



**ST BERNARD'S  
PREPARATORY SCHOOL**

**SCIENCE POLICY**

**ADVENT 2018**

# St Bernard's Preparatory School

## SCIENCE POLICY

### Mission Statement

**With God as our shelter and Christ as our guide, the mission of St Bernard's Preparatory School is to educate towards love and service to God, each other and the wider community. Through our broad balanced curriculum we will develop an understanding of each faith and the values we share. We will treat each person with respect, knowing we are special and unique.**

**St Bernard's is part of the St Benedict's family of schools. All schools in the group share a similar Catholic and Benedictine/Bernardine ethos.**

### **Introduction – Why do we teach Science?**

Science is an important part of the education of St. Bernard's Preparatory School. To this end, science is mainly taught by a specialist Science teacher in a well-equipped specialist laboratory.

Children study science through practical, challenging and yet safe activities based initially on their immediate personal experiences and later on a broader range of contexts. They learn about science in their lives and in the wider world. The school is committed to the highest standard of pupil achievement based on positive attitudes where children learn to question and to seek explanations.

Science involves children observing, seeking evidence and looking for explanations for what they find. The context of the work is most important in science. Teacher's choice of content will be guided by the scheme of work and will promote inclusion.

All children benefit from science in terms of its contribution to their overall capability and from the way that science links with other areas of the curriculum such as literacy, numeracy, technology, physical education, geography and history.

Our current scheme of work ensures that the children in years 1 -6 cover all of the requirements of the New National Curriculum for Science introduced in September 2014; pupils in years 2 and 6 began the New National Curriculum in September 2015, requiring new mid- term and weekly planning to be introduced. In particular we emphasise investigation by pupils and maximising opportunities to engage with phenomena in their environment and every day experiences. Teachers of science are given specific advice about resources and methods for implementing Working Scientifically and ICT.

The reasons for this policy are to act as a common statement regarding the teaching of Science throughout the school. In the Foundation Stage and Year 1, the planning and teaching of Science is generally the responsibility of the class teacher with support from the specialist teacher. In all other years this responsibility currently lies with the specialist teacher who teaches in years 4-6. All teachers concerned with the teaching of Science have the responsibility of implementing this document. The Science Handbook 2017-18 outlines new resources, risk assessments for practical activities and the types of scientific enquiries and the matching performance descriptors for Working Scientifically.

## **AIMS**

Science Investigation is at the heart of Science Education. Our children find science enjoyable, meaningful and challenging. Children's experience in science includes a high proportion of practical work. This includes both exploration and investigation. Children are engaged by stimulating contexts, concepts, resources and investigations. They are given increasing opportunity to plan their own science investigations. Science contributes significantly to the personal development of pupils and their future economic well-being. All children at St. Bernard's Preparatory School are encouraged to have a sense of wonder, fascination and curiosity about their world and thus develop a thirst for learning. They should come to appreciate the beauty, order, and precision that are found in creation. Pupils will begin to develop a spiritual, moral and social understanding about the effects of their actions on the environment. Children are encouraged to see that science is a part of the life of all cultures and peoples both now and in the past and that we can all participate in science.

## **DEVELOPING, INTEREST, ATTITUDE AND AWARENESS**

By using a multi-sensory and kinaesthetic approach, the aim is to inspire the children to ask questions, and to develop a willingness to handle material, both living and non-living, combined with a sensitivity of the need to give proper care to living things. There should be enjoyment in using all the senses for exploring, an interest in collecting material for observation or investigation, a wish to find things out for oneself through enjoyable experimentation, without loss of willingness to participate in group work.

## **LEARNING TO OBSERVE AND RECORD FINDINGS**

Pupils should be made aware that there are various practical ways for testing ideas and making observations, as well as various ways of expressing and recording results including use of data loggers and ICT. Pupils should be shown how to investigate, classify, observe changes over time, and conduct comparative and fair tests, research using secondary sources, to recognise patterns and present evidence in a variety of ways as appropriate as outlined in The Science Handbook 2017-18.

## **DEVELOPING BASIC CONCEPTS AND LOGICAL THINKING**

There is a need for the children to learn the meaning of new words and how to use them correctly; to appreciate that things which are different may have some common features; to develop the ability to make reasonable predictions.

## **POSING QUESTIONS AND DEVISING EXPERIMENTS OR INVESTIGATIONS TO ANSWER THEM**

This aim should develop in pupils the ability to find answers to simple problems by investigating, to make comparisons, to appreciate the need for measurement and to realise that more than one variable may be involved in a particular change. In addition, it is also important to understand how to improve accuracy by repeating measurements. Over the years pupils should have opportunities to experience different types of scientific enquiry and understand that 'Fair Testing' is only one type of enquiry, but should be aware how to control variables to achieve 'Fair Testing'; The Science Handbook 2017-18 gives guidance for Working Scientifically enquiries and skills for each year group.

