St. Joseph's Catholic Primary School

Science

September 2026-2027

At St. Joseph's, we live love and learn by the example of Jesus.

Our curriculum intent

At St Joseph's primary school, our intent is to provide an outstanding Science curriculum that inspires curiosity, fosters a deep understanding of scientific concepts, and develops critical thinking skills. We aim to create a positive and inclusive learning environment where all pupils have equal opportunities to excel and thrive in Science. By understanding what our children already know, we inspire learning through excellent teaching and a passion for bringing a rich and varied curriculum to life. Our intent is to instil a love for Science, cultivating the next generation of scientists, engineers, and innovators.

We aim to create and foster, for all children, a strong understanding of the world around them whilst acquiring specific skills and knowledge to help them to think scientifically, to gain an understanding of scientific processes for all learners and develop an understanding of the uses and implications of Science, today and for the future.

Ultimately, our intent is to inspire future generations of scientists and foster a deep appreciation for the wonders of Science.

The National Curriculum for Science

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.

Aims

Through high-quality science teaching, we aim to help our pupils understand how major scientific ideas have played a vital role in society. Moreover, we aim to prepare our pupils for life in an increasingly scientific and technological world.

The 2014 National Curriculum for Science aims to ensure that all children:

- develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics
- develop understanding of the **nature, processes and methods of science** through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the **uses and implications** of science, today and for the future

At St. Joseph's we also aim to:

- Prepare our children for life in an increasingly scientific and technological world today and in the future.
- Help develop and extend our children's scientific concept of their world.
- Encourage open-mindedness, self-assessment, perseverance and developing the skills of investigation – including: observing, measuring, predicting, experimenting, communicating, interpreting, explaining and evaluating.
- Developing the use of scientific language, recording and techniques.
- Developing the use of computing in investigating and recording.
- Making links between science and other subjects.
- Encourage and enable pupils to offer their own suggestions, and to be creative in their approach to science, and to gain enjoyment from their scientific work.
- Enable children to develop their skills of co-operation through working with others, and to encourage where possible, ways for children to explore science in forms which are relevant and meaningful to them.
- To encourage children to raise questions and learn how to investigate and explore these using both first-hand experience and secondary sources.
- 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.

- To ensure that every child enjoys a sense of awe and wonder of the natural and man-made world and understand the need to treat them with care, respect and sensitivity.

Implementation

To achieve our intent, we follow a well-structured and cohesive Science curriculum that is carefully mapped to the National Curriculum and Early Years Framework (EYF Understanding of the World) which ensures progression of skills and knowledge across the primary phase which meets the needs of our children by following the Plymouth Science Scheme of Work. Our curriculum promotes both scientific knowledge and the development of working scientifically skills, enabling pupils to acquire a solid foundation for their future education and beyond.

Our science lessons are designed to be engaging, practical and enquiry-based. We provide a wide range of hands-on investigations, experiments and fieldwork opportunities to promote active learning and enhance pupils' understanding of scientific concepts. We utilise a variety of resources, including high-quality books, digital tools, and real-life examples that stimulate pupils' curiosity and deepen their understanding of scientific phenomena.

Children are encouraged to think scientifically, ask questions, and make connections between different scientific concepts. We provide opportunities for children to work collaboratively, fostering effective communication, teamwork and problem-solving skills. As part of our implementation strategy, we include regular formative assessment opportunities to monitor pupils' progress, identify misconceptions and provide timely feedback to support children's learning.

Science is taught as discrete subject and lessons as it is a core subject in its own right. Science is taught, planned and arranged in topic units. The subject leader, alongside the scheme of work, have made cross-curricular links where relevant, demonstrating the real-world applications of scientific knowledge and promoting a holistic understanding of Science in context. In KS1, children are taught 1.5-2.0 hours per week and in key stage 2, children are taught 2.0 hours per week.

We ensure that the teaching of science involves problem solving opportunities that allow children to find out for themselves; this is known as Child-Led Enquiry. Children are encouraged

to ask their own questions and are given opportunities to use their scientific skills and research to discover the answers for themselves. This curiosity is celebrated within the classroom or assemblies. Planning involves teachers creating engaging lessons, often involving high-quality resources to aid understanding of conceptual knowledge. Teachers use precise questioning in class to test conceptual knowledge and skills, and assess children regularly to identify those children with gaps in learning, so that all children keep up.

At St. Joseph's we place a strong emphasis on building upon the learning and skill development of the previous years. We implement a strategy called the 'Recall Challenge' to ensure that children effectively consolidate their knowledge from previous lessons or years. This involves posing targeted questions to our children to reactive prior learning. These question relate to a topic that has already been covered in Key Stage 1 (KS1), Lower Key Stage 2 (LKS2), or Upper Key Stage 2 (UKS2), depending on the year group.

By following this structured approach, we are able to reinforce children's understanding of topics that have been previously taught. This systematic revisiting of key concepts not only consolidates their learning but also helps to embed knowledge more effectively. It is through this deliberate and strategic reinforcement that we ensure a strong foundation for continuous academic growth and achievement.

