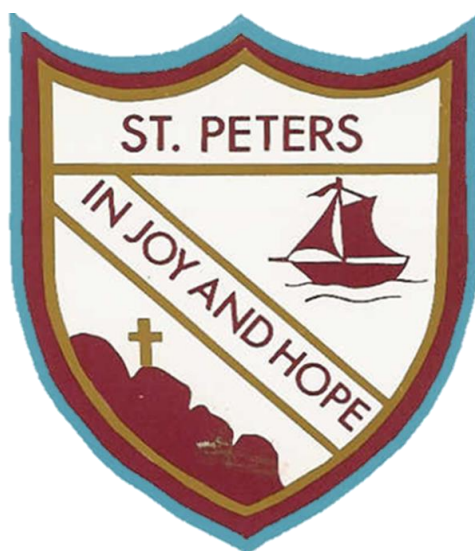


# St Peter's Catholic Primary School



## Science Policy

Agreed by Governors: June 2021

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

### **Statement of intent:**

At St Peter's Catholic Primary School, we believe that the teaching and learning of Science should stimulate and excite children's curiosity about the world they live in. Science provides the foundation for understanding the world around us and is vital to the world's future prosperity. It not only teaches pupils about the world they live in, but also how to study it and make sense of various phenomena through the specific disciplines of biology, chemistry and physics. As such, it is a fundamental aspect of all children's learning.

Through adherence to this policy, we ensure statutory compliance with the national curriculum as well as providing all pupils with a solid grounding in scientific knowledge and experimental processes.

### **The aims of this policy and our science curriculum**

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 21<sup>st</sup> century. Through the framework of the National Curriculum 2014, science aims to:

- Stimulate children's interest and enjoyment of science by building on their enthusiasm, curiosity and natural sense of wonder about the world.
- Develop pupils' ability to pose questions, investigate using correct techniques, accurately record findings, use appropriate scientific language and analyse their results.

Making pupils aware of and alert to links between science and other school subjects, as well as their lives more generally.

Help pupils develop the skills of prediction, hypothesising, experimentation, investigation, observation, measurement, interpretation and communication.

Deliver all the requirements of the national curriculum in relation to science and cover major scientific concepts.

Ensure pupils have sufficient scientific knowledge to understand both the uses and implications of science, today and in the future. This will also give pupils an appreciation of the changing nature of scientific knowledge.

Ensuring science lessons are purposeful, accurate and imaginative, allowing children to explore science in forms which are relevant and meaningful to them.

- Encourage children to treat the living and non-living environment with respect and sensitivity.
- To encourage children to raise questions and learn how to investigate and explore these using both first-hand experience and secondary sources.
- Whilst working as scientists themselves, discover 'famous' scientists and their contribution to our knowledge and understanding of the world around us.
- To help children recognise and assess risks and hazards to themselves and to others when working with living things and materials and to take action to control them.

### **Legal framework**

This policy has due regard to statutory legislation and guidance including, but not limited to, the following:

DfE (2013) 'Science programmes of study: key stages 1 and 2'

DfE (2014) 'Statutory framework for the early years foundation stage'

The Control of Substances Hazardous to Health Regulations (COSHH) 2002

The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 2013

This policy will be used in conjunction with the following school policies and procedures:

Health and Safety Policy

Accident Reporting Procedure Policy

**The subject leader is responsible for:**

- Preparing policy documents, curriculum plans and schemes of work for the subject.
- Reviewing changes to the national curriculum and advising on their implementation.
- Monitoring the learning and teaching of science, providing support for staff where necessary.
- Encouraging staff to provide effective learning opportunities for pupils.
- Helping to develop colleagues' expertise in the subject.
- Organising the deployment of resources and carrying out an **annual** audit of all science resources.
- Liaising with teachers across all phases.
- Communicating developments in the subject to all teaching staff.
- Leading staff meetings and providing staff members with the appropriate training.
- Organising, providing and monitoring CPD opportunities in the subject.
- Ensuring common standards are met for recording and assessment.
- Advising on the contribution of science to other curriculum areas, including cross-curricular and extra-curricular activities.
- Collating assessment data and setting new priorities for development of science in subsequent years.

