



Sheep Dip Lane
PRIMARY SCHOOL

Science Policy

September 2019

Policy ratified on:			
Date for review:	September 2020	L.Bevens (Science lead)	R.Day (Science lead)
Signed/Responsible: Chair of Governors			
Signed Head Teacher			

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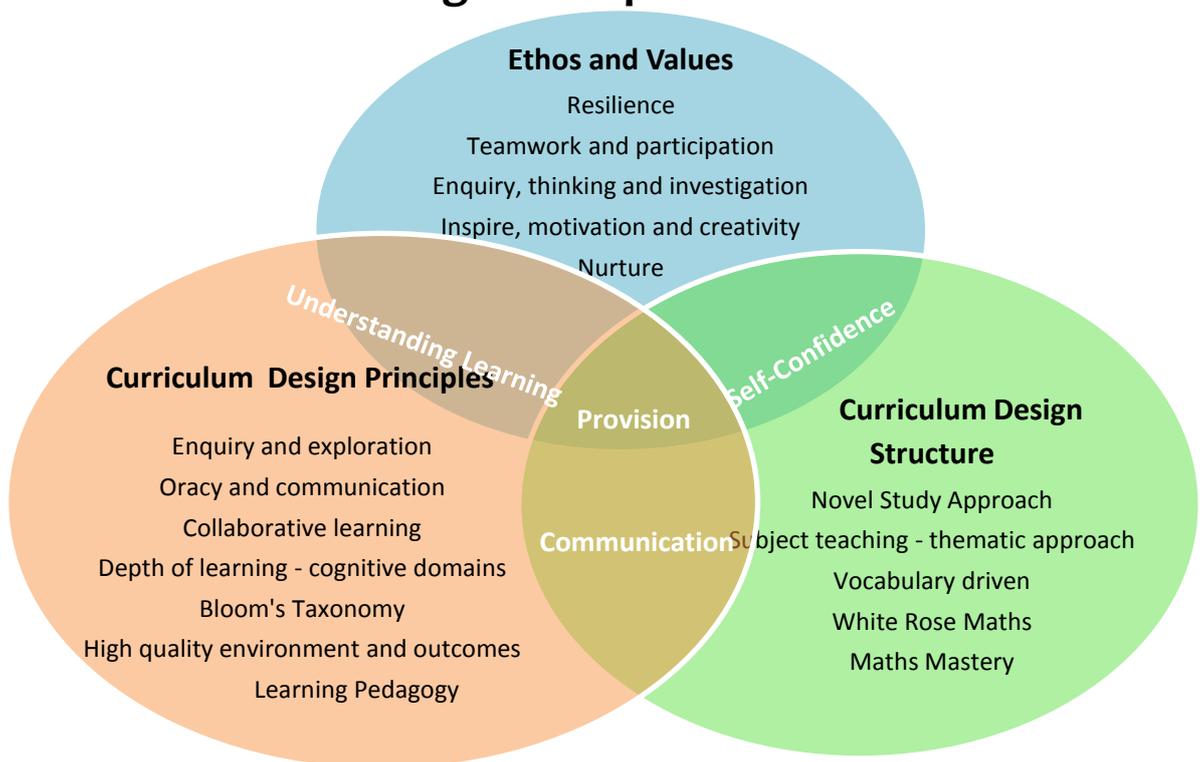


Sheep Dip Lane Primary School: Science Policy Reviewed: September 2019

Policy Statement for Science

Written by Working Party and approved by staff in 1990
Re-written November 1994
Reviewed June 1998 and September 2003, September 2006
Updated and reviewed 2008, July 2011
Updated September 2012
Reviewed September 2014
Reviewed September 2018
Updated September 2019

Our Curriculum Design Principles and Structure



Ethos and Values

At Sheep Dip Lane Primary School the curriculum has been designed to:
Recognise and build on children's prior learning, provide first hand experiences, allow children to develop the skills, knowledge and values they need to embrace the opportunities and challenges they face; to enable them to be create the future World they want to live in.
Recognise every child as a unique individual, celebrate and welcome differences within our community.

Develop with children their ability to learn, underpinned by the teaching of basic skills, knowledge, concepts and values.

Bring learning to life through real life contexts and experiences with provision that uses enhancement opportunities to engage learners.

