

Sacred Heart Primary School

Science Policy

*Let it be known to all who enter here that
Christ is the reason for this school,
the unseen but ever present teacher in its classes,
the model for its children, the inspiration for its staff.*

1 Aims and objectives

1.1 Science teaches an understanding of natural phenomena and develops a sense of awe and wonder. It aims to increase the appreciation of the school's environment and from there the appreciation and respect for the wider world. We also aim to encourage curiosity and awe of God's creation, and foster a concern for its future and its heritage. As taught in *Gaudium et Spes* (Vatican 11) we are created in the image of God capable of knowing and loving God and appointed by God to master all of the earth for the sake of God's glory.'

1.2 Science aims to stimulate a child's curiosity in finding out why things happen in the way they do. It teaches methods of enquiry and investigation to stimulate creative thought. Children learn to ask scientific questions and begin to appreciate the way science will affect their future on a personal, national, and global level.

1.3

Our aim is to ensure that science nurtures the curiosity that is innate within pupils. We intend for our pupils to become science literate, whereby they can ask questions, challenge theories and prove research based on the knowledge that they have attained. This is achieved through a rich varied curriculum, tailored to the needs of our pupils who become responsible for their own progress and active visible-learners through critical thinking and reflection. We want our pupils to understand and explain the world around them, wherever possible through first-hand experiences. Our curriculum intends for pupils to make progress and develop their scientific knowledge through a carefully sequenced body of skills and essential knowledge that builds on what has been taught before, engaging and encouraging scientific learning, with the hope that pupils will be motivated to continue to advance their skills into the next stage of their education and life experiences, creating life-long scientific learners.

2 Teaching and learning style

2.1 We use a variety of teaching and learning styles in science lessons. Our principal aim is to develop children's knowledge, skills, and understanding. Sometimes we do this through whole-class teaching, while at other times we engage the children in an enquiry-based research activity. We encourage the children to ask, as well as answer, scientific questions. They take part in role-play and discussions and they present reports to the rest of the class. They engage in a wide variety of problem-solving activities. Wherever possible, the pupils are involved in 'real' scientific activities, for example, researching a local environmental problem or carrying out a practical experiment and analysing the results.

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2.2 We recognise that there are children of differing scientific abilities in all classes and we ensure that we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this in a variety of ways by:

- setting common tasks which are open-ended and can have a variety of responses;
- setting tasks of increasing difficulty (we do not expect all children to complete all tasks);
- grouping children by ability in the room and setting different tasks for each ability group;
- providing resources of different complexity, matched to the ability of the child;
- using classroom assistants to support the work of individual children or groups of children

3 Science curriculum planning

3.1 At Key Stage 1 and 2 the National curriculum for science provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Planning is informed by and aligned with the national curriculum, supplemented by the 'Plymouth Science' scheme of learning, to ensure every teacher teaches the knowledge appropriate to that age group. The progression of skills in knowledge and understanding and working scientifically are developed through the year groups and scientific enquiry skills are of key importance within lessons. Consideration is given to how children will be challenged within their scientific learning as well as how learners will be supported. The sequence of lessons helps to embed scientific knowledge and skills, with each lesson building on previous learning. Other sources may be used to enhance planning the lessons to meet the needs of the children.

3.2 Key Stage 1

The principal focus of science teaching in Key Stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. During years 1 and 2, pupils need to develop scientific methods, processes and skills through:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

These will be taught through the following topics:

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Plants
Animals including humans
Everyday materials
Seasonal changes (on going topic throughout the year)
Living things and their habitats
Uses of everyday materials

3.3 Lower Key Stage 2

The principal focus of science teaching in years 3 & 4 is to enable pupils to broaden their scientific view of the world through:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

These will be taught through the following topics:

Plants
Animals including humans
Everyday materials
Rocks
Light
Forces and magnets
Living things and their habitats
States of matter
Sound
Electricity

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3.4 Upper Key Stage 2

The principal focus of science teaching in upper Key Stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- Identifying scientific evidence that has been used to support or refute ideas or arguments.