**The classroom teacher is responsible for:**

- Acting in accordance with St Peter's Catholic Primary School Science Policy, ensuring that lessons are taught in line with the school's Health and Safety Policy at all times.
- Liaising with the science coordinator about key topics, resources and supporting individual pupils.
- Ensuring that all of the relevant statutory content is covered within the school year.
- Monitoring the progress of pupils in their class and reporting this on a termly basis.
- Reporting any concerns regarding the teaching of the subject to the subject leader or a member of the senior leadership team (SLT).
- Undertaking any training that is necessary in order to effectively teach the subject.

**The National Curriculum**

**Foundation Stage**

During the Early Years, in accordance with the 'Statutory framework for the early years foundation stage', focus will be put on the seven areas of learning, (personal, social and emotional development, communication and language, physical development, literacy, mathematics, understanding the world, expressive arts and design) with the scientific aspect of pupils' work relating to the objectives set out within the framework. Learning fosters a hands-on curiosity for exploration of the world around us. Children are encouraged to develop their scientific skills through carrying out investigations, by making careful observations and using the language of science to compare and explain results. They begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about Science is done through the use of first-hand practical experiences, but there is also some use of appropriate secondary sources, such as books, photographs and videos. 'Working scientifically' is described separately in the programme of study, but is always taught through and clearly related to the teaching of substantive science content in the programme of study.

Pupils read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at KS1.

## **Years 1 and 2**

The principal focus of teaching in KS1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They are encouraged to be curious and ask questions about what they notice.

Pupils will be taught to:

Ask simple questions and recognise that they can be answered in different ways.

Observe closely, using simple equipment.

Perform simple tests.

Identify and classify.

Use their observations and ideas to suggest answers to questions.

## **Years 3 and 4**

The principal focus is to enable pupils to broaden their scientific view of the world around them. They do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and are beginning to develop their ideas about functions, relationships and interactions.

Pupils will be taught to:

Ask relevant questions and use different types of scientific enquiries to answer these questions, setting up simple practical enquiries, comparative and fair tests.

Make systematic and careful observations and, where appropriate, take accurate measurements using standard units and a range of equipment, including thermometers and data loggers.

Gather, record, present and classify data in a variety of ways to help answer questions.

Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.

Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

Identify differences, similarities or changes related to simple scientific ideas and processes.

Use straightforward scientific evidence to answer questions or to support their findings.

## **Years 5 and 6**

The principal focus in this age phase is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They will encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They will also begin to recognise how scientific ideas change and develop over time.

Pupils will be taught to:

Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.

Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.

Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.

Use test results to make predictions to set up further comparative and fair tests.

Report and present findings from enquiries, including conclusions, causal relationships and explanations of the results and the degree of trust in them. This should be in oral and written forms such as displays and other presentations.

Identify scientific evidence that has been used to support or refute ideas/arguments.

### **Cross-curricular links**

Wherever possible, the science curriculum will endeavour to provide opportunities to establish links with other curriculum areas.

### **English**

Pupils are encouraged to use their speaking and listening skills to describe what is happening.

Pupils' writing skills are developed through recording their planning, what they observe and what they found out.

Science based texts are sometimes used in English lessons and in guided reading sessions.

Literacy targets will be displayed in the children's science books to ensure high standards of literacy skills are transferred across the curriculum.

### **Maths**

Science will involve a degree of numeracy at all levels.

Pupils use their knowledge and understanding of measurement and data handling.

Where appropriate, pupils record their findings using charts, tables and graphs.

### **ICT**

Pupils will use ICT to locate and research information.

ICT will be used to record findings, using text, data and tables.

Pupils are encouraged to use calculators and other electronical devices, gaining confidence throughout their school experience.

### **PSHE**

Health education is taught as part of the science unit about ourselves, which covers:

- Health and growing
- Teeth and eating
- Moving and growing
- Keeping healthy
- Life cycles

### **History**

Scientific discoveries and the contribution of individuals to science will be studied.

## **Geography**

Links with biogeography/geology/geochemistry

## **Art/DT**

Certain science topics lend themselves to focus in this area of the curriculum. Such examples include Earth and space (observational drawing/modelling materials). Artists such as Leonardo DaVinci could be studied and building construction links with DT could be made through exploring forces and creating structures e.g. bridges.

