Science Policy

St Patrick's Catholic Voluntary Academy

Approved by:	Headteacher	**Date:** September 2024
Last reviewed on:	September 2024	
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Our Vision of Discipleship

We are a distinctive Catholic community, which lays strong foundations and values of lifelong learning. We believe we are made in the image of God and are special in his eyes. We will endeavor to ensure that school, parish and home, work as one. Saint Patrick's is a unique place of learning where all are motivated to be the best they can be. We embrace the inspirational challenge to nurture a Christ-centred curriculum.

Our approach is to take pride in developing outstanding teaching and learning by holding the highest expectations of all our pupils and knowing the children well. By focusing on what unites societies rather than our differences, we strive to create a culture of tolerance, equality and friendship not just among pupils but all members of society.

We will provide a place where everyone can flourish, feel safe and are valued. We aim to provide innovative learning opportunities in a forward-thinking environment, where all are prepared to embark on future challenges with excitement and confidence. The world of learning will embed qualities such as integrity, honesty, faith and truth.

All children are challenged to strive for academic, creative, sporting and personal accomplishment within a broad, vibrant and rich curriculum. Our students are given time to explore subjects and develop deep understanding.

Our commitment is to enable our children to be confident, autonomous learners by developing a range of key learning skills including resilience, independence, patience, perseverance and teamwork. We want our children to be prepared for life in modern Britain and the global society and we understand the challenges our children will face in the next phase of life's journey.

Contents

1. Rational and Objectives

A high-quality Science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes. (National Curriculum 2014).

Science at Saint Patrick's allows children to understand what goes on in the world around them, what they can do to look after the world and how they can also look after themselves. Children are encouraged to work scientifically, be observational and undertake experiments.

This policy should be read in conjunction with the Science Content and Concept Organiser which states the intended learning and end points. This is used to create detailed medium-term plans and individual sessions.

Audience:

This document is intended for:

- All teaching staff and staff with classroom responsibilities.

- School governors.

- Parents

- LA Advisor/ Inspectors

- Inspection Teams.

Copies are provided for staff and governors, as well as published on the School Website.

Paper copies of all documents are available upon request from the School Office or from the Curriculum Lead.

2. Aims

We aim to:

- Ensure children see themselves as a scientist, no matter what age they are or what background they are from.
- Enable children to make links between science and other subjects.

- Make children aware of the many jobs relating to science and that they could have one of these jobs if they would like.
- Ensure that children leaving Key Stage 2 are well equipped for secondary school with the science knowledge and skills that are required.
- Promote sustainability and allow children to know what they can do in their day-to-day life to help the environment.
- Promote a healthy lifestyle.
- Encourage independent and team-working skills.
- Encourage being aware of the health and safety needed in science.
- Ensure practical activities and the chance for children to investigate their ideas.

3. Health and Safety:

See Whole School Policy on Health and Safety.

Children are taught the importance of keeping safe when carrying out science experiments, and looking after and being careful with any equipment that is to be used. Children are encouraged to identify why we may need to do something linked to health and safety during an experiment, such as washing hands after exploring the parts of a flower. Permission for any food tasting as part of science is checked prior to the lesson, and parents are informed via a post on Class Dojo about any locality trips that are to take place as part of science.

4. Progression:

In the Early Years, children experience science through Understanding the World, through activities that allow them to think creatively and critically. Staff encourage children's curiosity by being play partners, asking 'wondering' questions about what they are doing and what would happen if they were to do something another way.

Learning from the Early Years is built upon in Key Stage One and in Key Stage Two. Previous learning is revisited before new learning occurs, to ensure misconceptions are addressed and that children are gaining a deeper understanding as they build upon their current knowledge with new knowledge. Learning is broken down into small steps to support this and reduce cognitive overload.

5. Content, delivery and curriculum organisation:

Planning and delivering the curriculum

Our curriculum has been created to ensure that the skills and knowledge taught meets and exceeds the aims of the national curriculum, where children have the opportunity to ask questions and learn through practical, hands on activities. Science in Key Stage One and Key Stage Two is taught using the White Rose Education science scheme, it is taught on a 2-year cycle to ensure that by the end of each key stage, children have experienced all that they need to know for their key stage, and that their learning has been built upon in appropriate small chunks. The planning from the White Rose Education scheme is put into the Saint Patrick's medium-term plan format, and adapted.

Science is delivered every week for 1 hour and 15 minutes. This time slot for science is on the same day for most Key Stage One and Key Stage Two classes with some variations due to timetable needs. 'Explorify' tasks that are linked to learning are used at the beginning of lessons to promote discussion, and 'Twig Science Reporter' is used at the end of lessons to show how science is all around us. Key Stage 2 classes use 'Engage, Explore, Extend' activities at the beginning of new topics to assess what they already know and to identify misconceptions. Practical hands-on experiments and activities are used to deepen children's understanding of the scientific content they are learning and embed key ideas and children are offered a variety of ways to record their ideas.

Working Scientifically

The concept of working scientifically is used in every lesson across all year groups. Children are taught to use the '5 lines of enquiry' in supporting them to work scientifically:

- Comparative and fair testing – identifying the effect of changing one variable while keeping other variables the same.
- Pattern seeking – making observations to explore natural events where there are variables that cannot be controlled.
- Observing over time – identify and measure changes in living things, materials, and physical processes, over seconds, minutes, hours and months.
- Identifying classifying and grouping – arranging things into groups according to shared qualities or characteristics.
- Researching using secondary sources – using videos, internet, books etc. to find evidence and answer questions.

