St Monica's Catholic Primary School

# Science Policy 2021

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| Status | School need |
| Policy written | October 2021 |
| Date presented to Education Committee | 12.10.21 |
| Published on school web site | Autumn 2021 |
| Date of next review | Autumn 2024 |

**Rationale**

At St. Monica's, the Mission Statement asserts that we will try to provide high quality learning opportunities for each and every child. Our Mission Statement further commits us to encourage the children to appreciate the wonder of creation and in order for children to do so they need to have a knowledge and understanding of the world in which they live. This policy is a statement of how the school will endeavour to fulfil the mission through the teaching of science.

## 1. Aims

1.1 Science teaches an understanding of natural phenomena. It 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 in which science will affect the future on a personal, national, and global level.

1.2 The objectives of teaching science are to enable children to:

- Develop scientific knowledge and conceptual understanding of the world around them through the specific disciplines of biology, chemistry and physics.
- Ask and answer scientific questions;
- Plan and carry out scientific investigations, using equipment (including computers) effectively;
- Evaluate evidence, and present their conclusions clearly and accurately.
- Learn a little about the history of scientific discoveries and investigation, and the role of key scientists.
- Understand the uses and implications of science today and for the future.

## 2 Teaching and learning style

2.1 Our principal aim is to develop children's knowledge, skills and understanding, therefore we use a variety of teaching styles in science lessons. Sometimes we do this through whole-class teaching, while at other times we engage the children in enquiry-based research activity, in small groups or independently. We encourage the children to ask, as well as answer, scientific questions. They have the opportunity to work with a variety of data, such as statistics, graphs, pictures and photographs. They use ICT in science lessons because it enhances their learning. They take part in role-play and discussions, and in special projects they present reports to the rest of the class. They engage in a wide variety of problem-solving activities. Wherever possible, we involve the pupils in real scientific activities, for example, investigating a local environmental problem, or carrying out a practical experiment and analysing the results.

2.2 We recognise that in all classes, children have a wide range of scientific abilities, 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, including:

- setting 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.

3. **Science curriculum planning**

3.1 The school uses the National Curriculum for Science (2014). We may make use of activities and information from Lancashire County Council which provides detail for developing scientific enquiry in each year group across each topic area. Staff may also use other resources that are found online or in books or scientific/teaching publications aimed at this age group.

3.2 We make use of the local environment in our fieldwork where possible.

3.3 We carry out our curriculum planning in science in two phases (long-term and medium-term). The long-term plan maps the scientific topics studied in each term during the key stage.

3.4 There is a school agreed format for medium term planning and the activities planned should follow the teach, recall and apply model.

3.5 We have planned the topics in science so that they build on prior learning, as guided by the National Curriculum – see the progression map. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit, and we also build progression into the long term plans so that the children are increasingly challenged as they move up through the school.

**4. The Early Years Foundation Stage**

4.1 We teach science in the EYFS through the 'Understanding of the World' aspect of the EYFS curriculum. Children are encouraged to develop their skills of scientific enquiry, learning about the world around them through practical, active learning in a wide range of contexts (in accordance with the EYFS Statutory Guidance). Evidence of children's understanding is gathered through observation, photographic evidence and through discussion. At the end of the academic year, the class teacher is required to assess whether a child is 'emerging' or 'expected' in the early learning goals related to Understanding of the World, using the exemplars and through discussion with Reception colleagues in other similar schools in the area. The results are reported to the LA and a copy of the Early Years Foundation Stage Profile is also issued to parents.

**5. The contribution of science to teaching in other curriculum areas**

5.1 English
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 Literacy lessons are of a scientific nature. The children develop oral skills in science lessons through discussions 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. When the children use weights and measures, they are learning to use and apply number. Through working on investigations they learn to estimate, predict, record, identify and interpret patterns in data. They develop accuracy in their observation and recording of events. Many of their answers and conclusions include quantitative data (numbers).

5.3 Personal, social and health education (PSHE) and citizenship
Science makes a significant contribution to the teaching of PSHE and citizenship. This is mainly in two areas. Firstly, the subject matter lends itself to raising matters of citizenship and social welfare. For example, children study the way people recycle material and how environments are changed for better or worse and many aspects of Keeping Healthy and staying safe. Secondly, the subject gives children numerous opportunities to debate and discuss. They can organise campaigns on matters of concern to them, such as helping the poor or homeless. Science thus promotes the concept of positive citizenship, outdoor and environmental education.

5.4 Spiritual, moral, social and cultural development
Science teaching offers children many opportunities to examine some of the fundamental questions in life, for example, the evolution of living things and how the world was created. Through many of the amazing processes that affect living things, children develop a sense of awe and wonder regarding the nature of our world. Science raises many social and moral questions. Through the teaching of science, children have the opportunity to discuss, for example, the effects of smoking, and the moral questions involved in this issue. We give them 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. Environment or gardening clubs (and other selected initiatives, as they arise) give the children opportunities to have an active part in caring for their World. Science teaches children about the reasons why people are different and, by developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people.

**6. Science and Computing**

6.1 Computing enhances the teaching of science in our school significantly, because there are some tasks for which Computing is particularly useful. It also offers ways of impacting on learning which are not possible with conventional methods. Software and online resources are used to animate and model scientific concepts, and to allow children to investigate processes that it would be impracticable to do directly in the classroom. Data loggers are used to assist in the collection of data and in producing tables and graphs. Children use ICT to record, present and interpret data, to review, modify and evaluate their work, and to improve its presentation. Children learn how to a find, select, and analyse information on the Internet and on other media.

## 7. Science and inclusion – More Able and Talented, and Special Educational Needs

7.1 At our school we teach science to all children, whatever their ability and individual needs. 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 good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those who are more able and talented, and we take all reasonable steps to achieve this.
7.2 We enable all pupils to have access to the full range of activities involved in learning science. Where children are to participate in activities outside the classroom (for example a trip to Manchester Science Museum, Jodrell Bank, Grappenhall Heys Walled Garden, or St Helen's Glass museum) we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

## 8. Assessment for learning

8.1 Teachers will assess children's work in science by making formative judgements during lessons. If a written piece of work is produced, the teacher assesses it and uses this assessment to plan for future learning. Written or verbal feedback is given to the child to help guide his/her progress. Pupils throughout the school are helped and encouraged to make judgements about how they can improve their own work.

8.2 At the onset of a unit of work we use some form of pre-topic assessment to gauge the existing level of knowledge of the children. This will include looking at previous achievement on classroom monitor or other tracking records or the use of the Rising Stars assessment scheme. For younger children or those with SEN, we might verbally assess knowledge of the class or group by talking to them about a subject. We use the marks / results from these tests as the basis for making adjustments to lesson plans to ensure appropriate teaching (for example to address common misconceptions and to revise concepts that are expected to be understood before moving on).

8.3 At the end of a unit of work, we assess children's understanding through written or verbal methods as appropriate, including the Rising Stars Assessments and the results are recorded on Classroom Monitor.

8.4 Science is monitored by the Subject Champion and receives staff meeting time for development when Science comes up on the Curriculum Policy Review, Monitoring and Development programme.

## 9. Resources

9.1 The Subject Champion is responsible for auditing and completing internal requisitions for any additional resources required. Classes make use of the internet to support children's individual research.

## 10. Monitoring and review

10.1 It is the responsibility of the Subject Champion to monitor the standards of children's work and the quality of teaching in science. They also support colleagues in their teaching, stay informed about current developments in the subject, and provide a strategic lead and direction for science in the school.

10.2 This policy will be reviewed regularly according to the Governors' Policy Review Schedule.

Signed: Date:

Chair of the Education Committee