Enable children to feel safe and happy, have opportunities to enquire, explore and investigate in order to be highly motivated and develop a love for learning.

Use learning pedagogy that promotes positive attitudes towards learning.

It is our vision that we thrive together and are part of a great close knit community. Our curriculum enables us to celebrate local traditions and play an active role in respecting and supporting each other through community events so that children leave Sheep Dip as active citizens who can make appropriate decisions, evaluate situations and have the characteristics to make meaningful contributions to the society in which we all live in.

At Sheep Dip Primary School we recognise the challenges our learners often face, which makes it essential that we our enabling the children we serve to proactively change the world through learning. We understand that employers are calling for education to expand its focus beyond the tradition cognitive domain. Our school curriculum must emphasise **teamwork, resilience, creativity, self-motivation** and **mindset**. Children will need to develop skills that are not yet considered crucial to current jobs today – such as **persuasion, emotional intelligence and teaching others**. In essence technical skills will need to be supplemented with strong social and collaborative skills.

At the heart of our design for learning, is the need to ensure our children see themselves as citizens of the world, members who contribute to local, national and global issues which may impact on their lives. We see our curriculum as a vehicle for connecting with the bigger cause. This means we enable our pupils to form meaningful relationships with their learning, see patterns and apply skills into a context where learning can make a difference. This will ensure that our pupils see that their learning has human significance. They will understand that their global learning is relevant to future decisions and the active contribution they can make to the world.

Rationale

We believe that Science is a continuous process which helps our pupils to discover and to develop an understanding of their own environment and which helps to prepare them for adult life. We believe that it is important for our pupils to have a range and breadth of experience and that in order for them to develop a progressively systematic and quantified approach, that specific objectives are taught.

Aims

- * to develop scientific understanding, knowledge and skills progressively through practical investigations/explorations and research throughout all year groups.
- * to develop the skills of interpreting and evaluating data and working scientifically
- * to develop an awareness of safety
- * to develop the concepts of the following topics; everyday materials, plants, seasonal changes, forces and magnets, light, animals; including humans, rocks, sound, electricity, living things, evolution and inheritance, earth and space

Objectives

- * to encourage pupils to make predictions, test hypotheses and to devise their own solution to a range of problems

- * to value our pupils' own questions and use them as starting points for further investigations / explorations
- * to look for patterns and relationships in appropriate investigations and to systematically record results
- * by the end of Key Stage 2 to draw conclusions that are consistent with evidence and are related to scientific knowledge and understanding, referring back to initial predictions made
- * for pupils to be able to select and appropriately use scientific equipment

POLICY IN PRACTICE

Statutory Requirements

The statutory requirements in the new curriculum 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

Each attainment target is divided into themes. The themes are to assist in the planning of topics and in the understanding of progression through the Key Stages. The programmes of study are divided under the themes and it is important that coverage of them is planned for. Assessments need to be undertaken with reference to the age-related expectations for each year group. It is important to cover all parts of the programmes of study, as planning to the level of descriptions alone may mean that significant areas of the programmes of study will be missed. This would leave gaps in the pupils' scientific understanding and knowledge, which may be vital for later work.

Statutory Programme of Study

The programmes of study for science are set out year-by-year for key stages 1 and 2. Schools are, however, only required to teach the relevant programme of study by the end of the key stage. Within each key stage, schools therefore have the flexibility to introduce content earlier or later than set out in the programme of study. In addition, schools can introduce key stage content during an earlier key stage if appropriate. All schools are also required to set out their school curriculum for science on a year-by-year basis and make this information available online.

Within our school teachers will ensure that the following subjects are taught within the following key stages over a long-term plan –

For all subjects Working Scientifically will be included throughout the curriculum. These objectives are clearly listed in the programme of study and are evident in teachers planning and lesson objectives.

FS – Understanding the World (The World)

KS1 (Y1) – Plants, Animals, including Humans, Everyday Materials, Seasonal Changes

KS1 (Y2) – Living things and their Habitats, Plants, Animals, including Humans, Uses of Everyday Materials

LKS2 (Y3) – Plants, Animals, including Humans, Rocks, Light, Forces and Magnets

LKS2 (Y4) – Living things and their habitats, Animals, including Humans, States of Matter, Sound, Electricity

UKS2 (Y5) - Living things and their habitats, Animals, including Humans, Properties and changes of materials, Earth and Space, Forces

UKS2 (Y6) - Animals, including Humans, Evolution and Inheritance, Light, Electricity, Living Things and Their Habitats

Organisation of Teaching and Learning

Aims of Scientific Enquiry

In order for our pupils to achieve the highest standards in science we must enable them to develop specific skills in scientific enquiry, increasing complexity as they progress through school.