Impact:

Our approach to the teaching of Science at Saint Patrick's Catholic Voluntary Academy will result in engaging, high quality science education which provides children with an understanding of the world around them. Children will see themselves as a scientist, no matter what age they are, with an awareness of possible future roles and careers in the scientific world. Children will be able to question ideas and reflect on knowledge. Our

children will work practically and collaboratively, they will be able to articulate their understanding of scientific concepts and be able to express and reason using scientifically rich language.

As a Catholic school, understanding the connection between the scientific world and sustainability, it is important we share a knowledge and understanding of practically what we can do to support the common good in our day-to-day lives to help the environment which is belonging to and meant for all.

The impact of learning will be assessed by the subject lead with the curriculum leader through a triangulation of activities, which include: lesson observations, planning scrutinies, book looks, pupil voice, staff voice and expected subject content and progression.

6. Curriculum Enrichment:

Children's learning in Science is further supported through the arrangement of a range of educational visits to sites outside of school, as well as where possible having visitors in to speak to the children. National Science Week is celebrated across school in March. An after-school science club is offered to Year 3 and Year 4 children.

7. Classroom Organisation and Teaching Style:

Class Teachers are responsible for their own class organization and teaching style in relation to Science, whilst at the same time ensuring these complement and reflect the overall aims and philosophy of the school.

In classes children are taught in a variety of ways, with an emphasis on adaptive teaching. This may be:

- Individually
- In groups to support one another, to encourage investigative skills, co-operation and effective learning together.
- As a class, where introductions, modelling and discussions are appropriate.

8. Inclusion:

We are a fully inclusive school and all children at St. Patrick's Catholic Voluntary Academy are given equal opportunities in Science, regardless of their gender, academic ability, Special Educational Need, social, cultural and linguistic background. All children participate in scientific activities and experiments and activities are carefully planned and adapted according to the needs of our children. Adaptive teaching is used to provide support and scaffold for children who may need this, as well as to stretch and challenge children.

For gifted and talented pupils, teachers provide additional opportunities to take responsibility, develop leadership skills, think scientifically, use and apply their Scientific talents for the good of the class or the wider community.

9. Gifted and Talented:

The words “gifted” and “talented” can be used in many different ways. The Department for Education and Skills uses the following definitions:

Gifted: the top 5%-10% of pupils per school measured by actual or potential achievement in English, Maths, Science, History, Geography, Modern Foreign Languages, RE, ICT or Design and Technology.

Talented: the top 5%-10% of pupils per school measured by actual or potential achievement in the subjects of Art, Music, PE or the Performing Arts. However, one element of this description should be emphasized: it is the top 5%-10% of pupils, *per school, regardless of the overall ability profile of the pupils.*

How to identify the More Able in Science:

Parent and Pupil Feedback: a student might have interests outside of school that teachers are unaware of. Parents should be invited to communicate this information to teachers. Equally pupils should be encouraged to identify their own individual strengths and weaknesses.

Teacher identification: teachers are often best placed to identify which students are gifted or talented. They may also be aware of when students with gifted and talented potential are underachieving.

What support should More Able children be given?

Once the More Able children have been identified, our school will begin a coherent and consistent provision strategy. This will usually involve a combination of the following methods of support.

Enrichment: when children are encouraged to go beyond the usual limits of a subject or topic. Enrichment activities might involve extra classroom exercises or more open-ended project work.

Extension: when children are given activities that develop higher order thinking skills and work practices. Extension activities help children to work with greater autonomy and self-discipline.

10. Records and Assessment

Children record their work in an individual Science book, and photographs are used in PicCollages or on SeeSaw to show what has been done if the lesson has been more practical. Medium term plans have a dedicated ‘wow’ moments section, for anything a child has said or done that has stood out as part of the science unit.

Assessment for Learning is used in every science lesson across the school to assess whether children have understood a concept or if misconceptions have occurred. This allows for misconceptions and gaps to be addressed, ensuring we are building on secure scientific understanding. The ‘Engage, Explore, Extend’ activities used in Key Stage Two at the beginning of a new topic are also used to assess what children already know and address misconceptions. End of topic tasks/quizzes are also used to assess. Parents and Carers are informed of their child’s progress and achievements in their end of year report.

11. Roles and responsibilities

11.1 The governing board

The governing board will hold the Headteacher to account for the implementation of this policy.

The governing board has delegated the approval of this policy to the Headteacher.

11.2 The Headteacher

The Headteacher is responsible for ensuring that Science is taught consistently across the school.

11.3 Staff

Staff are responsible for:

- Delivering Science in a creative and inspiring way
- Monitoring progress
- Responding to the needs of individual pupils

The Role of the Science Subject Leader

- Supports colleagues in their teaching by keeping them informed about current developments in the subject.
- Provide a summary of the children's work and observe Science lessons across the school.
- Plan CPD for staff.
- Monitor provision of the curriculum and resources across the whole school.
- Monitor the progress pupils have made pre and post teaching through assessment activities, not just assessing against the intended end points.
- Provide adequate resources for all classes which are catalogued, stored and replenished as required.

11.4 Pupils

Pupils are expected to engage fully in Science, through lessons which are both interesting and inspiring.

12. Monitoring arrangements:

The impact of Science learning will be monitored by the Subject lead through a triangulation of activities, which include:

- lesson observations

- planning scrutinies

- book looks

- pupil voice

- staff voice
- expected subject content organisers and progression documents

13. Policy Monitoring and Review:

This policy is monitored by the Science Leader. It is evaluated and reviewed by the whole staff and Governors annually to ensure that it continues to meet the needs of the children, staff and parents, and that it is in line with current DfE advice and guidance.

14. Links with other policies

This policy links particularly to the following policies and procedures:
- SEND Policy.
- Science Content and Concept Organiser.
- Health and Safety Policy
- PSHE Policy
- RHE Policy

September 2024.