



## St Bernadette's Catholic Primary School

### Science Policy

#### Mission Statement

*'...to ensure a loving and faithful learning community in which our children can become the person God created them to be. A community where we celebrate the dignity, worth and uniqueness of every individual. Where we grow and learn together with joy, in the love of Jesus. In this love, we strive to be courageous stewards of creation.'*

#### Curriculum Intent

At St Bernadette's our curriculum is designed to ensure that our children develop into confident, resilient and determined learners prepared for the next stages of their learning. When our pupils leave us, we want them to do so with a love of God, a strong moral compass and the cultural capital they need to succeed. We want all of our pupils to believe in themselves and have the courage to ask questions and know that they can make a difference.

At St Bernadette's we have high standards of learning and behaviour: we value each and every member of our school family and as a result of that belief our pupils are empowered to challenge themselves, empowered to learn and aspirational for their futures. Embedded within our curriculum is the belief that each person is a unique creation of a loving God and has been bestowed with particular gifts to be developed and used for the service of others and as such we want service of others to be a central part of life in our school.

At St Bernadette's we ensure a broad, balanced and creative curriculum with a wide range of enrichment activities. We want our children to discover and develop their talents and interests in order to be the person God intended them to be. Through bespoke curriculum planning we ensure that questioning, problem solving and risk management skills are learnt and developed throughout the curriculum and that in so doing, our pupils better understand and appreciate themselves and the world in which they live.

Learners at St Bernadette’s acquire knowledge through a broad range of different subjects and driven by our Gospel values. We want to fully prepare them as future global citizens and stewards of Creation. At St Bernadette’s we are a reading school, our children develop a love of reading and read to learn. The learning of skills and the acquiring of knowledge is carefully planned and sequenced so that our pupils can build on secure prior learning in order to know more and remember more.

### Vision for Science

In science we fulfil our whole school mission by ensuring that our children experience awe and wonder about the world around them. That our children are curious and confident to ask questions about the how and the why in the world around them. To provide support and encouragement as they learn to investigate and work scientifically so that they can begin to answer some of those questions.

Our aim is to ensure that children are inspired to learn more about science, know that science is for everyone and above all, develop a love and enjoyment for learning in science. So that one day they may be able to use science as a means to become courageous stewards of creation.

### Aims of the Curriculum

The National Curriculum aims to ensure that all pupils:

- 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.

### Curriculum Organisation

The organisation of the science curriculum at St Bernadette’s can be found on the school website at the following link: <https://st-bernadettes.lancs.sch.uk/wp-content/uploads/2023/01/knowledge-progression-science-1.pdf>

### Science in the EYFS

Year group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
R	<i>Setback in</i> <b>'All about me'</b> Hugsday Once there were Giants Funnybones	<i>Toys</i> <b>A Chair for Baby Bear</b> Robot Robot It was the Night Before Christmas	<i>FINDING STAGES</i> <b>A year on Adam's Farm</b> The Three Little Pigs Three Billy Goats Gruff	<i>COLOSSAL SCIENCE</i> <b>The Man on the Moon: a Day in the life of Bob Gruff</b> Trees: Seasons Come, Seasons Go	<i>Mini-Insects</i> <b>The Very Hungry Caterpillar</b> The Tiny Seed What the Ladybird Heard	<i>The Wiggles</i> <b>Manda's Surprise</b> Allases Bringing the Rain to Kapiti Plain Mama Panya's Pancake
Understand some important processes and changes in the natural world around them, - The seasons						
<b>Continuous Provision:</b> <ul style="list-style-type: none"> <li>• Explore the natural world around them, making observations and drawing pictures of animals and plants.</li> <li>• Know some similarities and differences between the natural world around them observing, asking questions about and recording changing states of matter.</li> </ul>						
<b>Predicted Learning:</b> <ul style="list-style-type: none"> <li>+ Naming parts of the body</li> <li>+ Exploring and naming the senses</li> <li>+ Healthy me – including diet, exercise and oral hygiene.</li> </ul>						
<b>Predicted Learning:</b> <ul style="list-style-type: none"> <li>• Explore the forces of pushing and pulling.</li> <li>• Explore how to build ramps to make cars go faster/further</li> <li>• Explore and observe how we make balls bounce higher and talk about what they discover.</li> <li>• Explore different material and their through toys.</li> </ul>						
<b>Predicted Learning:</b> <ul style="list-style-type: none"> <li>• Explore and observe changes in matter through cooking – gingerbread-making.</li> <li>• Explore what plants need to grow by planting beans.</li> </ul>						
<b>Predicted Learning:</b> <ul style="list-style-type: none"> <li>• Explore the solar system: naming the planets and exploring scientific ideas about the Sun and moon</li> </ul>						
<b>Predicted Learning:</b> <ul style="list-style-type: none"> <li>• Explore habitats of minibeasts</li> <li>• Lifecycle of a butterfly</li> <li>• Observe the different characteristics of a variety of minibeasts and then group and classify them.</li> </ul>						
<b>Predicted Learning:</b> <ul style="list-style-type: none"> <li>+ Know some similarities and differences between the natural world around them and contrasting environments including weather.</li> </ul>						