These will be taught through the following topics:

Living things and their habitats
Animals including humans
Properties and changes of materials
Earth and Space
Evolution and Inheritance
Light
Electricity and Forces

Planning is monitored by the SMT and Science Co-ordinator to ensure consistency, progression, coverage and a balance between teacher led and practical activities.

4 EYFS

- 4.1 In Early Years, children engage in scientific activities through their study and acquirement of Understanding the World (UW). Nursery pupils follow the Development Matters curriculum for UW and are assessed according to the document's Ages and Stages. Reception pupils follow the Early Years Curriculum for UW and are assessed initially against Development Matters criteria, moving to the Early Years Profile towards the end of their Reception year.

5 The contribution of science to teaching in other curriculum areas

5.1 English

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Science contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. Some of the texts that the children study in the English are of a scientific nature. The children develop oral skills in science lessons through discussions (for example of the environment) and through recounting their observations of scientific experiments. They develop their writing skills through writing reports and projects and by recording information.

5.2 Mathematics

Science contributes to the teaching of mathematics in a number of ways. The children use weights and measures and learn to use and apply number. Through working on investigations they learn to estimate, predict and record data. They develop the skills of accurate observation and recording of events. They use numbers in many of their answers and conclusions.

5.3 Information and communication technology (ICT)

Children and teachers use ICT in science lessons where appropriate. They use it to support their work in science by learning how to find, select, and analyse information on the Internet. Children use ICT to record, present and interpret data and to review, modify and evaluate their work and improve its presentation. Teachers are encouraged to use ICT to promote and enrich pupils' attainment in Science.

5.4 Personal, social and health education (PSHE) and citizenship

Science makes a significant contribution to the teaching of personal, social and health education. The subject matter lends itself to raising matters of citizenship and social welfare and children are encouraged to take part in debates and discussions. They organize campaigns on matters of concern to them, such as helping the poor or homeless. Science promotes the concept of positive citizenship.

5.5 Spiritual, moral, social and cultural development

Science raises many social and moral questions. Children are given the chance to reflect on the way people care for the planet and how science can contribute to the way we manage the earth's resources. Science teaches children about the reasons why people are different and by developing their knowledge and understanding of physical and environmental factors, it promotes respect for other people in God's world.

6 Teaching science to children with special educational needs

6.1 At our school 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 through equality of opportunity. 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.

6.2 When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style, and differentiation – so that we can take some additional or different action to enable them to learn more effectively. This ensures that our teaching is matched to the child's needs. If a child has an IEP it may include, as appropriate, specific targets relating to science.

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7 Assessment and recording

- 7.1 Assessment is used daily in the form of Assessment for Learning. This informs the planning for future lessons and identifies where further individual or group support is needed. Work outcomes are monitored regularly to ensure that they reflect the learning and understanding of the key knowledge and working scientifically skills embedded across the lessons. Teachers adapt their planning for the next lesson to ensure there is time to address these misconceptions. These misconceptions may be addressed through in class marking, conferencing, verbal feedback or with the use of mini plenaries. Within our approach, children are encouraged to ask their own questions and use their skills to discover answers, becoming increasingly more independent as they move throughout the school. Assessment can be carried out in a variety of ways, developing the skills with increasing depth and challenge as the children move through the year groups. SIMS is used to track pupil progress and attainment in Science. These judgements will be based on the expectations in Chris Quigley Education Ltd. We will record and use this information as the basis for assessing the progress of each child.

8 Resources

- 8.1 Science resources are kept in a central store where there is a box of equipment for each unit of work.

9 Safety

- 9.1 Teachers have a responsibility to plan safe activities for science. Subject Leaders are responsible and accountable to the Head Teacher for all matters relating to health, safety and welfare within their subject areas. When carrying out scientific investigations, certain work is potentially hazardous. Normally, this work is carried out in the classroom and no special facilities are provided. A risk assessment should be completed by the class teacher for any hazardous activity.

10 Monitoring and review

- 10.1 It is the responsibility of the science subject leader to monitor the standards of children's work and the quality of teaching in science. The science subject leader is also responsible for supporting colleagues in the teaching of science, for being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school. The science subject leader has specially-allocated time for fulfilling the vital task of reviewing samples of children's work and visiting classes to observe teaching in the subject.

Approved by the Governing Body

Signed: _____

Sept 2022