

**Much Woolton Catholic Primary School**

*‘****With Jesus we Love, Learn and Grow****’*

**School Policy for Science**

Approved by the Governing body in October 2021

Signed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Chair of Governors

Signed\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Head teacher

**MISSION STATEMENT**

With Jesus we Love, Learn and Grow

**To do this we will:**

* Be a Christian community that follows Jesus in living out Gospel values.
* Provide opportunities for all to grow and achieve their full potential, by igniting a desire for lifelong learning.
* Be a beacon of light that shines out to others, sharing faith, hope and love.

**Objectives:**

* Provide quality collective worship and enriching liturgical celebrations.
* Enable our children to acquire an excellent religious education, through a well taught and resourced Come and See programme.
* Encourage all to develop their understanding of and relationship with God, while at the same time respecting that others choose to express their faith in different ways.
* Be positive role models, who treat each other with respect and are willing to forgive and be forgiven.
* Provide a stimulating curriculum, which is fun, challenging and relevant to the needs of our children.
* Value all our pupils and staff, appreciating their uniqueness and individual talents, enabling them to develop these to the full.
* Have high expectations of ourselves and each other, in all that we do.
* Ensure that all children reach their full potential through effective planning, assessment and evaluation, which will inform their next steps.
* Create a positive atmosphere where all feel valued and are welcomed into our school community.
* Develop positive links between the school and parish community.
* Learn about and appreciate other faiths and cultures.
* Use our talents as responsible citizens to enrich the lives of others in our local and the global community.

Science education in the primary school concerns the development of an understanding of our world and environment through experience, exploration and interaction with scientific phenomena.

The purpose of gaining this understanding is to enable pupils to take responsibility for their role in the maintenance of a healthy life and the creation of a safe environment, not only for the benefit of themselves, but also for other human beings, animals and plants in out world. This is in accordance with Every Child Matters guidelines and the New National Curriculum (2014).

Children gain scientific understanding from the moment they begin to interact with their world. In the early developmental stages of movement, hearing, watching and playing children begin to establish rules about how things in their environment react and behave. From this they develop their judgements about safety and risk, about their ability to explore, create, invent and enjoy. They discover and employ their senses of hearing, seeing, touching, smelling and tasting. These senses can be a source of pleasure or otherwise.

Scientific learning in the primary school extends and enhances this natural curiosity by providing children with the opportunity to apply and further develop the skills that they have already acquired. When pupils study Science they are obtaining a set of skills and a body of knowledge that will be required for the essential routines of life, for work, pleasure and creativity in their future lives. It is not taught simply to prepare for qualifications required by future employers, though it is a vital part of aspirations towards economic wellbeing, as detailed in Every Child Matters guidelines. Scientific investigation skills are also required for learning across the whole curriculum. The new Science directives issued in the National Curriculum 2014, focus on the notion of children ‘working scientifically’ in their science studies; understanding the process of science, the design of experiments, reasoning and arguing with scientific evidence and analysing and interpreting data. Therefore, at Much Woolton School, Science is viewed as an integral and essential component of the whole curriculum.

**Aims**

1. To encourage pupils to have a sense of wonder, fascination and curiosity about their world and thus develop a thirst for learning.
2. To encourage pupils to appreciate the beauty and order to be found in creation.
3. That, wherever possible, Science based lessons include opportunities for practical demonstrations and experiments in which pupils learn to work collaboratively and independently.
4. That every child receives equal opportunity to develop their scientific skills, understanding and knowledge as outlined in the National Curriculum Programmes of Study, alongside the acquisition of other basic skills during their primary education.
5. That all pupils are challenged in each area of the Science curriculum so that they reach their full potential without feeling overstretched, so that they derive pleasure through learning.
6. That pupils are able to effectively and confidently communicate their scientific predictions and discoveries as they are given opportunities to observe, describe, illustrate, hypothesize and

interpret, using appropriate scientific vocabulary.

1. That pupils have a heightened awareness of scientific principles through the regular display of their work and experiments in the classroom and around the school.
2. That pupils know where and how to access relevant scientific information through effective use of good quality books in the school and local library.
3. That pupils begin to develop a spiritual, moral and social understanding about the effects of their actions on their environment.
4. That, wherever possible, links are made with other curriculum areas to avoid science being viewed in isolation from the whole curriculum.
5. That the children are taught Science with reference to Every Child Matters and National Curriculum guidelines, ensuring that in their studies the children remain healthy and safe, make a positive contribution to lessons, enjoy their studies, experience achievement and

**Working Scientifically**

This sets down the way in which children should be learning to work when undertaking and investigation. The skills of working as a scientist, involving observation, asking questions, hypothesizing, designing and carrying out investigations, drawing conclusions and communicating results are aspects which have to be developed. The scientific skills must be integrated into the teaching of all investigations and activities associated with the attainment targets.

