

Lockington CE VC Primary School



Science Policy

Date Policy Formally Agreed By Governors	7 th December 2017
Date Policy Becomes Effective	October 2015, Reviewed Nov 17
Review Date	November 2020
Person Responsible for Implementation and Monitoring	Science Subject Leader

1 Introduction

Children are scientific by nature. They have inherent curiosity. At Lockington Primary School we enable children to develop their knowledge and understanding of scientific ideas, processes and skills. We encourage ways of thinking, discovery and communicating ideas. We also give opportunities for explaining values and attitudes through science. Pupils learn to ask scientific questions and begin to appreciate the way science will affect their future on a personal, national and global level. Science should not be seen as a subject in isolation, but rather one which, wherever possible, encompasses a wide range of cross-curricular activities, drawing from and contributing to, many other subjects.

At Lockington CE VC Primary School, science takes place within the context of our school vision: to develop lively, enquiring minds and promote outstanding standards of achievement in a happy, safe and caring environment based on Christian values which encourage all to show respect, acceptance and understanding of others.

2 Aims and objectives

We live in an increasingly scientific and technological age where children need to acquire the knowledge, skills and understanding to prepare them for life in the 21st century. Through the framework of the national Curriculum (2014), science aims to:

- stimulate children's interest, enjoyment and creativity in the area of science.
- equip children to build upon their natural sense of wonder about the world.
- develop, through practical work, the skills of observation, prediction, investigation, interpretation, communication, questioning and hypothesising, and increase the use of precise measurement skills and ICT.

- support children to develop their skills of cooperation through working with others, and to encourage where possible, ways for children to explore science in forms that are relevant and meaningful to them.
- encourage children to collect relevant evidence, to question outcomes and to persevere.
- encourage children to treat the environment with respect and sensitivity.
- encourage children to raise questions and learn how to investigate and explore these using both first-hand experience and secondary sources.
- develop the ability to challenge one's own and other's ideas in both a practical and creative sense.
- help children understand the nature of scientific ideas and how to obtain and test evidence for them.
- help pupils recognise and assess risks and hazards when working scientifically and take action to control them.
- To embody principles of the distinctively Christian nature of our school in all aspects of learning.

The following objectives should be kept in mind when planning work:

- To give the opportunity, through investigation, to develop the ability to think and enquire purposefully and safely.
- To develop basic skills through observation, research and investigation.
- To use mathematical skills appropriate to age and ability and learn why these skills are important to find evidence.
- To develop an understanding of the processes which shape their surroundings.
- To develop the ability to use scientific and mathematical language to explain their findings.
- To enable all children to communicate their findings in a variety of ways, including the use of charts and diagrams.
- To provide opportunities for self-awareness and to develop attitudes of co-operation, understanding and respect for others.
- To provide opportunities to enhance speaking and listening skills.
- To promote the use and understanding of basic, precise scientific language.
- To enhance research skills using reference books, ICT and the internet, where applicable.

3 Subject Organisation

Our whole school approach to planning and assessment is based on the National Curriculum (2014). Science encompasses the acquisition of knowledge, concepts, skills and attitudes. Through the programmes of study in the Science National Curriculum (2014), pupils will acquire and develop these skills throughout their primary years.

Children are taught in two mixed age classes:

- Reception and Key Stage 1
- Key Stage 2

Reception pupils are also taught through continuous provision.

Science topics are taught in half termly units to ensure curriculum coverage. Teachers use a variety of resources and planning documents to compile schemes of work, including Hamilton Trust resources. Children are taught in class groups and work is differentiated in a variety of ways so that all children access the curriculum, succeed and are challenged. Planning for science is a process in which all teachers are involved to ensure the school gives full coverage of the National Curriculum for Science, Development Matters and the Early Learning Goals (ELGs). We adapt and extend the curriculum to match the unique circumstances of our school.

The overall style of planning may differ slightly throughout the school; however there is a generic format:

Long term:	See Curriculum overview of units of study
Medium term:	Includes brief outline of the lesson including main objectives.
Short term:	Includes: Objectives for that lesson/s including success criteria Key vocabulary Activities including cross-curricular links Resources Grouping and differentiation Assessment opportunities Evaluation

Time allocation

Key Stage 1 – approximately 1 ½ hours per week plus additional time allocated into other cross curricular opportunities.

Key Stage 2 – approximately 2 hours per week plus time allocated into other cross curricular opportunities.

4 Teaching and learning

The teaching of science should engender a variety of teaching and learning styles, all of which include elements of:

- development of scientific skills and routines
- development of positive attitudes and open mindedness
- discussion between pupil/peer and pupil/teacher
- appropriate practical work
- investigative work

These elements can be incorporated in the teaching of science through;

- whole class discussion/ teacher demonstration
- small group discussion/ investigation
- individual investigation

The planning and delivery of lessons should include elements of teaching styles to address all types of learners, e.g. the linguistic, the visual, the kinaesthetic, the auditory. The

teaching of science should include development of the basic skills of mathematics, reading and writing.

