



Science Policy

January 2023

St. Michael's C.E. (VC) First School

Science Curriculum Intent:

Science is an opportunity to ask questions, create curious learners and develop scientists of the future in our ever changing world.

At St Michael's we believe that a high quality science education provides the foundations for understanding the world and engaging children in scientific enquiries to link learning across their subjects. We believe that science is vital to the world's future and all pupils should be taught essential aspects of the knowledge, methods, laws, processes and uses of science. Our children should be encouraged to develop a sense of excitement and a curiosity of the world around them, ask questions, learn new knowledge and key vocabulary. This vision will begin from our Foundation Stage in Nursery and Reception and carry through the school years. As a First school, we focus on the Curriculum up to year 4. We have good links with the local middle schools and have mapped out their science curriculum for teachers to be able to see where their learning will continue to grow as well as links with the middle schools to share ideas, share resources and plan in lessons. We engage children and staff from the middle schools to join us at St Michael's to model science and exciting lessons with the intent to engage children further and develop a sense of excitement.

Working scientifically is a key element of our Science curriculum and is interwoven into science topics and lessons. The teachers in each year group plan hands on age appropriate activities for the children to engage in to enhance learning, enjoyment and understanding. Lessons will be practical and taught both indoors and outdoors with time to reflect, predict, change and analyse. When planning lessons, teachers should plan them in sequence, reflect on previous learning and provide the children with rich vocabulary to use in context.

We intend to provide all children of all abilities with an inclusive, broad and balanced science curriculum. The teaching staff at St Michael's ensure that all children are exposed to high quality teaching and learning experiences, which allow children to explore their outdoor environment and locality, thus developing their scientific enquiry and investigative skills.

Our Science curriculum, in line with 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 lines of scientific enquiries that help them to answer 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.

Aims (taken from the National Curriculum)

In KS1 the children should be taught to

- ask simple questions and recognise that they can be answered in different ways
- Observe closely, using simple equipment
- Perform simple tests
- Identify and classify
- Use their observations and ideas to suggest answers to questions
- Gather and record data to help in answering questions.

In lower KS2 the children should be taught to

- ask relevant questions and use different types of scientific enquiries to answer them
- set up simple practical enquiries, comparative and fair tests
- Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- Gather, record, classify and present data in a variety of ways to help in answering questions
- Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- Identify differences, similarities or changes related to simple scientific ideas and processes
- Use straightforward scientific evidence to answer questions or to support their findings.

Science Curriculum Implementation:

As a school we use the Rising Stars 'Switched on Science' scheme of work to ensure there is consistency throughout the school and focus on the key vocabulary in year group. Teachers map out the science topics in their long term plans and ensure each area is taught ready for transition into the next year group. In our Early Years Foundation Stage the teaching staff focus on aspects in Understanding the World and Expressive Arts and Design to build the children's knowledge, vocabulary and curiosity through extensive outdoor learning opportunities and weekly forest school sessions. These foundations ensure as the children progress through the years they take this enjoyment and inquisitive nature with them to learn new exciting skills.

Science is taught weekly and is also interwoven in other lessons for cross curricular links to keep the magic of science alive. This allows our children to use newly learned vocabulary in all aspects of learning and make links with science and the wider world. Our school is fortunate to have extensive grounds to explore and use for science as well as curriculum rich resources. Every year group takes lessons outdoors as well as engaging in hands on learning with tools and equipment to carry out scientific experiments.

Switched on Science has been designed to cover all the requirements of the National Science curriculum in a way that is intended to develop pupils' understanding of the concepts, practices and perspectives that underpin each discipline of science. It provides many opportunities for our children to explore the 6 lines of enquiry and reflect on these in their lessons. The 6 areas explored throughout the year in each year group are;

Pattern seeking

Group and classify

Observe over time

Using Secondary sources

Comparative work

Working scientifically

Skills are revisited and developed each year which enables the children to consolidate the skills they have learned and transfer these as the curriculum develops.

Curriculum Enrichment

Our children's scientific learning is enriched by the following;

- Extensive outdoor area to explore with grounds next to the canal, woodland area and pond area
- Forest school lessons with a Level 3 forest school lead on site to support daily
- Trips and residential visits (E.g Laches Wood, Wolseley Center, Farm visits)
- British Science Week competitions and learning
- Ogden Trust Science partnership
- Lego coding club - Years 3 & 4
- Volunteers from the local community
- Local middle school children and staff visitors

Science Curriculum Impact:

Our children get excited when discussing science lessons and the enjoyment they have in them. The children are able to reflect on learning and its outcomes clearly and confidently, making links to the wider world where appropriate. The teaching staff see excited learners asking questions to enhance learning and act on this to meet the needs of their inquisitive minds. We endeavour for our children to be confident and creative in their learning whilst understanding the importance of science.

Progress in Science is demonstrated through regularly reviewing and scrutinising children's work to ensure there is a clear progression of skills being taught. Science staff meetings are also held to ensure teaching staff are up to date with new information and support can be given to those who seek it. A map of skills is regularly updated when children's books are being reviewed to ensure each line of enquiry is met throughout the year. When moderating work, pupil voice is also taken into account and a sample of children from each class will be asked to discuss their science learning. From this we see the excitement and children reflecting positively on lessons they have witnessed and taken part in. This also gives the children a chance to showcase the new vocabulary and use it in the correct context.

Assessment

Science data is collected termly and reviewed by the teachers and subject leader per topic. We ensure topic aspects are covered and identify children who are developing, achieving and working at greater depth. This data is then monitored and reflected upon to influence the teaching in future topics and revisions needed.

'Switched on Science' offers assessments for each year group and topic for teachers to use or use as a guide when assessing themselves. KS1 also are use of the TAFS document to ensure science targets are met with exemplifications to compare against. The teachers assess children's understanding during every lesson through reflection, questioning to test long term memory and creating mind maps to address misconceptions arising.

Differentiation and Inclusion

We teach Science to all children, whatever their ability. It is a broad and balanced curriculum which is differentiated to ensure all children can access it with a hands on learning approach but also in mind the different starting points of those who are identified as SEND. Teachers work towards removing barriers to learning and participation and following the children's interests where possible to teach this subject.

Resources

All teachers have access to the scheme of work we follow and there are resources pre-loaded onto Switched on Science to support teaching. We also have a secure science resource room which is home to a variety of resources for all topics. Teachers are regularly asked if new products need to be ordered or refreshed and are encouraged to actively check they have the correct resources before a science lesson is taking place. We have a

wealth of hands on resources for both display purposes, investigations trays and class sets of hands on activities.

Health and Safety

All teaching staff are aware of the resources used for science and will counter any risks they see by making lessons safe as well as engaging. If equipment is broken or damaged this is replaced and staff made aware of changes to resources. Safeguarding of children and staff during practical lessons is of great importance and the teaching staff are aware of risks associated with equipment and children handling them.

Role of the Subject Leader

The role of the subject leader is to:

- Support quality teaching, planning and assessment
- Planning and leading staff meetings
- To engage parents in science and invite parents in during British Science Week to showcase their skills and support learning with the children.
- Provide quality resources
- Keep up to date with new policies and structures through Entrust training
- Collect evidence of science work across all year groups and abilities
- To keep knowledge and skills up to date in line with changes in National and local policy
- Support other staff in school including NQTs and RQTs

Community Links

The school strive to involve and interact with the local community as much as possible. This can be achieved through:

- Inviting local organisations to work with the children
- Holding exhibitions of children's work in school and outside school
- Participating in local STEM events
- Organising trips to places with links to science