At Much Woolton School all children shall undertake scientific investigation as an ongoing process. Classes shall undertake school visits and invite outside parties interested in Science to school as appropriate.

**Implementation**

The school has a statutory responsibility to cover all the Programmes of Study for Key Stages 1 and 2. The coverage of the Programmes of Study is set out in the School’s Curriculum framework.

All the strands for Science 1:

* Ask questions, predict and hypothesize.
* Observe, measure and manipulate variables.
* Interpret results and evaluate scientific evidence.
* Encourage investigation and scientific activity.

All of the children shall study Science through the Hamilton Trust on-line resource. In addition to this, the published schemes L.C.P. and Ginn Star Science as well as a variety of Internet Smartboard resources can also be used in school.

The Science co-ordinator has audited, listed and compartmentalized scientific resources which have been planned. Children shall be taught within their own class, using outdoor spaces when appropriate and available.

Children in the Foundation classes are given opportunities to observe everyday objects and events, making use of all their senses, asking questions, looking for similarities and differences and developing skills of sorting and classifying.

Activities are planned in such a way as to encourage full and active participation by all children irrespective of ability. The Hamilton Trust is used as the basic Primary Science resource, which is in line with the new National Curriculum and grades topics within activities, each relevant to the theme at hand. Each activity is easily adapted to cater for short attention spans, starts from a base of formative assessment and develops the children’s interests and experiences, encouraging a variety of responses, culminating in a variety of outcomes through summative assessment. Other appropriate Science texts are available if required.

Topics use a variety of starting points which appeal to both boys and girls. Positive attitudes towards Science are to be fostered. Planning boards are used at appropriate levels to encourage investigatory skills throughout both key stages.

**Health and Safety**

Safety must always be an important consideration and practical activities demand special safety precautions in accordance with Every Child Matters and National Curriculum guidelines. Children shall be encouraged to become familiar with simple safety procedures. Some scientific activities have particular safety implications and where potential hazards exist within the Switched On for Science and Hamilton Trust schemes it is highlighted in the resource. The Rising Stars, L.C.P. and Ginn Star Science schemes also highlight potential dangers when introducing new topics.

We expect all our pupils to learn to take responsibility for the safety of themselves and their classmates within a safe environment. This is, in fact, in one of the requirements of the Programme of Study and is in accordance with Every Child Matters guidelines. However, class teachers will use their professional judgement as to the suitability of such experiments for their class, bearing in mind age and maturity. Class teachers will also ensure that pupils with physical disabilities or behavioural problems are kept free from risk and receive their full entitlement to Science as required by Every Child Matters and the National Curriculum. Class teachers will always supervise all activities and it will sometimes be appropriate to have other adult helpers. In the unlikely event of an accident the class teacher will do all that he or she can to administer first aid, referring, where appropriate, to the school’s first aid manual. Any accidents will be recorded as detailed in the school’s health and safety policy. It is important to have a balanced approach to the potential risks of experiments, as an over cautious approach can inhibit experimentation and enjoyment of the subject. In cases of uncertainty the class teacher will refer to the head teacher for guidance. Specialised equipment is held in a central resource area, to which teachers have access at any time and laboratory coats are available for all children to wear when experimenting and working scientifically.

**Planning**

Staff produce medium term plans, which include a series of objectives drawn from relevant programmes of study and a summary of tasks, assessment vocabulary and resources. Lesson plans include a clear objective, teaching methods and plenary activity.

**Key Skills**

It is important that the children are made aware that Science involves a number of general skills necessary to its successful implementation, namely:

* Working (and thinking) scientifically
* Communication.
* Application of number.
* Information technology.
* Working with others.
* Improving learning and performance.
* Problem solving.
* Reasoning.
* Enquiry.

**Teaching Approaches**

There shall be a mix of class teaching and group work in line with the school teaching policy. Teachers shall utilize class teaching when it is the most effective way to disseminate ideas and group work when there is a need for an investigation. Practical work shall be a strong feature of Science teaching, with “hands-on resources” a main feature of the lessons, bearing in mind the importance of constant safety monitoring.