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.

Working Scientifically

'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.

Observing and Measuring

In Year 1 we would expect most pupils to observe familiar materials and events at first hand, using their senses and to begin to make comparisons between living and non-living things and natural and made objects. By Year 6 we would expect most pupils to classify into broad groups according to common observable characteristics. Also to quantify their observations by selecting and using appropriate instruments, such as a Newton meter to measure the strength of a force.

Investigating and Manipulating Variables

From being able to explore the effects of magnets in Year 1 we would expect most pupils to be able to identify the variables to be measured, changed or controlled in an investigation in Year 6.

Questioning, Predicting and Hypothesising

From asking questions such as "how?", "why?" and "what will happen if?" In Year 1 we hope that most of our pupils in Year 6 will be able to make predictions based on previous knowledge and understanding and begin to formulate hypotheses.

These include:-

- The use of extended vocabulary
- Demonstrations and sharing of skills, knowledge and techniques

Communicating and Recording

We would expect that pupils would progress from being able to list and describe their observations in Year 1 to being able to systematically list and record data using tables, charts and graphs, where appropriate, by Year 6.

Interpreting and Evaluating

In Year 1 it is reasonable to expect most pupils to begin to associate one fact with another and to compare what they have observed with what they expected. By Year 6 it is reasonable to expect that most pupils will be able to interpret the results of their investigations by linking patterns in their results to the original question, idea or prediction and that they will begin to draw conclusions that are consistent with the evidence.

Attitudes

We believe that pupils' attitudes are very important for effective learning to take place.

We aim to promote the following attitudes in our pupils:-

- an enquiring mind
- co-operation with others
- valuing the opinion of others
- open-mindedness
- perseverance
- originality

Citizenship/Inclusion

All children will have the same opportunity to follow the science curriculum with each child learning at a pace that is appropriate to them. Through work carried out in science children will have the opportunity to:

- extend and develop their social skills
- work as part of a team
- experience moral and cultural issues
- discover the magic of the world around them

Gifted and Talented

The curriculum and organisation of the science curriculum allows each child to learn at a rate that is appropriate to them. Opportunities are offered to enable the more able pupils to develop fully their abilities. For example through the use of HOTS questioning as a means of developing higher order thinking skills.

ICT

In science pupils will be given the opportunity to apply and develop their ICT capability through the use of ICT tools, to support their learning.

Pupils will be given the opportunity to support their work by:

- finding things out from a variety of sources e.g. internet, science apps, online videos/media
- developing their ideas using ICT tools to amend, and refine their work and enhance its quality and accuracy
- exchanging and sharing information both directly and through electronic media
- reviewing, modifying and evaluating their work, reflecting critically on its quality as it progresses.

Health and Safety/Risk Management

When working with tools, equipment and materials in practical activities and in different

environments, including those that are unfamiliar, pupils will be taught:

- about hazards, risks and risk control
- to recognise hazards
- to assess risks
- to manage their environment

All of the above will ensure the health and safety of themselves and others.

Homework

On occasion homework activities focus on cross-curricular links between Science and Literacy or Mathematics and are usually short and focused referring to the topic work covered to consolidate skills and understanding. Some homework may be creative home learning projects or linked to British Science Week.

Assessment, Recording and Reporting

In Science we aim to give a picture of each pupil's attainment by recording the level of skills, knowledge and understanding that have been achieved. At the beginning of each Science topic teachers must ensure a baseline assessment is recorded for each pupil to identify starting points, next steps and targets.

Assessments are on-going throughout each topic and are an integral part of planning. Records are also completed at the end of each science topic to monitor pupil progress. This is completed formative through class track and teacher judgement grids against learning objectives and summatively through O-Track.

