



Science Policy

Reviewed – September 2019



St Bartholomew's Church of England

Primary School

Science Policy

1. Science Policy

The study of Science is an essential part of the school curriculum. Through effectively delivering this curriculum, children's entitlement to participate fully in Science is realised and they will develop skills to explore and understand the world in which they live.

- Children will be involved in learning experiences which require both practical and intellectual activities.
- All children have the potential to progress scientifically. We recognise that they arrive with different levels of language and experience. Our aim is to provide appropriate experiences and support to enable them to develop scientifically.
- Good Science teaching at St Bartholomew's should be based on children's first hand experiences and teaching these experiences through different types of Scientific enquiry.
- Science in the classroom should start from the views which children hold and give them the opportunities to change their views and ultimately their understanding – increasing their subject knowledge and skills.

The purpose of this document is to give an overview of Science at St Bartholomew's. It covers the general principles and teaching methods involved. The principles and teaching practice are to be implemented by the teaching staff and monitored by the Science Co-ordinator.

Prospectus Statement

Children should know basic scientific laws and develop skills by doing practical experiments and activities which cover a range of different types of enquiry over the year including: observation over time; pattern seeking; sorting/grouping; classifying; comparative and fair tests; using secondary sources and models.

Purpose and Aims

To deliver the National Curriculum in ways that are imaginative, purposeful, controlled and disciplined but also enjoyable.

- To help develop and extend the children's scientific concepts of their world.
- To encourage the development of investigation, exploration, collaboration, observation and evaluation.
- To carry out planned safe, practical activities.
- To develop different ways of recording and interpreting information.

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- To enable the children to become effective communicators of scientific ideas, facts and data.
- To explore cross curricular links between Science and other areas of the curriculum whilst ensuring key Science objectives are not diluted.
- To build upon children's scientific skills, knowledge and experiences so that their knowledge and understanding is deepened and enriched as they progress through the school.
- To ensure the children are exposed to key scientific vocabulary which progresses each year.
- To encourage the development of positive attitudes to Science.
- To develop the aptitude, abilities and interests of all pupils to their maximum.
- To provide a curriculum, which caters for individual needs and an environment / ethos in which, every pupil experiences equality of opportunity and promotes self-esteem.

2. Strategies

- To plan learning experiences where all pupils can contribute and achieve a degree of self-fulfilment.
- To recognise excellence of effort and / or achievement.
- To have high expectation of all pupils
- To provide a stimulating environment, which generates enthusiasm and motivation (including exciting and interactive working walls).
- To enable pupils to enjoy the process of scientific discovery and investigation.
- To develop appropriate work to cater for the different needs of the children in the class.
- To encourage the use of a diversity of resources
- To use a range of teaching strategies
 - Particularly cognitive science to improve knowledge retention (repeated opportunities to recall information during subsequent lessons, frequent mini testing and reflecting/explaining what they have learnt).
- To give pupils the practical experiences that will allow them to develop skills in line with the National Curriculum.
- To give pupils the opportunity to plan, predict, undertake, and evaluate their own investigations.
- To use appropriate scientific vocabulary and continuously refer to that vocabulary to aid retention.
- To integrate assessment into the general teaching process.
- To promote the ability to consider other pupils' ideas and work together in small group activities.
- To provide children with a safe working environment and develop their understanding of safe practices.
- To make Science relevant to their lives and personal experiences.

3. Definition of Science Education and Content of the Curriculum

Science is a body of knowledge which is built up through experimental testing of ideas. Science is also a methodology, a practical way of finding reliable answers to questions we may ask about the world around us.

Children will be given the opportunity to be involved in practical and hands on science as well as have science days and visiting scientists within the classroom.

Role of Science Co-ordinator

1. To monitor and review the policy
2. To support the planning of Science to ensure attention is given to knowledge, understanding, skills and attitudes.
3. To promote good teaching practice.
4. To be aware of national local developments in Science.
5. To order, replace and organise necessary equipment within the constraints of the school budget.
6. To undertake responsibility for Science and co-ordinate development, organisation and implementation throughout the school.
7. To liaise with members of staff to ensure Science takes its relevant place within the school's curriculum. To lead appropriate INSET activities taking into account courses arranged by outside agencies. To provide individual support for staff.
8. To ensure appropriate methods of assessment and recording are carried out (also provide teachers with advice on how to assess their children and what standards to expect by year group).
9. To provide support materials to help teachers in planning or delivering lessons and assessing children.
10. To monitoring and support the improvement in standards of teaching and learning in Science.
11. To ensure classes are creating displays with a scientific theme.
12. To liaise with local Science coordinators in order to share best practice.
13. To arrange opportunities for Science professionals to visit and work with children in the school so children start to become aware of STEM careers.