EYFS science curriculum is based on and built around key texts which provide opportunities to provide openings for key predicted learning. As such, the development of scientific knowledge and skills has context and coherence and links closely to the needs and experiences of the children.

Further opportunities for children to explore the natural world around them and engage with scientific experiences and phenomenon are carefully built into continuous provision.

Key Learning Linked to The Natural World – Working Scientifically. Children at St Bernadette’s are taught, supported and encouraged to:-

**Explore/Observe** - look closely at/notice features in the natural world including animals and plants, weather and seasons, and natural materials e.g. water, ice, sand, stones, etc.

**Describe** - talk about what they notice/observe in the natural world, e.g. features of animals, plants, natural materials, seasons, weather, etc; talk about changes they notice and changes over time, based on real experiences or books read to them at home or school.

**Record** - draw pictures e.g. observational drawings of plants, mini-beasts, take photographs, make models or record in scrapbooks.

**Questioning** - show an interest in and be curious about the natural world; ask questions about what they notice/observe or changes that occur, e.g. changes in plants throughout the seasons.

**Explain** - talk about what they know and what they have learnt about the natural world. Talk about why things happen/occur in relation to different processes e.g. ice melting, seasonal changes.

**Research** - talk to people (visits/visitors/family), think of questions to ask to find out about plants, animals, seasons, processes; use first hand experiences/use secondary sources, (e.g. books, photographs, internet).

**Equipment and measures** - use senses/use simple equipment to make observations, (e.g. magnifiers, pipettes, egg timers, digital microscopes, etc).

**Compare/sort/group/identify/classify**: notice similarities, notice differences in the natural world, including plants and animals; talk about what they know and understand about similarities and/or differences, e.g. in relation to the natural world around them and other environments they have learnt about through real experiences or books read at home or school.

**Test** - make suggestions, show resilience, work with others.

**Vocabulary** - use simple vocabulary to name and describe objects, materials, living things and environments.

## Key Stage 1 & 2 Science curriculum

### Implementation

- Organisation  
Knowledge <https://st-bernadettes.lancs.sch.uk/wp-content/uploads/2023/01/knowledge-progression-science-1.pdf>  
Skills <https://st-bernadettes.lancs.sch.uk/wp-content/uploads/2021/10/Skills-template-science-update-1-1.pdf>
- The science curriculum at St Bernadette’s as part of the Catholic curriculum offered is rooted in Gospel values which are made explicit to the children in every aspect of their scientific learning.
- Our curriculum planning ensures that learning links with many other areas of the curriculum are exploited to support the development of the whole child as stated in our mission for the school.
- Our science curriculum is delivered according to the agreed programmes of the National Curriculum, ensuring that our children experience a wide range of knowledge and skills throughout each Key Stage, appropriate in *content and order in terms of year group expectations*.