At the end of the year annual reports written by each class teacher, are presented to parents and discussed individually at the summer open evening. In all year groups each class teacher uses their on-going assessment records from O-Track to inform their reports to parents. As with Year 2 these reports are presented to parents and discussed individually at the summer open evening.

Pupils are involved in self assessments and peer partner assessment to support the AFL agenda. Success criteria are also generated by the children to meet the objectives set during sessions.

Range and types of Assessment in Science

Assessment tasks in science are often planned as group activities. However, it is also necessary to plan for and assess pupils individually. Appropriate assessment tasks linked to the National Curriculum are an essential part of the planning/assessment cycle.

Assessments can be:-

- i) National assessment tasks
- ii) completed task sheets or word cards linked to the programmes of study
- iii) a practical investigation that is planned, carried out and recorded by the pupil
- iv) a one to one dialogue with the teacher
- v) open-ended tasks which require the skills of prediction, hypothesis and questioning and fair testing
- vi) written tests based on the programmes of study and level descriptions
- vii) self / peer assessment of a task / topic

In Science standardisation within each Key Stage takes place half-termly.

Moderation of work is carried out by subject leaders annually to ensure continuity and progression as well as tracking progress. This also enables strengths to be highlighted as well as indicating areas for future development.

SATS Sampling

Not all children in Year 6 will take science SATs. Pupils at the end of the KS2 programme of study do not routinely sit a science test, as their performance is ordinarily measured using teacher assessment judgements.

Every 2 years however, in order to gauge the overall performance of the national population, a sample of pupils sit tests in science.

Whole cohorts do not take the tests. Instead, we select a sample of approximately 1,900 schools to participate. In each of the selected schools we select up to 5 pupils to take the tests, so that approximately 9,500 pupils participate in the sampling tests. The sample is selected in such a way as to ensure it is representative of the population.

The KS2 science sampling tests are not subject to local authority monitoring visits. **Schools selected for science sampling will need to be available to administer the tests within the 2 week period from Monday 8 June 2020.**

For those who are selected, there will be three papers:

- **Biology:** 25 minutes, 22 marks
- **Chemistry:** 25 minutes, 22 marks
- **Physics:** 25 minutes, 22 marks

It sounds very intimidating, but these are ‘questions in a physics/chemistry/biology context’, for example:

Biology: ‘Describe the differences in the life cycle of an amphibian and a mammal’

Chemistry: ‘Group a list of materials according to whether they are solid, liquid or gas’

Physics: ‘Predict whether two magnets will attract or repel each other, based on where the poles are facing’

Confidentiality

As a general rule the children’s confidentiality is maintained by the teacher or member of staff concerned. If this person believes that the child is at risk or in danger she/he talks to the child protection officer, who may confer with the Head Teacher before any decision is made.

Safeguarding

The safety, health & wellbeing of every child in our school remains a priority at all times.

All visiting practitioners must have up to date CRB checks before they are able to work in school. All visitors and practitioners are always supported by Classteachers or members of the Leadership Team.

All school staff (e.g. Teachers, Curriculum Support Staff, Parents etc) receive training regarding child protection and safeguarding in line with model protocol.

The Provision and Management of Resources

Teachers' reference material is kept in the staff room stock cupboard clearly labelled and organised into subject areas.

Our pupils are encouraged by example and encouragement to care for the school, its environment and the equipment within it.

The science subject leaders are responsible for these areas.

Managing the Science Curriculum / Staff Development

The role of the subject leaders

- * to advise and support all members of staff in the delivery of the science curriculum
- * to advise and support teachers in planning and implementing science assessment tasks
- * to advise and support new staff to school and ensure that they understand the science policy statement and guidelines and how to implement them
- * to be responsible for the allocated science budget and to be responsible for the organisation, maintenance and updating of science resources
- * to ensure that staff are made aware of new initiatives and developments in science both at local and national level
- * to attend relevant courses in order to update herself /himself in the subject
- * to review, evaluate and update, where necessary, all documentation governing the implementing of the science curriculum.

Sources – SDLP K.S. Planning Documents

National Curriculum in England: Science programmes of study

LEA Guidance on Policy Documents – “Policy in Practice”

These will be approved by the Governing Body on an annual basis.

Policy Agreed: 30th September 2018 & updated September 2019

Signed Head Teacher:

Signed: Chair of Governors:

Policy to be reviewed in Autumn 2020