Refer to National Standards for subject leaders for the full role of the co-ordinator.

4. Equal Opportunities.

At St Bartholomew's we ensure that all children have the opportunity to extend their scientific ideas regardless of gender, race, social class, physical or intellectual ability.

- Girls and boys are equally encouraged and valued.
- All children are encouraged to talk about their scientific investigations.
- Access is provided to all activities. Physically less able children are encouraged to participate and integrate in scientific activities in the classroom.
- Support is provided for those children experiencing difficulties. Extended activities may be provided for those who are more able.
- We ensure that all children are encouraged to talk about their scientific investigation or an appropriate means of expression is provided, building on the language they already have.
- We recognise the different levels of experience and language of the children arriving at the school and provide them with appropriate experiences and means of expression.

5. Good Science Learning

For good Science learning to take place, evidence of the following should be found in our classrooms:

- An active learning environment
- Children working from first-hand experiences
- Children encouraged to ask questions
- Children actively involved in exploration and investigation
- Children working co-operatively
- Children discussing with each other and adults
- Children devising and conducting their own investigations in both KS1 and KS2
- Children choosing their own materials and equipment
- Children recording their findings in a variety of ways
- Children drawing conclusions from their findings
- Children showing enjoyment in the activities they are undertaking and enthusiasm for the subject
- Children working responsibly and safely with a range of equipment
- Children having access to, and using, a wide scientific vocabulary
- Children recalling information learned during lessons and during subsequent lessons in the following days and weeks

At St Bartholomew's we encourage children to gain confidence in asking their own questions and devising investigations to answer them. We look for opportunities to give children the chance to explore critical thinking questions and demonstrate their learning.

6. Planning

Planning in Science is a process in which all teachers are involved. Shared planning in year groups ensures all children have equal access to the curriculum. Work is planned using the National Curriculum 2014. All teachers have copies of short term planning to ensure coverage of topics. The curriculum themes for Science are allocated as below.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Foundat ion Stage	Seasonal Observations	Similarities and Differences	Animals and Habitats	Plants	Growing (Plants and Humans) Lifecycles	
Key Stage 1 Cycle 1	1) Animals including humans 2) Everyday Materials Seasonal Changes		Living things and their habitats	Science inventors/ inventions (link to materials)	Plants	
Key Stage 1 Cycle 2	Ourselfes and our bodies How do we stay healthy? (Germs, teeth, food, bacteria) Seasonal Changes	Everyday Materials	Living things and their habitats		Plants	
Year 3 & 4 Cycle 1	Animals including humans Healthy Eating	Light And Dark	Forces (3M Competition)	Magnets (3M Competition)	Rocks and Fossils	Plants
Year 3 & 4 Cycle 2	Electricity	1) Sound 2) States of Matter	3M competition Habitats and Classifying		Humans and animals (Teeth and digestion)	The Water cycle
Year 5	Earth and space	Forces	Properties and changes in materials 3M competition		Life cycles & reproduction – human & animal. Changes in humans as bodies develop	
Year 6	Light	Electricity	Living things & their habitats		Evolution & Inheritance Animals including humans. Sex Ed	

KS1 and KS2 follows the key objectives in the National Curriculum 2014 Science document. Aspects of 'working scientifically' are developed within each unit of study and are progressive throughout the school. Children develop through practical scientific study. All year groups have weekly Science lessons where there are opportunities to retrieve prior learning. To accommodate for split year group classes, objectives for KS1 (Years 1 & 2) and lower KS2 (Years 3 & 4) are covered in a two-year cycle.

7. Differentiation in Science

The children are taught in their class groups. Work is provided at different levels which meet the wide range of children's needs within the class:

- Children may be grouped in ability within the class with appropriate tasks set
- A variety of tasks varying in difficulty may be set related to a specific theme – extension activities are given to those who are more able
- Greater teacher support may be given to less able pupils – more responsibility and challenge may be given to more able pupils.