**Progression**

We expect that as children move through each year of the school they will progress in Science studies in a number of areas. They should be able to:

* Understand the importance of Science investigations.
* Take responsibility for Science investigations.
* Increase personal scientific knowledge and make links between areas of Science.
* Be able to use precise scientific terminology.
* Move from unstructured to systematic investigations.
* Work as part of a team.
* Increase accuracy of recording.
* Move from simple drawings and diagrams to using scientific diagrams and graphs.
* Make informed choices.

**Assessment and Recording of Science**

Science is a core curriculum subject and an on-going assessment of this subject has always been an integral part of good practice. The main reason for assessment is to enable the teacher to match work to the abilities and needs of the pupils as they progress.

Assessment will be completed within each year group at the end of a Science topic. In order to assess pupils’ understanding and skills, it is necessary to interact with pupils, listening to and observing them whilst they are working. There are some pupils who can only display their abilities in practical ways or through their comments whilst they are working. There might not be any evidence of this in their written work. Therefore, the teacher’s assessment will be ongoing and not limited to formal tests. At the end of each topic, teacher assessment for each pupil is recorded in the science books. This forms part of the transfer information between year groups and informs teachers of progression made.

**Feedback**

Oral feedback is given to pupils in lessons individually, in groups and as part of whole class teaching. Written feedback is given through the marking of children’s work, bearing in mind the lesson objectives and providing a ‘next step’ to challenge or motivate the pupil further in their studies if needed.

**Differentiation**

In our teaching of Science we implement differentiation by outcome, through play, initial activity and encouragement of response, paying particular attention to:

* The time teachers give to individuals and groups.
* Teacher instruction.
* Teacher support.
* Expectations of pupils and teachers towards pupils.
* Activity time allocation.

**Inclusion**

Science is taught in line with the new National Curriculum policy (2014). All the children within the school are given their due entitlement to the study of the Science scheme of work through the Hamilton Trust website.

**Staff Development**

Staff are encouraged to attend training courses relevant to their needs both within and outside the authority. Staff are consistently informed of courses through the display of course bulletins in the staffroom. INSET days and staff meetings are arranged to meet staff needs as required, such as training through the ‘Ogden Trust’ partnership. The development of staff is an important part of the school’s approach to the improvement of standards and achievement in the teaching of Science.

**Parental Information**

As part of the school’s termly policy of informing parents all subject topics parents are informed of all Science topics for their child’s year through half-termly pupil learning journeys, parents’ evenings or through end of year school reports.

**Resources**

Science resources are managed by the Science co-ordinator who is responsible for ordering and replacing new equipment. Equipment pertaining to each year’s programme of study is kept in year group classes. There is also a central Science resource cupboard in a shared corridor. Teachers are asked to state their Science equipment needs annually to be ordered by the Science co-ordinator, bearing in mind the particular topics which they are required to teach. Many resources can be purchased locally and minimum costs.

**Units to be studied:**

**Year 1**

* Plants
* Animals Including Humans
* Ourselves
* Everyday Materials
* Seasonal Changes

**Year 2**

* Dinosaurs
* Living Things and Their Habitats
* Plants
* Space
* Animals
* Materials

**Year 3**

* Plants
* Health and Growth
* Rocks
* Light and Shadows
* Forces and Magnets

**Year 4**

* Living Things and Their Habitats
* Animals Including Humans
* States of Matter
* Sound
* Electricity

**Year 5**

* Living Things and their Habitats
* Animals Including Humans
* Properties and Changes of Materials
* Earth and Space
* Forces

**Year 6**

* Animals Including Humans
* Living Things and Their Habitats
* Evolution and Inheritance
* Light
* Electricity

**End of Key Stage Outcomes**

**(Year 1 and Year 2)**

**Working scientifically**

During Years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

* asking simple questions and recognising that they can be answered in different ways
* observing closely, using simple equipment
* performing simple tests
* identifying and classifying
* using their observations and ideas to suggest answers to questions
* gathering and recording data to help in answering questions

**(Year 3 and Year 4)**

**Working scientifically**

During Years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

* asking relevant questions and using different types of scientific enquiries to answer them
* setting up simple practical enquiries, comparative and fair tests
* making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
* gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
* recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
* reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
* using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
* identifying differences, similarities or changes related to simple scientific ideas and processes
* using straightforward scientific evidence to answer questions or to support their findings.

**(Year 5 and Year 6)**

**Working scientifically**

During Years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

* planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
* taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
* recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
* using test results to make predictions to set up further comparative and fair tests
* reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.
* identifying scientific evidence that has been used to support or refute ideas or arguments