- Staff use the PLAN primary science assessment resources – [www.planassessment.com](http://www.planassessment.com) – these have been produced to help schools plan and assess effectively the science National Curriculum (England)
- The subject leader draws on expert knowledge of subject specialists and specialist associations to design, resource and enhance learning sequences which are tailored to the needs of our children, our Catholic ethos and our locality.
- At St Bernadette's we have developed sequences of learning in science which are progressive, carefully sequenced and provide opportunities to revisit learning regularly.
- The sequences draw on and use knowledge and skills from across the curriculum to help embed learning in children's memory; these are planned for at every stage.
- The science curriculum has been planned to take account of the natural order of the seasons and to ensure that teaching in science is both supported and enhanced by learning in other subjects. For example: In Year 4 the science unit is enhanced and reinforced by the Design technology unit on electrical systems and in Year 5 The science unit on Earth and Space follows the unit on Forces to reinforce the children's knowledge and understanding in relation to gravity. In addition, learning in Year 3 on 'Animals Including Humans' has been split into Health & Nutrition and Skeletons & Movement in order to provide a deeper more secure learning experience.

### **Planning**

The planning of the curriculum is organised in three phases:

- **Long term** curriculum planning in science identifies our expectations for the acquisition of scientific knowledge, scientific skills and scientific vocabulary for each year group. This planning format shows progression and sequencing in each area of learning.
- **Medium term** science planning identifies prior learning, common misconceptions, key knowledge and vocabulary so that prior knowledge and vocabulary are built upon. The medium term planning also clearly identifies the new skills, knowledge and vocabulary which is to be taught and learnt. Links with other curriculum areas are made explicit.
- **Short term** planning breaks down learning in science into smaller manageable steps (key knowledge) on which to build individual lessons around.
- In short term planning, opportunities to revisit and assess prior learning are built into the start of every unit and every lesson to provide children with regular opportunities to revisit and recap and as such help embed learning (knowledge and skills) in children's memory.

### **Teaching Science to children with Special Educational Needs**

We recognise that there are children of widely different 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 tasks which are open-ended and can have a variety of responses.
- Setting tasks of increasing difficulty.
- Providing resources of different complexity, matched to the ability of the child.
- Using classroom assistants to support the work of the individual children or groups of children.

At St Bernadette's School, we teach Science to all the children, whatever their ability. Science forms part of the school Curriculum offer to provide a broad and balanced education for all children. In order to ensure equity in the provision of science so that all children can achieve the following may take place but is not limited to:

- providing learning opportunities that are matched/adapted to the needs of children with learning difficulties through work in science taking into account the targets set in the children's Individual Education Plans (IEPs).
- Providing pre-teaching of key learning and/or vocabulary.
- Providing different ways of recording, explaining & evaluating.
- Adaptations to tasks

### **Teaching and Learning in Science**

We use a variety of teaching and learning styles in science lessons. Our principle aim is to develop children's knowledge, skills, vocabulary and understanding. This can be achieved through: -

- whole class teaching;
- enquiry-based research activity;
- encouraging the children to ask, as well as answer, scientific questions;
- the use class floor books to record what if? questions, to record scientific observations and responses;
- providing opportunities to use a variety of data, such as statistics, graphs, pictures and photographs;
- the use ICT in Science lessons when it enhances their learning;
- role-play and discussions;
- presenting reports to the rest of the class;
- engaging in a wide variety of problem-solving activities.
- involving the pupils in 'real' scientific activities, for example, researching a local environmental problem or carrying out a practical experiment and analysing the results.
- Adhering to our non-negotiables for teaching and learning in science **which are**

1 – Novel hook lesson where prior learning is assessed recorded – annotated diagram/quiz.

2 – Concrete or modelling task – annotated drawing (their own version) acting it out e.g. planets

3 Consolidation tasks such as: 'Odd one Out' or 'What if?' – review previous learning. These are recorded in floor books - 2 per half term.

4. Allow the children to produce their own learning where they can show what have they learnt. E.g. circulatory system rather than have 30 printed and coloured diagrams can the children design a diagram of their own to show how there is a 2part system – oxygen & deoxygenated.

### **Development of subject specific vocabulary**

The development of subject specific vocabulary is planned for, sequenced and progressive. The key vocabulary for each unit in science is made clear in our 'Knowledge organisers' and on our working walls in classrooms. We have an expectation that all children will be able to use, read and spell key vocabulary accurately by the end of each unit. Prior knowledge of key vocabulary is assessed and reactivated at the beginning of a topic and throughout so that opportunities to embed this vocabulary in memory are maximised.