## **Music**

This aspect of the curriculum can be covered through topics such as sound. For example: How sound is created/exploring instruments/movement and vibration.

## **PSED**

Pupils' development will be focussed on the vastness of science and the natural world, encouraging a sense of awe.

Pupils are encouraged to think about the effect of scientific discoveries on the modern world.

Current scientific developments and issues will be discussed in the classroom, where appropriate.

## **Teaching and learning**

Pupils will be taught to describe associated processes and key characteristics in common language, as well as understand and use technical terminology and specialist vocabulary.

Lessons will allow for a wide range of scientific enquiry, including the following:

Questioning, predicting and interpreting

Pattern seeking

Practical experiences

Collaborative work

Carrying out investigations

Carrying out time-controlled observations

Classifying and grouping

Undertaking comparative and fair testing

Researching using secondary sources

Teachers will be provided with a 'Types of Enquiry' map for their year group which outlines examples of the 5 aspects of working scientifically for the topics.

Opportunities for outdoor learning will be provided wherever possible.

Each year group will have the opportunity to undertake an external or internal educational visit, which will seek to be science based, at least once a year.

A science scheme of work folder is located in every classroom and available to access on the shared drive; this can be used to promote progression throughout the school.

## Planning

- All relevant staff members are briefed on the school's planning procedures as part of staff training.
- Throughout St Peter's science is taught as a core lesson and cross-curricular themes and links are made where appropriate.
- Teachers will use the key learning content in the DfE's 'Science programmes of study: key stages 1 and 2' and the national curriculum as a starting point for their planning.
- Lesson plans will demonstrate the balance of visual, auditory and kinaesthetic elements used in teaching, ensuring that all pupils with different learning styles can access the learning experience.
- Long-term planning will be used to outline the units to be taught within each year group.
- Medium-term plans will identify national curriculum links, focus (main learning activities) resources, assessment opportunities and interventions. Knowledge organisers will be used to highlight NC links, previous knowledge, key vocabulary, key information and diagrams.
- Medium-term plans will be shared with the subject leader and SLT to ensure there is progression between years. These will be uploaded to staff shared documents.
- Short-term planning will be used flexibly to reflect the NC focus of the lesson, the success criteria and the aim of the next lesson.
- Short-term planning is the responsibility of the teacher. This is achieved by building on their medium-term planning, taking into account pupils' needs and identifying the method in which topics could be taught.
- Short-term plans are solely for the benefit of the classroom teacher and do not need to be shared with the subject leader.
- All lessons will have national curriculum links, which are shared and reviewed with pupils via knowledge organisers.

## **Equal Opportunities**

We ensure that all pupils have equal access to a broad and balance curriculum regardless of age, gender, race and ability.

All children will participate in science activities and tasks will be tailored to provide appropriate challenges to specific individuals and groups. Adult support will be used when appropriate.

At St Peter's we will ensure that:

- All pupils will have equal access to the entire science curriculum, including practical experiments.
- Gender, learning ability, physical ability, ethnicity, linguistic ability and/or cultural circumstances will not impede pupils from accessing all science lessons.
- Where it is inappropriate for a pupil to participate in a lesson because of reasons related to any of the factors outlined above, the lessons will be adapted to meet the pupil's needs and alternative arrangements involving extra support will be provided where necessary. See SEN policy for further information.
- All efforts will be made to ensure that cultural and gender differences will be positively reflected in all lessons and teaching materials used.

- St Peter's Primary School aims to provide more academically able pupils with the opportunity to extend their scientific thinking through extension activities such as problem solving, investigative work and research of a scientific nature.

### **Health and Safety**

Activities are planned with due regard to our Health and Safety policy. Risk assessment are undertaken as appropriate and kept with teacher's planning.

When working with tools, equipment and materials in practical activities and in different environments, pupils are taught:

- About hazards, risks and risk control;
- To recognise hazards, assess consequent risks and take steps to control the risks to themselves and others;
- To use information to assess the immediate and cumulative risks;
- To manage their environment to ensure the health and safety of themselves and others;
- To explain the steps they take to control risks.