British Science Week, run by the British Science Association is a ten-day celebration of science, technology, engineering and maths, featuring entertaining and engaging events and activities. British Science Week provides a platform to stimulate and engage children in their understanding of the scientific world around them. Each year group takes an aspect of the theme set and will investigate this further across a week. We also have a

In addition to British Science Week, the school holds an annual STEM Week, providing pupils with further opportunities to explore science, technology, engineering and mathematics. Throughout the week, children participate in a range of practical, hands-on activities and challenges designed to develop curiosity, creativity, problem-solving and critical-thinking skills. STEM Week encourages pupils to work collaboratively, apply their knowledge to real-life situations and develop an understanding of how STEM subjects are used in everyday life and future careers.

Programme of Study

Following the National Curriculum guidelines, each class should, alongside the teaching of, The requirements are outlined below:

EYFS (Early Years Framework)

Science in the Early Years Foundation Stage (EYFS) is an integral part of 'Understanding the World', one of the prime areas of learning and development. The EYFS framework recognises that play underpins the delivery of all aspects of learning at this stage. Children engage in play in varied ways, which can involve describing, discussing, showing and explaining. By providing a secure and stimulating environment with the necessary support, children are encouraged to explore, develop, and experiment as they play, enabling them to better comprehend the world around them.

The strand 'Understanding the World' within EYFS serves as a foundational introduction to scientific concepts. As children progress through EYFS and into Key Stage 1 and 2, this understanding forms the basis for more formalised science education. By nurturing children's curiosity and encouraging hands-on exploration from an early age, educators pave the way for a seamless transition to more advanced scientific learning in later years. Through this holistic approach, children are equipped with essential skills and knowledge to foster a lifelong love for science.

Year 1 & 2 (KS1)

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. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should 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 should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos

Year 3 & 4 (Lower KS2)

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

Year 5 & 6 (Upper KS2)

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 exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, children should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. Children should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Children should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

Science Topic Map

Year Group	Unit Coverage					
	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
Year 1	Materials		Plants	Scientists and Inventors Science Week	Animals including humans	
	Seasonal Changes – Winter / Autumn		Seasonal Changes – Spring		Seasonal Changes – Summer	
Year 2	Animals including humans (Ext Unit)		Materials	Living Things and their habitats Science Week	Plants (Ext Unit)	
Year 3	Rocks	Forces and magnets	Animals Including humans Science Week		Plants	Light
Year 4	Animals including humans	Sound	States of matter Science Week		Electricity	Living things
Year 5	Forces	Space	Properties of materials Science Week		Living things and habitats	Animals including humans
Year 6	Animals including humans	Evolution and inheritance	Electricity	Light Science Week	Living things and habitats	

**Please see each year group's long term planning as this is subject to change*

**Please find EYFS framework on the school's website under the tab 'curriculum maps'*

'Working Scientifically'

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand. 'Working scientifically' is embedded throughout the areas of learning in key stage 1 and 2 in biology, chemistry and

physics; this focuses on the key aspects of scientific enquiry which enable children to investigate and answer scientific questions. Children will develop 'Scientific Enquiry' skills (comparative fair testing, research, observations over time, pattern seeking and identifying and classifying) and 'Working Scientifically' skills (questioning, prediction, setting up tests, observation and measurement, recording, interpreting results and evaluating).

KS1

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 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.

LKS2

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 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.

UKS2

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

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

Spoken Language

The national curriculum for science reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely. They must be assisted in making their thinking clear, both to themselves and others, and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

Assessment and Recording

Children's progress is significant and therefore it is continually monitored throughout their time at St Joseph's and is used to inform future teaching and learning. At the end of each Key Stage, all the children are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study that are outlined in National Curriculum which is

statutory. All year groups will develop their understanding of the non-statutory requirements in order to develop the opportunities for children to work scientifically and provide a level of challenge for all.

All children will receive **verbal feedback** and **conferencing** as stated in the Fast Feedback Policy, based upon teacher assessment, in order for children to meet the learning intention. All children will receive **verbal feedback** on a two-week cycle and will receive two **conferences** every half term.

Various forms of assessment such as effective questioning, observations, talk/group-partner discussions, and live feedback are utilised to inform the planning and delivery of Science lessons. Furthermore, students undergo assessment of their scientific understanding at both the beginning and end of each topic. A unique approach we adopt is the use of concept maps with relevant images, enabling students to demonstrate their understanding. Initially, students outline their existing knowledge and subsequently, they update these maps in a different colour to indicate new findings. This structured method supports students in articulating their learning journey effectively.

Impact

Our science provision leads to a significant impact on pupils' knowledge, skills, attitudes and aspirations. Through our curriculum, children will acquire a deep understanding of scientific concepts and develop the ability to apply their knowledge in a range of contexts in a fun engaging approach. They become confident and independent thinkers, capable of questioning, hypothesizing, and critically evaluating scientific evidence.

