are taught and encouraged to use accurate scientific vocabulary and stem sentences.
4. They are given regular opportunities to retrieve their learning and apply it in different contexts so that long term learning is secured.
5. Quality resources and facilities, including the outdoors are used.