

Our Lady's Catholic Primary School

Science policy 2020/21

This policy outlines the guiding principles by which Our Lady's Catholic Primary will implement Science in the National Curriculum (2014).

'Science is a way of exploring and investigating the world around us, both natural and man-made, with the aim of learning more about it and understanding it better. One way to increase the ability to investigate and understand is to increase knowledge, but scientific knowledge on its own is not science. Science is not only a way of knowing: it is also a way of doing, and each shapes the other.' (Wenham, M, 1995, Understanding Primary Science.)

Rationale

"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 key foundational knowledge and concepts can be used to explain what is occurring, predict how things will behave, and analyse causes. This foundational understanding should be consolidated through their appreciation of the specific applications of science in society and the economy." DfE NC 2014

Aims

"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

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- 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.”
DfE NC2014

At Our Lady's, we also aim to:

- develop children's understanding of the collaborative nature of science and build their social skills to enable them to work cooperatively with others
- foster concern about our environment
- prepare our children for an increasingly scientific and technological world
- provide children with enjoyable experiences of science, so that they will develop a deep and lasting interest and may be motivated to study science further.

Equal opportunities

A broad, balanced science education is the entitlement of all children, regardless of ethnic origin, gender, class, aptitude or disability. Our equal opportunities policy will be followed. Every effort is made to ensure that science activities and investigations cater for all children and that they are as interesting and engaging for girls and boys.

Methodology

National Curriculum coverage

- teachers will ensure the National Curriculum for Science 2014 is taught
- children will work scientifically in a number of ways: comparative/fair-testing, seeking patterns, observation / measurement over time, identifying, grouping and classifying and using secondary sources.

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- The Foundation Stage teachers currently plan for science through topics, taking care to cover the guidelines set out in the Early Years Foundation Stage document. Science falls into the category of Understanding the World. "This involves guiding children to make sense of their physical world and their community through opportunities to explore, observe and find out about people, places, technology and the environment." (Statutory Framework for the Early Years Foundation Stage, 2014)

Time

-KS1- 1.5 hours per week minimum, KS2- 2 hours per week minimum

-science may also be taught through cross curricular links

-an annual science week

Planning, continuity and progression

When planning, consideration is given to:

- The key ideas to be addressed and the most appropriate context in which to investigate them
- Activities which will encourage children to think and express ideas about the concepts being explored
- Opportunities to re-visit previous learning to aid with retaining knowledge
- The possible ideas the children might express
- The provision of opportunities for children to develop skills and processes of science alongside their understanding of the concepts
- The nature of and possibilities for assessing and recording children's progress
- Classroom management and organisation, including safety considerations
- The sequencing of the science units to aid progression
- Working scientifically will be embedded in each unit and will not be taught as a separate strand

Teaching and learning style

We aim to teach science in ways that are imaginative, purposeful, well managed and engaging. We try to ensure we give clear accurate teacher explanations and use skillful, open- ended questioning.

Good practice includes collaboration and practical, investigative science.

Differentiation

We aim for deep secure learning for all so we use a 'mastery' approach.

"Mastery learning' is a specific approach in which learning is broken down into discrete units and presented in logical order. Pupils are required to demonstrate mastery of the learning from each unit before being allowed to move on to the next with the assumption that all pupils will achieve this level of mastery if they are appropriately supported. Some may take longer and need more help, but all will get there in the end." DfE 2014

- Children who master content quickly should be encouraged to study broader and deeper not accelerating through the content so keeping within the key stage. They should also be encouraged to carry out more independent enquiry and build up scientific investigative skills.

Strategies for Learning

Children construct their own ideas which help them to make sense of the world around them. It is therefore a tenet of science teaching in Our Lady's that the current knowledge and beliefs of the children be determined before commencing work and at various stages in each topic. Misconceptions will also be addressed.

In our science curriculum, we aim to develop the processes, skills and attitudes which will aid children in learning and understanding science.

Processes:

- question raising
- collecting information and hypothesising
- experimenting

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- decision making
- communicating and recording
- applying findings
- organising

From these processes, certain skills are developed.

- Observing
- Hypothesising
- Comparing and classifying
- Predicting
- Estimating and measuring
- Testing
- Planning
- Interpreting information

Certain attitudes need also to be developed which are not only specific to science but are relevant to life both in and out of school:

Attitudes

- Curiosity
- Co-operation
- Perseverance
- Open-mindedness
- Self-analysis
- Responsibility
- Independent thought
- Self-discipline

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Within the classroom, teachers look for opportunities to praise co-operation and safe, considerate behaviour. Achievement in science is celebrated in display and the verbal and written communication of scientific findings.

SEND

Children with special educational needs are involved in all work planned at an appropriate level to enable them to achieve their full potential. SEND policies and guidelines will be followed.

Resources

Most resources are kept in the central resource area in labelled trays, although some are kept in the classrooms. The science subject leader will administer the allocated budget for science.

Teachers are consulted during science specific staff meetings about the resources needed or indeed which resources may need replacing.

Additionally, Our Lady's has access to outdoor learning in our school grounds, including a wooded outside area, which teachers are encouraged to utilise.

Health and Safety

Pupils will be taught to use scientific equipment safely during practical activities. Class teachers, teaching assistants and the subject leader will check equipment regularly and report any damage, taking defective equipment out of action. The ASE book 'Be Safe' should be consulted when necessary and this is always kept in the resource area. If an activity is not covered by 'Be Safe' then we will contact CLEAPSS (School Science Service Helpline 01895251496) for further advice.

Educational visits

Local visits will be encouraged and utilised wherever possible, e.g. Catalyst Science Museum, local museums, Knowsley Safari Park, Farmer Teds. Any others?

Assessment

Assessment opportunities will be identified within schemes of work. Children's progress will be recorded and will be monitored by the subject lead.

At Key Stage 1 the only statutory assessment for science is teacher assessment and therefore assessments will be recorded appropriately. Headstart tests will be used at the end of each unit to assess knowledge. Floor books will be used to record how children have been working scientifically. These will be passed up to the next class at the end of the year.

At Key Stage 2 similar arrangements will be followed. The school may also be selected for national sampling, which is undertaken by the Standards and Testing Agency. Children's attainment will be related to the National Curriculum level descriptions.

It is important to note that testing is only one method of assessing and each teacher also uses their own judgement based on observation in lessons, discussions with the child and written work. These, along with test results, are used to determine a child's level of attainment. Results are shared with the Assessment Lead teacher.

Marking

Much of the work done in science lessons is of a practical or oral nature and, as such, recording will take many varied forms. It is, however, important that written work is marked regularly and clearly, as an aid to progression and to celebrate achievement. When appropriate, pupils may be asked to self or peer assess their own or other's work. Marking will follow the marking policy as per other subjects.

Monitoring and Evaluating

This will take place by the subject lead through:

- monitoring and evaluation of pupils' work
- lesson observations
- pupil questionnaires and pupil voice

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- analysis of the tracking system

The science policy will be reviewed annually by Mrs Kelly, science lead.