We encourage the use of outdoor learning in the local and wider environment, which enables children to have first-hand experience with the world. Through the use of workshops, trips, STEM days, Science Week, home learning opportunities and challenges, interactions with experts, local charities, universities and secondary schools, children will develop an understanding that science has changed history and is continuing to do so today and in the future; a subject that is vital in everyday life.

The impact of our science curriculum extends beyond academic achievement. Children develop a lifelong love for Science, evidenced by their enthusiasm and engagement in and

outside of lessons. They become aware of the relevance of Science in their lives and the wider world, promoting a sense of awe and wonder about the natural world.

Through our outstanding science provision, we ensure that all children, regardless of their background or ability, make excellent progress and achieve the highest standards. Monitoring and evaluation processes are in place to assess the impact of our Science provision, inform any necessary adaptations, and ensure ongoing improvement.

Ultimately, our intent is to inspire future generations of scientists and foster a deep appreciation for the wonders of Science.

Inclusion

At St Joseph's we aim to meet the needs of all our children and we comply with the requirements set out in the SEN Code of Practice. Each child is entitled to a broad and balanced curriculum where we ensure that all children receive the opportunity to participate fully within their ability to access the lesson through 'adaptive teaching'. Adaptive teaching is reactive and responsive to individual children's needs at any particular moment in time and at any point in the learning journey. We ensure that children are all challenged to achieve their age appropriate milestones. All children will access the planned learning and curriculum content. Teachers will have the same learning intentions for all children within the class (unless there is exceptional circumstances).

In order for all pupils to be able to achieve these intentions, it will be necessary to 'adapt teaching' for some, through the use of strategies such as:

- Targeted, tailored support both within lessons and as pre/post teaching.
- Individualised resources (wobble cushion, fiddle toy, coloured overlay, timers etc).
- A range of meta cognition strategies (knowledge organisers, word banks, scaffolding-writing frames/exemplars, mind maps, recall etc).
- Breaking down content into smaller chunks or steps.
- Modelling and sequencing (thinking out loud, manipulatives, worked out models etc.)
- Consistent visual models/resources
- Address vocabulary through lessons, guided reading, homework or pre-teaching
- Reframing questions (Asking a question that requires the same high level of thinking, but using a simpler construction, by using an active rather than a passive voice, or by focusing on one aspect at time)

- Intervening appropriately, i.e. in the classroom/lesson wherever possible, to minimise the need for out-of class interventions (though these will still be appropriate and necessary for some pupils).

Monitoring

It is the responsibility of the Head teacher, Governors, Senior Leadership Team and 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.

Opportunities will be taken for staff to undertake training in Science to develop and reinforce knowledge and skills and to review the latest developments; this will be in the form of staff meetings or advisors visits. Termly monitoring will take place in the form of: drop ins, book scrutiny's, observations or pupil voice. In addition to this, we work closely with Herts for Learning and St Francis of Assisi Academy Trust and attend science clusters to moderate science books and share best practise regularly.

Health and Safety

Health and Safety is of paramount importance at St. Joseph's and is our first priority in teaching Science. Children will be taught to use scientific equipment safely when using it during practical activities. Children will be informed of any risks or hazards but will also be encouraged to assess and identify risks for themselves. A risk assessment will be made, as part of the planning process, before any potentially dangerous scientific activity is undertaken. Safety glasses will be used where appropriate. Class Teachers and Teaching Assistants will check equipment regularly and report any damage, taking defective equipment out of action and reporting it to the Subject Leader who will replenish.

Resources

Resources within science are fundamental to the teaching and learning of scientific enquiry. At St. Joseph's we have sufficient, high-quality science resources to aid and support the teaching of all topics taught, from EYFS to Y6. The Science Subject Leader is responsible for Science resources and will update when necessary to keep the teaching and learning of Science current and in line with the National Curriculum. Teachers will inform the Science Lead if there are any additional or broken resources that are needed. Classroom working walls are also available to

support children's scientific vocabulary and the learning journey. All classroom working walls are interactive to engage children and allow them the opportunity to ask questions that are not easy to answer. Teachers will also incorporate the use interactive whiteboards and white boards in lessons to show useful websites through videos, games, concept cartoons etc.

Children are expected to, where appropriate, choose their own equipment and set such equipment up for practical science. This should be done under adult supervision with Health and Safety requirements in mind. By doing so, they:

- make sensible choices about which equipment to use,
- treat the equipment with care,
- use the equipment with their own and other's safety in mind,
- become independent learners

The school grounds and surrounding areas offer a great resource for staff and pupils and will be used to develop children's awareness of the wider world around them with risk assessments carried out before use and signed off by the subject leader, Deputy Headteacheer and Head Teacher.

Review

This policy should be viewed as a working document for the benefit of all concerned in the education of the children at St. Joseph's Catholic Primary School.

Review Date: July 2027