OUR LADY IMMACULATE CATHOLIC PRIMARY SCHOOL

"With God all things are possible"

At Our Lady Immaculate Catholic Primary School, we will inspire our children to achieve personal excellence for themselves and for the glory of God.

OLI Science Policy

Date	Review Date	Coordinator
Autumn 2022	**Autumn 2024**	**Barry Owens**

Headteacher:	Lesley Roche
Chair of Governing Body:	Linda Mc Sweeney

Introduction

Our Lady Immaculate is a thriving Catholic learning community with Christ at the centre. We celebrate the uniqueness of every child and aim to educate and prepare our children to be independent, confident and to live life to the full. As a Catholic learning community, everything we do serves the Church's teaching of assisting parents as primary and principal educators to fulfil their role. Every decision is made with the children in mind, serving our Mission and Vision and following our Virtues to live by, British Values and Global Values.

Science is a core subject within the National Curriculum. This policy outlines the purpose, nature and management of Science taught at Our Lady Immaculate School. It reflects the consensus views of all the teaching staff and they are responsible for its implementation.

For children, science is the exploration of the world around them through investigation

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 science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Aims

Our Lady Immaculate School aims to:

- to develop the natural curiosity of children about the world around them;
- to develop questioning and enquiring minds through a range of enjoyable and interesting experiences;
- to help children develop the skills to make systematic enquiries;
- to provide opportunities for children to apply theoretical ideas to the solving of practical problems;
- to enable children to develop an increasing attention to accuracy;
- to foster a positive attitude to science and increase pupils' understanding of how science is used in the wider world;
- to provide a range of relevant experiences allowing pupils to acquire knowledge, skills and understanding in the key areas of Scientific Enquiry, Life Processes and Living Things, Materials and their Properties, and Physical Processes through a variety of teaching and learning strategies;
- to develop the accurate use of scientific vocabulary;
- to meet the needs of each child so that they will reach their potential:
- to engender a sense of awe and wonder at Gods creation through Science.

The National Curriculum for Computing 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.

Rationale

At Our Lady Immaculate School, we believe that:

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand. 'Working Scientifically' is embedded within the content of biology, chemistry and physics, focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data.

Through science, pupils at Our Lady Immaculate School will continue to deepen their respect, care and appreciation for the natural world and all its phenomena.

Aims

Our Lady Immaculate 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

Spoken language

Our Lady Immaculate curriculum for science reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak develops their scientific vocabulary and ability to articulate scientific concepts clearly and precisely. They are assisted in making their thinking clear, both to themselves and others, and teachers ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

Objectives

Early years
Foundation Stage pupils investigate science as part of Knowledge & Understanding of the World. By careful planning, pupils' scientific skills and knowledge gained at Key Stage 1 will be consolidated and developed during Key Stage 2.

In Key Stage 1 pupils should:

- experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them;
- be encouraged to be curious and ask questions about what they notice;
- 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;
- 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;
- learn through first-hand practical experiences, but also use some appropriate secondary sources, such as books, photographs and videos;
- work scientifically alongside the teaching of substantive science content in the National Curriculum programme of study;
- read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at Key stage 1.

In Lower Key Stage 2 pupils should:

- broaden their scientific view of the world around them through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments;

- 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;

- draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out;

- work scientifically alongside the teaching of substantive science content in the National Curriculum programme of study;

- read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

In Upper Key Stage 2 pupils should:

- develop a deeper understanding of a wide range of scientific ideas, through exploring and talking about their ideas; asking their own questions about scientific phenomena;

- encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates;

- begin to recognise that scientific ideas change and develop over time;

- 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;

- 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;

- work scientifically alongside the teaching of substantive science content in the National Curriculum programme of study;

- read, spell and pronounce scientific vocabulary correctly.

Resources and access

In order to encourage an investigative approach to learning the school has a central store of equipment to allow investigations, observations and measurements to be carried out.

The Science Subject Leader will see that this level of resourcing is maintained and will administer the allocated budget for science.

Plan B Science is used in all classes. This resource includes teaching slides as well as a range of activity resources to develop the principle of working scientifically. This programme covers and extends the National Curriculum programmes of study.

Planning

The whole school Science topic cycle is based on the national curriculum requirements.

Plan B Science is used as the basis for the science curriculum map and the planning and progression in each year group.

This is not restrictive, and teachers are encouraged to broaden pupil's knowledge and understanding using ICT and other resources.

Science is taught in topic blocks each term and cross curricular links are made where these are relevant in developing knowledge, skills and understanding.

Teachers have copies of the detailed requirements of the national curriculum at each level to support their planning.

Inclusion

A minority of children may have particular teaching and learning requirements which go beyond the provision for that age range and if not addressed, could create barriers to learning. This includes G&T children, those with SEN or those who have EAL. Teachers take account of these requirements and plan, where necessary, to support individuals or groups of pupils to enable them to participate effectively in the curriculum and assessment activities. During any teaching activities, teachers should bear ensure that special arrangements are made available to support individual pupils. This is in accordance with the school inclusion policy. These children should be identified and discussed at pupil progress meetings to ensure that appropriate provisions and/or interventions are effected.