### **Enhancements to the Science Curriculum**

At St Bernadette's we believe that Science is not always a classroom based subject and learning can take place as part of school trips, themed activity weeks and outdoor exploration. We want our children to grow up with a sense of awe and wonder and an eagerness to explore their place in the God's world. We do this by making sure that enrichment activities are exciting, build on learning and promote enjoyment in Science.

## **Assessment**

### **Formative assessment**

Formative assessment takes place on a day-to-day basis during teaching and learning, allowing teachers and pupils to assess attainment and progress more frequently. It begins with diagnostic assessment, indicating what is already known and what gaps may exist in skills or knowledge. If a teacher and pupil understand what has been achieved to date, it is easier to plan the next steps. As the learning continues, further formative assessments indicate whether teaching plans need to be amended to reinforce or extend learning. At St Bernadette's this takes the form of quizzes at the start and end of topics to assess what is known, needs to be revisited and what the next steps are. Formative assessment at the start of every lesson may be a question or a task that activates and assesses prior learning from the previous session before the introduction of new key knowledge. Throughout lessons, teachers will be asking questions to assess understanding, to check for misconceptions and to challenge and extend learning. Through the use of formative assessment teaching staff are able to make informed decisions about what the children need next and provide the correct support, extension or intervention so that **all** children can achieve the high expectations we have for them.

### **Summative Assessment & Recording**

Assessment in science is carried out using the 'Key learning' grids published by the Lancashire Science Team. The class teacher accurately assesses where each child's learning is against specific targets from the National Curriculum. These are recorded on medium term evaluations and are handed into the subject leader at the end of each term (each term comprises two science units).

Evidence of scientific understanding can be collected effectively from the talking, thinking and decision making the children are involved in, from observations, from contribution made to the science floor books and from work produced which displays what the children have learnt and remembered. Teaching staff use exemplar materials from the PLAN Primary Science resources to support their own assessments.

The Science Subject Leader keeps samples of children's work in a portfolio and uses these to moderate judgements internally and externally as part of a cluster group.

### **Professional Development of Staff and Use of Resources.**

At St Bernadette's School we are fully committed to developing staff subject knowledge, skills and confidence. As part of the monitoring of science by the subject leader, staff CPD is prioritised and training and further development opportunities are made available.

We are continually building up resources for all Science teaching units. These are kept in classes, where appropriate and in a central store for ease of access. The library contains a good supply of non-fiction books which support learning in science. Computer software and the internet is used to support children's individual research. As part of topic evaluation and assessment and through staff

surveys resources are monitored to ensure that staff are able to easily access all the resources needed to teach the units effectively.

### **Parental involvement including homework.**

At St Bernadette's parental input is highly valued and parents are invited and welcomed into school to share their own expertise with the children. Children may receive science homework based on their current topic and we provide Knowledge Organisers for parents to support learning at home.

## **Monitoring of Science at St Bernadette's**

### **Role of the Subject leader**

It is the responsibility of the subject leader to: -

- monitor the standards of teaching & learning, pupil outcomes, engagement and enjoyment in science,
- to meet with governors on subject specific visits and report to the Standards and Effectiveness Committee on standards in science at St Bernadette's,
- to support colleagues in their teaching,
- for be informed about current developments in the subject,
- for providing a strategic lead and direction for science in the school,
- to monitor the budget,
- resources science topics,
- book activities and workshops to support learning.
- to review samples of children's work,
- to attend and organise training in science,
- to liaise with science subject leaders from other schools,
- to organise science week.

### **Governors**

As part of their accountability Governors actively visit school to triangulate information provided by the Headteacher and the Subject Leader in regard to science. In partnership with the subject leader they will engage in dialogue to provide challenge and support, visit lessons, look at work in pupil's books and undertake discussions with pupils. They provide a written report to the Standards and Effectiveness Committee on the impact of the science curriculum at St Bernadette's and how effective it is at achieving the schools vision and intent.

### **Reference to other relevant policies**

- Feedback and marking policy

**Policy date: February 2023**

**Review date: February 2024**