## **ACQUIRING KNOWLEDGE AND LEARNING SKILLS**

Inevitably factual knowledge will be acquired; pupils should increase their ability to extract relevant information from books, internet sources, and other reference material. They should be shown how tools, measuring instruments (including electronic and remote devices) and simple apparatus should be used, and be made aware of the importance of safety in the use of tools and equipment.

## **COMMUNICATING**

Communication through the medium of Science lessons is as important as it is in English lessons. Pupils should acquire the ability to use appropriate scientific vocabulary correctly, to record, to discuss, to question, to tabulate, to make models, to draw and use colour as appropriate. In addition, pupils should have opportunities to explore and use multimedia and ICT to communicate scientific ideas and present work.

## **APPRECIATING PATTERNS AND RELATIONSHIPS**

Children should be made aware of cause-and-effect relationships, and encouraged to look for sequence of change in natural phenomena and in the environment. They should also challenge assumptions about the interpretation of patterns.

## **IMPLEMENTATION AND ORGANISATION**

At St. Bernard's Preparatory School we are continuously improving the idea of scientific approaches throughout the school and promoting full and active participation of each child irrespective of ability. Teachers to follow the schools' scheme of work as shown in the mid-term plans for science and use the resources therein including Snap Science and Kent Science to develop weekly planning, as well as other relevant and valued resources, to create continuity and progression, in a structured curriculum and to ensure there are no gaps or overlaps made unnecessarily.

In order to cover all the programmes of study at Key Stage 1 and 2 Science is taught as a separate subject, with reference made wherever possible to the school theme.

From Year 3 onwards a specialist teacher works closely with other teachers to encourage subject related links e.g. Maths week, ICT, DT, Geography, P.S.H.E., Music and Drama.

The Science room is timetabled for use from Year 4 onwards, Year 2 and 3 pupils use as appropriate. Science resources are available at all times for teachers or pupils to use throughout the school.

Teachers plan science using the Kent scheme of work and Collins Snap Science which have been developed for the new curriculum. Long Term planning shows the topic overview from year 1-6. Medium term plans include a summary of objectives, vocabulary and resources required. Weekly plans are submitted electronically fortnightly to the head teacher, using the appropriate Science Planning Template, and include detailed objectives, tasks, teaching methods, differentiation, resources and assessment /evaluation.

Within the schemes of work for Science, pupils are encouraged to develop hands-on investigative skills and an understanding of Science through practical activities. The skills for Working Scientifically are fostered through these activities when appropriate. Whenever an investigation is taking place children will be made aware of Health and Safety considerations and will be encouraged to develop the idea of fair testing as well as other types of enquiry.

At Key Stage One pupils spend approximately 1.5-1.75 hour per week rising to 2 hours per week at Key Stage 2.

In Key Stage 2 Teachers will set weekly science activities to be completed at home.

## **DEVELOPING AND MONITORING THE SCIENCE CURRICULUM**

The plan for developing the Science curriculum and managing changes is outlined in the Science action plan. The Science Co-ordinator / Headteacher are responsible for the management of changes in the curriculum and resources.

The knowledge and understanding to be covered at school within the National Curriculum will be taught mainly by using the Kent scheme of work and Collins Snap Science as a basic scaffold but there is freedom to use alternate resources and activities to achieve teaching objectives.

The school's science scheme of work sets out units through which Science will be taught, usually 2 units a term in each year. This ensures a balanced coverage and progression throughout the school but teachers have freedom to re-order topics within the year to best meet curriculum objectives; while ensuring planning matches any changes.

It is important that the following Key Skills are developed through science. It is necessary to make children aware of these in the same way that we tell children about the learning objectives at the start of each lesson.

- Communication
- Application of number
- Information technology
- Working with others
- Improving own learning and performance
- Problem solving
- Thinking skills (information processing/ reasoning/enquiry/creative thinking/ evaluating skills)

It is important for the child to learn that not every activity results in the one right answer. Children have to be encouraged to learn from those investigations, which do not work, as from those which do.

The following positive attitudes will be fostered throughout all classroom and school activities. Attitudes relating to:

- Awe and wonder, interest and enthusiasm for discovery
- Willingness to be involved in group work
- Perseverance and diligence
- Open-mindedness
- Co-operation with others
- Self-criticism
- Responsibility
- Respect for living things

## **ORGANISATION OF RESOURCES**

The Science Co-ordinator manages Science resources and is responsible for ordering new and replacement equipment. Resources are centralised under the supervision of the Science Co-ordinator in the Science room. Items may be purchased from the science budget after consultation with science co-ordinator and subject to normal budget approval.