Adults have a responsibility to report accidents and near-misses following the procedure outlined in the school's **Accident Reporting Procedure Policy**. All staff members will be shown how to correctly use equipment as part of their induction training. Any 'new' experiments or activities which a teacher has not used in the classroom before will be trialled prior to being performed with pupils.

### **Planning and Assessment for learning**

All teachers are responsible for the planning, assessment, recording and reporting of science, supported by the subject leader. In Year 1-6, each lesson begins with a quiz assessing key knowledge and vocabulary and each unit of work is preceded by a 'Quick Quiz' which allows the teacher to assess the children's level of science understanding of each topic rather than their reading ability. Once completed, the teacher will determine whether the pupil is working at, below or above ARE according to their score. A record of who is at 'emerging', 'expected' and 'exceeding' stages is kept and updated termly on target tracker. Teacher assessments are also carried out as part of every classroom activity and is a continuous process. Such assessments/observations include:

Talking to pupils and asking questions

Discussing pupils' work with them

Live marking

Specific assignments for individual pupils

Observing practical tasks and activities

Pupils' self-evaluation of their work

In terms of summative assessments, the results of end of year assessments will be passed to relevant members of staff, such as the pupil's future teacher.

Parents will be provided with a written report about their child's progress during the summer term every year. These will include information on the pupil's attitude towards science, progress in understanding scientific methods, ability to investigate, and the knowledge levels they have achieved.

Verbal reports will be provided at parent evening during the Autumn and Spring terms.



Pupils with special educational needs and disabilities (SEND) will be monitored by the special educational needs coordinator.

### **Monitoring and Review**

The science curriculum is monitored by the science coordinator through staff meetings, observation of teaching, monitoring of planning and children's work, pupil voice and analysis of data. Science Lead will also closely monitor and track 2 selected pupils from each year group in accordance with Sc1 to ensure continuity and progression. Science is also discussed and monitored during pupil progress meetings by the assessment coordinator. Feedback is given to staff and support given where necessary.

### **Involvement of Classroom Assistants/Student Teachers / Volunteer Helpers**

Teachers are responsible for ensuring that teaching assistants and classroom helpers are aware of the relevant sections of this policy, in particular the Health and Safety implications of the activities they are involved in. Verbal guidelines should be given which include any special needs or requirements individual children may require.

### **Equipment and Resources**

The science specific resources are kept in the science cupboard, located in Year 5 classroom. The subject leader, in liaison with the facilities manager, is responsible for ensuring that all resources and equipment are sufficiently maintained. Equipment will be checked prior to each use and any damages or defects must be reported to the subject leader immediately. The subject leader is responsible for maintaining an inventory of resources. Staff members must inform the subject leader of any changes regarding science resources, such as broken items or when new resources are required. Any equipment or resources which are a cause of concern will be removed from the science cupboard immediately. The subject leader will carry out an annual audit of the science resources, reordering any consumables when necessary. Class teachers can discuss the need for new resources with the subject leader.

New online resources and useful sites are introduced and shared when they arise. All teachers are encouraged to invite visitors in to enhance science experiences and learning.

### **Partnership with Parents / Carers**

Each term, parents/carers are given termly overviews of areas being taught. There are two scheduled parent / carer evenings in the year. Parents are able to contact the school if they have any concerns about any aspect of their child's work. Parents are encouraged to support their child's science experiences through their participation in a whole school homework for STEM fortnight.

### **Enhancing the Curriculum**

- ✓ STEM fortnight activities including an exhibition for parents and pupils to be implemented 2021/2022.
- ✓ After school clubs (to be implemented 2021/2022)
- ✓ RSPB: nature workshops (years 1, 3 and 5)
- ✓ Super Science competition: inter school science competition organised by cluster group, held at Woodchurch High and supported by All About STEM and Science 2 U.
- ✓ Explorify - whole school
- ✓ Science spotlight visible in school library and in classrooms (suitcase libraries will have a sample of science books)

### **Monitoring and review**

This policy will be reviewed on an annual basis by the subject leader, in collaboration with the headteacher. The subject leader will monitor teaching and learning in science at St Peter's Primary School, ensuring that the content of the national curriculum is covered. Any changes made to this policy will be communicated to all teaching staff.

### **Subject Leader**

The subject leader is Louise Gorry