The help of parents and other interested people will be encouraged and used where appropriate.

5 Foundation Stage

We teach science in the reception year as an integral part of the topic work covered during the year. We relate the scientific aspects of the pupils' work to the objectives set out in the Early Learning Goals (ELGs) which underpin the curriculum planning for children aged 3-5. Science makes a significant contribution to the objectives in the ELGs by developing understanding of the world through, e.g. investigating what floats and what sinks when placed in water.

6 Key Stage 1 and 2

In Key Stage 1 the National Curriculum (2014) Programme of Study focuses on key concepts which we cover in a two year rolling programme:

	Cycle A			Cycle B		
Term	Spring	Summer	Autumn	Spring	Summer	Autumn
Science	Working Scientifically			Working scientifically		
	Everyday Materials (Y1); Seasonal Changes (preliminary)	Animals including Humans (1)	Plants (1); Seasonal Changes (1)	Uses of everyday materials (2)	Living things and their habitats (2); Animals including Humans (2)	Plants (2)

In Key Stage 2 the National Curriculum (2014) Programme of Study focuses on key concepts which we cover in a two year rolling programme in which Y3/4 and Y5/6 units are combined and differentiated:

	Cycle A			Cycle B		
	Autumn	Spring	Summer	Autumn	Spring	Summer
Year 3/4	Keeping Healthy	Amazing Magnets	Name that living thing	Light and Shadows	Excuse me. Are these teeth yours?	Roots and Shoots
	Rocks and Fossils	States of Matter	Artful Flowers, Fruits and Seeds	It's Electric	Listen Up	Help our Habitats
Year 5/6	May the Force Be With You	Music Festival Materials	Life Cycles Through Art	Crime Lab Investigations	Classification	When Art Meets Science

	Earth and Space	Changing Materials	Homo Sapiens Growth	Electric Celebrations	Game of Survival	Big Science Week
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Working scientifically is embedded within the above content. Over the term, PLAN, DO and REVIEW skills are focused on in turn. This allows the progress in each skill to be regularly assessed.

For each topic covered, planning covers, in both Key Stages:

- Working scientifically
- Topic related Key Concepts
- Cross-curricular links
- Key vocabulary to be developed
- Resources
- Activities
- Health and Safety points

7 Inclusion

Equal Opportunities

- We plan our classroom activities to challenge and involve all pupils appropriately, according to age and capability, ethnic diversity, gender and language background.
- We are aware of different learning styles and the need to allow pupils to be able to work in their preferred learning styles for some of the time.
- We use materials for teaching which avoid stereo-typing, and bias, towards race, gender, role or disability.
- We deal with such issues clearly and sensitively when they arise.

Differentiation

We teach science to all children, whatever their ability. Science forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our science teaching we provide learning opportunities that enable all pupils to make progress. We do this by setting suitable learning challenges and responding to each child's different needs. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels. Work is differentiated, or children are grouped in such a way as to allow each child to progress at their own rate or level.

For our gifted and talented pupils we will expect:

- Teachers to provide teaching and learning experiences that encourage pupils to think creatively, explore and develop ideas, and try different approaches. Pupils should be encouraged to set their own questions, offer ideas, suggest solutions or explanations, and reflect on what they have heard, seen or done in order to clarify their thoughts.

- Greater independence in working, e.g. a pupil to be able to carry out their own simple scientific enquiry.
- Avoid giving gifted pupils additional writing tasks and encourage them instead to communicate their understanding in a variety of ways, giving them responsibility for choosing and evaluating the most appropriate method.
- Provide opportunities within science for pupils to develop their skills in other areas, such as intrapersonal skills (for example, opportunities to use initiative), and interpersonal skills (for example, leadership and group membership). These opportunities also relate to the key skills of working with others and improving own learning and performance.

By being given enhancing and enriching activities, more able children should be able to progress to a higher level of knowledge and understanding appropriate to their abilities.

Teaching science to children with special educational needs and disabilities

When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors including classroom organisation, teaching materials, teaching style and differentiation so that we can take some additional or different action to enable the child to learn more effectively. This ensures that our teaching is matched to the child's needs.

Intervention will lead to the creation of an Individual Education Plan (IEP) for children with special educational needs. The IEP may include, as appropriate, specific targets relating to science.

Some children will require closer adult supervision and more adult support to allow them to progress. To accommodate the individual's learning style, lessons will be planned where possible in a multi-sensory way so that the various activities will cater for all pupils in the spirit of inclusion. There will also be consideration of how to record outcomes so that pupils are not inhibited by a specific difficulty.

8 Recording and Presentation of Work

The children record their work in a variety of ways for a variety of purposes:

- to help clarify their thinking (whiteboards, science books)
- to communicate with their working groups, teachers or others
- for future reference to enable them to develop ideas and understanding
- as evidence of attainment
- for assessment purposes

Children are encouraged to record their work in a manner appropriate to its purpose. This may take the form of drawings with labels, lists, descriptions, summaries, posters, instructions, tables of results etc. In Key Stage 2 during some science lessons a range of evidence is collected and compiled in a class Big Book for some units of science that are studied.