## **RESOURCES AVAILABLE FOR USE IN THE TEACHING OF SCIENCE AT ST. BERNARD'S PREPARATORY SCHOOL**

1. The school building / science room, school grounds.
2. Conservation area. Habitats in the conservation area include an insect garden, log pile, leaf litter, rock garden, and pond. Animals e.g. tadpoles, maggots, woodlice etc. are occasionally kept in school in the correct hygienic conditions.
3. Use of ICT Suite, audio-visual aids – slides, videos, TV, TV programmes, DVD's
4. Printed materials e.g. Ginn, QCA, Letts.
5. Commercial equipment in the science room, and materials collected by staff.
6. Places to visit for instruction and interest e.g. stream, cemetery, Science Open Days/Museums.
7. Visitors to school e.g. Science Theatre Group, A-Life, Animal Encounters, EBEEPT, Dentist, Mr Fennell.
8. I.C.T. Resources. Interactive whiteboard, interactive CD ROMS (Follens and Collins resources from year 1-6). Internet and subscription websites- Espresso, Twig Science, Snap Science (Year 3) e-chalk. Data Loggers, recording hand lenses.

## **ASSESSMENT, RECORDING AND FEEDBACK**

Science is a core-curriculum subject and on-going assessment of this subject has always been an integral part of good practice. Assessment of pupil's achievement and attainment in science aims to assist pupils in understanding their own progress, teachers in their planning as they tailor the curriculum to suit pupil's needs, parents and carers about their child's progress and the school's monitoring of progress and attainment.

Assessment of science will occur in the following forms:

- Elicitation of pupil's understanding of science concepts;
- Teacher assessment driven by careful use of lesson objectives and learning outcomes;
- Pupil self assessment;
- End of unit tests;
- End of year assessment.
- Common Entrance and SAT Type assessment.

Assessment is mainly informal in Early Years with progression for Early Learning Goals recorded in the ELG record booklet. In Year 1 work is assessed according to lesson objectives with a test at the end of the year. Year 2 have recording books which provide information for the class teacher when making the end of Key Stage 1 teacher assessment, together with CGP Study and Activity books. Year 3, 4, 5 and 6 pupils are assessed at the end of each topic and Years 4-6 have an end of year assessment.

A record of topic assessment and Working Scientifically attainment will be kept for each class at Key Stage 2. Pupils will be introduced to topic targets and will complete a self-assessment at the end of each topic. Teachers will set and monitor pupil attainment targets and lead pupil review of progress towards targets. Oral feedback is given to pupils in lessons individually, in groups and in whole class teaching. Written feedback is given through marking during and following lessons, identifying successes and suggesting improvements.

Parents will receive written reports of their child's academic achievements, other skills, abilities and progress. These will occur as scheduled in the schools reporting policy. Attainment descriptors for each year group are given and held centrally by the science co-ordinator; nomenclature for attainment has now been specified as WTS- working below national standard and EXS and at national standard. In the Primary Science curriculum no performance descriptors are given for working at mastery standard.

## **HEALTH AND SAFETY**

Whilst Primary Science does not require pupils to handle dangerous chemicals etc., some Science lessons involve experiments and demonstrations which are potentially hazardous if mishandled. Teachers will always warn pupils of any foreseen dangers and ensure that, where appropriate, they take necessary precautions. We expect all our pupils to learn to take responsibility for the safety of themselves and their classmates. This is, in fact, one of the requirements of the Programmes of Study. However, for Early Years, and Years 1, 2 and 3 Class teachers will use their professional judgement as to the suitability of such experiments for their class, bearing in mind their age and maturity, and will also ensure that pupils with physical disability or behavioural problems are kept free from risk. Class teachers will always supervise all activities and it will sometimes be appropriate to have other adult helpers. In the unfortunate case of an accident, a designated First Aider will do all he / she can to administer First Aid. Any accidents will be recorded as detailed in the School's Health and Safety Policy. The Science Handbook 2017-18 contains a general risk assessment and individual Risk Assessments must be made for activities falling outside normal practice.

It is important to have a balanced approach to risks of experiments as an over-cautious approach can inhibit experimentation and enjoyment of this subject. Practical activities in science should be as safe as necessary to provide pupils with relevant opportunities and experiences. In cases of uncertainty, teachers will refer to the Head Teacher for guidance and a specific Risk Assessment form completed.

**Applies to:**

Whole School including Early Years Foundation Stage (EYFS), all staff, peripatetics, clubs and extra-curricular activity providers, volunteers, Trustees, Governors.

**Related policies:**

Curriculum, Safeguarding Portfolio, Health and Safety, Premises Management Documents

**Availability**

This Policy is available to parents on the website [www.stbernardsprep.org](http://www.stbernardsprep.org) or a copy can be requested from the school office.

**Monitoring and Review**

The Governors will undertake a formal annual review of this policy for the purpose of monitoring the efficiency with which the related duties have been discharged or earlier if significant changes to the systems and arrangements take place, or if legislation, regulatory requirements or best practice guidelines so require.

Signed by \_\_\_\_\_

Headmaster \_\_\_\_\_

Date \_\_\_\_\_

Chair of Governors \_\_\_\_\_

Date \_\_\_\_\_