



Science Policy

Date: September 2023
Review: July 2024

Curriculum Rationale

We have the following goals in all curriculum areas:

S**uccess** – We celebrate individuality, and the success that each child has, and we recognise that this will take a variety of forms.

M**otivation** – We aim for all of our children to be motivated young people who have a desire to do their best and try their hardest.

C**onfidence** – We provide a nurturing environment where all our pupils develop confidence in themselves to be successful members of their community.

A**spiration** - We are aspirational for our children, providing a curriculum that ensures each learner has the opportunity to reach their true potential.

These aims are achieved by adhering to the following learning motto:

IGNITE – EXCITE – ENGAGE

We aim to:

Ignite a passion for learning and the curiosity to explore the world.

Excite pupils with a curriculum that is fun, and which contains a wealth of rich experiences

Engage all learners and members of the community.

1.) Introduction:

We want our children to love science. We want them to have no limits to what their ambitions are, and to grow up wanting to be astronauts, forensic scientists, toxicologists or microbiologists.

We want our children to remember their science lessons in our school and embrace the scientific opportunities they are presented with! To achieve this, we use exciting, practical hands-on experiences that encourage curiosity and questioning.

Our aim is that these stimulating and challenging experiences help every child secure and extend their scientific knowledge and vocabulary, as well as promoting a love and thirst for learning. At St. Michael's, we have a coherently planned and sequenced curriculum which has been carefully adapted with the need of every child at the centre of what we do. We want to equip our children with not only the minimum statutory requirements of the science National Curriculum but to prepare them for the opportunities, responsibilities and experiences of later life.

2.) Intent:

Our **intent** is to give every child a broad and balanced Science curriculum which enables them to confidently explore and discover what is around them and develop a deeper understanding of the world we live in.

The national curriculum for science 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.
- Acquire knowledge and understanding of:
 - Life processes
 - Properties of materials, how they can change and their uses
 - Forces in nature
 - Physical processes

3.) Implementation:

EYFS:

Science is taught in Nursery and Reception classes as an integral part of the topic work covered during the year. As the reception class is part of the Foundation Stage of the National Curriculum, we relate the scientific aspects of the children's work to the objectives set out in Development Matters Document, linking to the Early Years Foundation Stage goals, which underpin the curriculum planning for children aged three to five. Further guidance for Science in the Early Years can be in the PLAN EYFS matrices, which are available to access on Staff Share or via the PLAN website (www.planassessment.com).

Key Stage 1:

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.

Lower Key Stage 2:

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.

Upper Key Stage 2:

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, they 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**.
- They 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.
- Pupils 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.

At St. Michael's Science is taught weekly and adheres to the requirements of the National Curriculum.

In order to do this, we use the “**Love to Investigate**” scheme of work (developed by Maestro Education), which promotes and supports scientific enquiry, independent thinking and practical

experiments. We use a variety of teaching and learning styles in science lessons, including using iPad technology where appropriate, with the principal aim being to develop children's knowledge, skills, and understanding, as well as the ability to think and work scientifically.

Planning:

Long-term plans (for example see appendix 1) map the scientific topics studied in each term during the Key Stage. In some cases, we combine the scientific study with work in other subject areas, so that it is integrated into topic work and the children begin to understand the relevance of science to everyday life (Science Capital). At other times, the children study science as a discrete subject so that children have a good grasp of scientific fact and principles.

The class teacher is responsible for planning their own lessons using flipcharts, in line with the paperless planning agenda. These flipcharts should list the specific learning objectives for each lesson, linking to the children's unit cover sheet objectives and/or the 'working scientifically' objectives. The class teacher saves these individual flipcharts, with annotations, in their own Staff Share account labelled 'Science'. See sub-section on 'Digital Learning'.

Presentation:

Work can take several forms. It can be presented in a photographic, illustrative, statistical/data or written format.

The layout of written work is to be based upon the age-appropriate scaffolds that have been developed for each year group. Children are to become familiar with these through regular teaching of science and encouraged to develop independent recording skills as they progress through school. There will be some occasions where the standard format for written work will need to be adapted according to the task.

Scientific vocabulary and terminology is to be used by pupils according to the topic/task that they are working on.

4.) Impact:

The impact of our curriculum is intended to lead to strong progress over time for all pupils. Children will therefore be expected to leave St. Michael's reaching at least age-related expectations for Science.

Through engaging lessons, trips and interactions with visitors, our Science curriculum will encourage pupils to be enthusiastic scientists, and to understand that science has changed – and is changing - our lives and that it is vital to the world's future prosperity.

We want to empower our children so they understand they have the capability to change the world. This will be evidenced in a range of ways, including pupil voice, their work and their overwhelming enjoyment of science.

4. Assessment:

Formative Assessment:

Teachers assess children's work in science by making formative judgements during lessons as to whether the child has achieved the objective set for that lesson. This includes pupils' own reviews of their learning at the end of each unit.

Summative Assessment:

Teachers assess the completed work of each pupil in relation to the curriculum objectives, learning outcomes and the work in children's books/ Showbie account. The teacher will make sure that this judgement is informed by referring back to their previous evidence and judgements made during the study of that unit of work (unit assessment cover sheets/teacher's) For example, if a child has been judged as 'Working Beyond' in the majority of their unit objectives (on their own unit cover

sheet) and they also meet that criteria for 'working scientifically' then the teacher should make an informed judgement to assess that child as 'working beyond' in their final 'overall science assessment/judgement' of the child's learning. Teachers will use this as the basis for assessing the progress of each child, and we pass this information on to the next teacher at the end of the year.

5. Resources:

We have sufficient resources for all science teaching units in the school. We keep these in a central store, where there is equipment for each unit of work.

The Education Library Service contains a good supply of science topic books to support children's individual research.

Where there are consumables that may need replenishing, teachers should plan ahead using the Science Long-term Plan in order to preempt and order any such items in order to ensure effective teaching and learning can take place.

6. Digital Learning (See *Digital Learning Policy*)

7. Responsibilities of the Subject Leader:

- Monitor the effectiveness of Science teaching and learning by means of lesson observation, pupil interviews, learning walks, sampling children's work and overseeing assessment
- Provide feedback to teaching staff and the headteacher
- Periodically update the whole school planning overview (in consultation with all teaching staff) to ensure it remains relevant and appropriate
- Attend subject leader network meetings and disseminate new information
- Support teachers in planning and delivering the curriculum
- Manage the resources for teaching Science
- Report to the Curriculum link governors of the Local Governing Committee as requested

The planning of the science curriculum is the responsibility of individual class teachers, who should use their own professional skills and judgments on how to effectively plan and deliver science sessions. The subject leader, however, will be available to support and guide individual class teachers where necessary.