Pupils with special educational needs

We believe that all children have the right to access the science curriculum. In order to ensure that children with special educational needs achieve to the best of their ability, it may be necessary to adapt the delivery of science for some pupils.

We teach science to all children, whatever their ability. Science forms part of the national curriculum to provide a broad and balanced education for all children. Through the teaching of Science, we provide opportunities that enable all pupils to make progress. We do this by setting suitable challenges and responding to each child's individual needs.

Equal opportunities
We will ensure that all children are provided with the same learning opportunities regardless of social class, gender, culture, race, and disability or learning difficulties. As a result, we hope to enable all children to develop positive attitudes towards others. All pupils have equal access to science and all staff members follow the equal opportunities policy. Resources for SEN children and gifted & talented will be made available to support and challenge appropriately.

Assessment and record keeping
Teachers regularly assess progress through observations and evidence. Key statements of attainment are used to assess science in each topic. Each class uses assessment criteria and pupil progress trackers as a guide to assess pupils against their age Assessing computing is an integral part of teaching & learning and key to good practice. Assessment should be process orientated - reviewing the way that techniques and skills are applied purposefully by pupils to demonstrate their understanding of computing concepts. As assessment is part of the learning process, it is essential that pupils are closely involved.

Formative assessments are carried out during and following short focused tasks and activities. They provide pupils and teaching staff the opportunity to reflect on their learning in the context of the agreed success criteria. This feeds into planning for the next lesson or activity.

Summative assessment review pupils' ability and provide a best fit attainment category. Independent tasks provide a number of opportunities and scope for pupils to demonstrate their capability throughout the term. There are opportunities for pupil review and identification of next steps. Data from summative assessments are recorded for all pupils – showing whether the pupils have met, exceeded or not achieved the learning objectives. Children's work in science is assessed using informal observations during lessons. Once the children complete a unit of work, a summary judgment of the work for each pupil as to whether they have yet to obtain, obtained or exceeded the expectations of the unit. For KS2 children more formal methods are used. Children use Knowledge Organisers to review and consolidate what they have learned. They complete knowledge quizzes and more formal assessment activities.

Pupil attainment is recorded and progress of different cohorts and groups tracked, using target Tracker each term.

Monitoring and evaluation
The subject leader is responsible for monitoring the standard of the children's work and the quality of teaching in line with the schools monitoring cycle. This may be through lesson observations, pupil discussion and evaluating pupil work.

The role of the Subject Leader
There is a Science Subject Leader who is responsible for the implementation of the Science policy across the school.

Their role is to:

- offer help and support to all members of staff (including teaching assistants) in their teaching, planning and assessment of science;
- provide colleagues opportunities to observe good practice in the teaching of science;
- maintain resources and advise staff on the use of equipment and resources;
- monitor classroom teaching or planning following the schools monitoring programme;
- monitor the children's progression in science, looking at examples of work of different abilities;
- manage the science budget;
- keep up-to-date with new l developments and disseminate information and developments to colleagues;
- lead staff training on new initiatives;
- attend appropriate in-service training;
- have enthusiasm for science and encourage staff to share this enthusiasm; liaise with all members of staff on how to reach and improve on agreed targets;
- help staff to use assessment to inform future planning.

Staff training
The Science subject leader will assess and address staff training needs as part of the annual development plan process or in response to individual needs and requests throughout the year.
Individual teachers should continually develop their own skills and knowledge, identify their own needs and notify the subject leader.

Cross curricular links
As a staff, we are all aware that science knowledge and skills should be developed through core and foundation subjects. Where appropriate, Science is incorporated into schemes of work for all subjects. Our school provides pupils with opportunities to enrich and deepen learning using cross-curricular approaches to Science as well as following the core curriculum.

Health and Safety
Primary Science is very safe, as chemicals are used only very occasionally and the ones which are recommended for use have no severe hazards. There are some hazards, associated with:

- sharp objects
- flames
- chemicals (including 'kitchen' chemicals)
- animal and plant specimens
- micro-organisms

Sharp objects, such as tools are used under close supervision.

Tea lights may be used by the teacher for heating but must be in a sand tray with children observing at a safe distance.

Care is taken after handling animals and plants to look out for signs of allergies developing but this is rarely a problem in primary teaching. Animals should be obtained from a reliable source and due hygiene observed when handling them.

The only chemicals used are safe and non-caustic, such as lemon juice, vinegar, baking powder, salt, sugar, red cabbage water and food colouring. No chemicals with any form of warning are to be used.

Care must be taken after handling animals and plants to look out for signs of allergies. Animals should be obtained from a reliable source and due hygiene observed when handling them.

Simple bread moulds can be made with bread enclosed in cling film or sealed plastic bags.

For guidance on specific activities, for example-pond dipping, teachers refer to:
Health & safety in primary school science and technology (ASE 3rd Edition).