8. Resources

Science boxes are kept in a central Science store. The equipment and contents of the boxes are appropriate to the relevant year group/topic. Staff should notify the Science Co-ordinator of any extra resources required, of any breakages or losses which occur and of any new materials, books, DVDs etc which might prove to be useful.

The Science coordinator is responsible for auditing the resources and using the Science (and Science week) budget appropriately.

Unsupervised children are not allowed to collect resources and all teaching staff need to ensure all materials are returned at the end of each unit.

Planned units of work are held centrally on Fronter.

9. Recording of work

Each child has a Topic book which they use for English, Science, RE and other topic subjects. This records independent work and progress. Each year group also has a Science book in which to record evidence of lessons/investigations such as photographs, examples of group tasks etc.

Marking of work will be as per the requirements of the Schools Marking Policy.

10. Assessment

The children should be encouraged to be involved in making their own assessment in accordance with the Assessment for Learning Policy.

Formative teacher assessment is used to guide the progress of individual pupils in Science. It involves identifying each child's progress in each area of Science curriculum, determining what each child has learned and what therefore should be the next stage in his/her learning. Formative assessment is mostly carried out informally by the teacher, in the course of their teaching, in accordance with the assessment policy. This may take the form of:

- Oral responses
- Observations
- Written work including diagrams, construction and interpretation of graphs and diagrams
- Quizzes/tests
- Explaining concept cartoons

Children are assessed against the nation curriculum objectives for knowledge and working scientifically. At the end of each unit, teachers are required to input data into a spreadsheet to show evidence of the children meeting these expectations. The children's understanding will be recorded as: Working towards expected (WTS); At expected (EXP) or Greater depth (GDS).

To help with judgements, teachers will refer to support materials which show expectations for each topic area.

Year 2 and 6 data is recorded and sent to the LEA as either an 'Expected' or 'Working Below' grading however, teachers are encouraged to look for and challenge their higher attaining scientists.

11. Reporting to parents

This includes attitudes to Science, progress in the ability to investigate scientifically and understanding of scientific ideas and concepts.

- Reporting to parents is on a termly basis through parents evening/ open evening meetings
- The annual written report to parents includes a statement about Science in the general comments

12. The 'Outdoor Classroom'

The development of the 'Outdoor Classroom' is vital in providing a unique resource to enhance the quality of teaching and learning in Science and other subjects. Teachers are encouraged to use the outdoor classroom as often as possible. This includes the track, badger trail, badger nesting sites, peace garden, planting area and pond area. Children also visit the local countryside.

13. Eco School

Children are given the opportunity to develop their scientific understanding of what it means to be Eco friendly.

St Bartholomew's was awarded the Bronze award in 2008 and the Silver award in 2009 and the Green Flag award in July 2017. We will continue to promote and educate about how to look after our local and wider world environment and what it means to be more sustainable.

14. Health and Safety

- The teacher should be clear as to the purpose of the work and ensure that any testing that needs to be carried out complies with health and safety procedures and has been practised prior to the lesson.
- Risk assessments should be carried out
- CLEAPPS referred to and advice followed when using chemicals or fire in the classroom
- Safety hazards should be pointed out to the children at the beginning of any work.

15. The Role of the Teacher

The role of the teacher is one of planning and delivering a balanced programme of scientific activity. This entails providing guidance, support and encouragement to learn about chemistry, physics and biology. The teacher encourages the children to ask questions, find out answers for themselves and explain scientific concepts using appropriate but stretching vocabulary.

16. Implementation

At St Bartholomew's children cover the full curriculum for their year group expectations. Children are taught Science on a weekly basis. This is often through discrete lessons although some lessons (particularly in KS1 and FS) are more cross curricular.

During National Science Week there is an additional science focus. A range of Science activities take place during that time including outside visitors to inspire and educate the children. The whole school will also take part in an annual science day of activities.

Early Years

We encourage children to:

- Explore and recognise features of living things, objects and events in the natural and man-made world
- Look at similarities, differences, patterns and change
- Talk about their observations and sometimes record them
- Be confident in asking questions, formulating ideas and predicting outcomes.