



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. It should not be taught as a separate strand. The notes and guidance give examples of how 'working scientifically' might be 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 should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should 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

All pupils will experience breadth of coverage as identified in the New National Curriculum as published September 2013. The programme of study for science is set out year-by-year for key stages 1 and 2. See above for timetable of study.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Reception Development Matters Early Year Outcomes	Me, Me, Me!	Percy's Woodland Animals	Let it go!	Growing	Food, Glorious Food!	Who put the colours in the rainbow?
	Working Scientifically					
Year 1	Everyday materials Seasonal changes		Plants Seasonal changes		Animals including humans Seasonal changes	
Year 2	Animals including humans Healthy eating		Uses of everyday materials	Plants	Living things and their habitats Health Education	
Year 3	Animals including humans	Rocks	Forces and magnets	Light	Plants Health Education	
Year 4	Electricity	Sound	Animals including humans	Animals including humans	Living things and their habitats	States of matter Health Education
Year 5	Earth and space	Forces	Properties and changes of materials		Living things and their habitats	Animals, including humans Health Education (SRE)
Year 6	All living things and their habitats	Animals including humans	Evolution and inheritance	Electricity	Light	Health Education

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

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 published September 2013 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, supplemented by Chris Quigley Essentials learning challenges and milestones. Each plan clearly identifies the learning challenges, differentiation, learning outcomes and activity appropriate to engage pupils. These are uploaded onto a central file for ongoing monitoring purposes. Short term planning (in the form of teaching flipcharts) is the responsibility of the year group teams drawing ideas from a range of resources and records in greater detail the necessary differentiation and support required.

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. 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 (located behind the stage) details contents which are clearly labelled. Cupboard 1 containing potentially harmful materials e.g vinegar and salt remains locked and inaccessible to pupils in accordance with health and safety guidelines. Key available in office.

Health Education is targeted on a specific Topic Plan for two weeks in 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 (British Science Week).

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. (see Chris Quigley milestones)

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. The key vocabulary should be displayed. Resources and other information sources for the unit of work being covered are freely available for the children to access.

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 being 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 (currently 'Farmvention') which children in KS2 have the opportunity to join. In addition, children in Years 5 and 6 are given the opportunity to join a lunchtime science and maths club known as Stan Club. This club is implemented and supervised by the science leader and runs once a week throughout the Spring term.

8. 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 who lead workshops and demonstrations which are risk assessed to ensure safe for all within a classroom or school hall environment.

It is each teacher's responsibility to read the school copy of "Be Safe" (ASE) which is to be found centrally in the staffroom to enable reference regularly.

The LEA 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. They also provide a helpline number: 01895 814372 which teachers can use for health and safety advice and other issues concerning science.

New teachers joining the school will be briefed re the safety documents 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 at the beginning to check their 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'. At this point a comparison is made to indicate progression. Information is shared with the science leaders 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

An evaluation of each unit of work is completed by each teacher and passed to the science leader. These identify issues relating to the resources, teaching and learning issue and training and assessment moderation. The science leader monitors books termly and offers feedback to individual staff as required.

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. In 2018 we achieved a Bronze Primary Science Quality Mark (PSQM) and as a staff the following principles were agreed:

- The children are given the opportunity to talk about the science and pose questions of their own.
- All children are actively engaged and learning through 'hands on' investigation.
- Investigations take a variety of forms. Often creative or child led but always relevant and meaningful to the children in our school.
- Quality resources and facilities, including the outdoors are used.
- Children are encouraged to use accurate scientific vocabulary.

12. Review of Policy

This document was reviewed and revised in Autumn 2 2019.