Children are encouraged to become the leaders of their investigations, each given a specific part to play. Therefore in KS2 children will record their planning of investigations using the interactive science display and / or individual planning sheets which give the same criteria. All children will have an individual science book which can be kept as a record of their work (this is incorporated with the Big Books).

9 Marking

Science written work is marked in line with the marking policy, the focus being on the correct use of key words and scientific explanation. Diagrams, graphs and tables should be labelled correctly and neatly and marked accordingly. Comments are brief yet provide appropriate feedback and further questioning to help children understand what they need to do to move forward in their learning.

10 Scientific Vocabulary

In the early years, language is particularly important as there is less emphasis on written recording and more on practical experience, investigating and discussion.

In KS1, pupils should be taught to use simple scientific language to communicate ideas and to name and describe living things, materials, phenomena and processes.

In KS2, pupils should be taught to use appropriate scientific language and terms, Include SI units of measurements (e.g. metre, Newton), to communicate ideas and explain the behaviour of living things materials, phenomena and processes.

11 Links with other subjects

Teachers will be committed to linking the children's learning with other curricular areas. Speaking and listening will be actively promoted during scientific investigations. The children develop many of their non-fiction reading and writing skills in science. Mathematical skills such as weighing and measuring are an important part of the science lesson. Where appropriate, children record their findings using charts, tables and graphs using ICT.

12 Assessment, Recording and Reporting

Science is taught over blocks of approximately six weeks. During the block, children will develop a variety of skills such as investigation, observation, recording, measuring and fair testing. These skills will be assessed throughout the six weeks at various opportunities to form on-going teacher assessment based on teacher observation and continuous assessment. Records kept on Classroom Monitor and should be updated each half term (minimum). Lesson plans and evaluations will allow opportunities for this to be planned and recorded. Children are encouraged to comment on their learning. More formal methods of assessing science also help to provide more evidence of attainment. This would happen at the end of the unit that has been studied.

Teachers will make a formal assessment of the children's work at the end of KS1 and KS2.

13 Resources

There is a central resource area providing both basic and specialised equipment and materials for the whole school. Topic boxes are situated in the corridor and further equipment is stored within KS1 and KS2 classrooms. All equipment should be returned to its place of storage in a state suitable for use by the next member of staff. Shortages and breakages should be reported to the science leader for replacement. A range of pupils' reference books is kept in the library, supplemented by library loans.

14 Health and Safety

A risk assessment will be made as part of the planning process before any potentially dangerous scientific activity is undertaken. Pupils will be informed of any risks or hazards but will also be encouraged to assess and identify risks for themselves. Children will be shown how to use scientific equipment safely. Safety glasses will be used where appropriate.

15 Roles and Responsibilities

The Governing Body:

Determines, supports, monitors and reviews the school science policy.

The Headteacher's role is to:

- provide support by encouraging staff and praising good practice;
- monitor learning and teaching through lesson observations;
- give feedback to teachers following lesson observations;
- support staff development through in service training and provision of resources.

The Science Subject Leader's role is to:

- take the lead in the policy development;
- act as a consultant to colleagues on resources, visits, visitors, curriculum changes, classroom teaching and learning ideas;
- liaise with other members of staff to form a coherent and progressive scheme of work;
- monitor and evaluate pupils' work, pupils' views about the subject, displays and teachers' planning;
- write action plans;
- audit resources and ordering resources when needed;
- keep up to date with developments in science and disseminate information to the rest of the teaching staff;
- lead staff meetings as appropriate;
- attend relevant in-service training and prompt relevant training to others.
- The science subject leader gives the Headteacher an annual report in which s/he evaluates the strengths and weaknesses in the subject and indicates areas for

further improvement. The science subject leader has specially-allocated time in which to fulfill this role.

The Class teacher's role is to:

- be responsible for the teaching of science as set out in the policy;
- provide planning and reviews for the Headteacher and science co-ordinator to have access to;
- provide samples of science work when required;
- assess children's work in order to detail future planning;
- update skills, knowledge and understanding of science;
- identify training needs in science and take advantage of training opportunities;
- keep appropriate on-going records in relation to school policy.

16 Monitoring and review

Monitoring of the standards of children's work and of the quality of teaching in science is the responsibility of the science subject leader. The science subject leader is responsible for gathering samples of curriculum work, monitoring books and schemes of work to ensure that the Programmes of Study are being effectively taught and match the needs and abilities of the pupils. Lessons ideally will also be monitored to help promote quality of learning and standards of achievement in science.

This policy was written: September 2017.

This policy is due for review: September 2020.

The person responsible is the Science Subject Leader.

Signed by Headteacher _____ Date _____

Signed by Chair of Governors _____ Date _____

