

**The
Lloyd Williamson
Schools**

**Science
Policy**

GENERAL STATEMENT

At Lloyd Williamson Schools Foundation (LWSF), we believe that science teaches an understanding of natural phenomena. We aim to stimulate our children's curiosity in finding out why things happen in the way they do. We teach methods of enquiry and investigation to stimulate creative thought. Through science, we hope that all our pupils will understand how major scientific ideas contribute to technological change – impacting on industry, business and medicine and improving the quality of life. We hope that pupils will recognise the cultural significance of science and trace its world-wide development. They will learn to question and discuss science-based issues that may affect their own lives, the direction of society and the future of the world.

INTENT

The aims of our teaching of Science are for the children to:

- ask and answer scientific questions
- plan and carry out scientific investigations using a variety of equipment
- understand the importance of fair testing
- understand and use scientific vocabulary such as: predict, observe, test, record , result and conclusion
- know and understand the life processes of living things
- know and understand the physical processes of materials, electricity, light, sound and natural forces
- know about the nature of the solar system, including the earth
- evaluate evidence and present their conclusions clearly and accurately

At *Key Stage 3*, our Science programme offers opportunities for pupils to:

- build on their scientific knowledge and understanding from Key Stage 2 and make connections between different areas of science
- use scientific ideas and models to explain phenomena and events
- understand a range of familiar applications of science
- think about the advantages and drawbacks of scientific and technological developments for the environment and in other contexts, considering the reasons for different opinions
- carry out a variety of investigations – on their own and in groups – making use of reference sources and evaluating their work
- communicate what they did and its significance
- learn how scientists work and make links with this and the importance of experimental evidence in supporting scientific ideas

At key stage 4, students choose between co-ordinated science IGCSE (all 3 subjects but equivalent to 2 IGCSEs) or all or any of the three science subjects – physics, chemistry and biology. They can also take astronomy as an additional science subject.

Regular mock exams are held throughout the 2 year course to help prepare students for the challenge of the public exams.

APPROACHES TO TEACHING AND LEARNING

Teaching Styles and Strategies

We use a variety of teaching and learning styles in science lessons. Our principal aim is to develop pupil's knowledge, skills, and understanding. Sometimes we do this through whole-class teaching, while at other times we engage in enquiry-based research activity. We encourage the children to

ask, as well as answer, scientific questions. They have opportunities to use a variety of data, such as statistics, graphs, pictures, and photographs. They take part in discussions, and they present reports to the rest of the class. They engage in a wide variety of problem-solving activities. Wherever possible, we involve the pupils in 'real' scientific activities, for example, researching an environmental problem or carrying out a practical experiment and analysing the results.

We recognise that there are children of widely different scientific abilities in all classes, and we aim to provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this in a variety of ways by:

- setting common tasks which are open-ended and can have a variety of responses
- setting tasks of increasing difficulty (we do not expect all children to complete all tasks)
- using LSAs to support the work of individual children

Teachers use a range of inclusion strategies, including paired work, open questions and direct, differentiated questioning and the activation of prior knowledge and contextual learning. This supports the inclusion and motivation of all learners to access the content.

We believe Science is good when:

- Students are given some responsibility and independence to lead their own appropriate investigations
- Students ask questions and work together to discover the answers
- Students accumulate scientific knowledge and develop their conceptual understanding through a range of scientific enquiries
- Students can share and explain their ideas and conclusions
- Students can link their learning to the real world and have a sense of purpose
- Students consolidate and build on prior learning

Curriculum Planning

Teachers divide the Science curriculum planning into three phases (long-term, medium-term and short-term). The long-term plan maps the scientific topics studied in each class.

Teachers' medium-term plans give details of each unit of work for each term.

Class teachers are responsible for writing lesson plans (short-term plans). These plans list the specific learning intentions of each lesson.

At LWSF, teaching staff will:

1. Organise and maintain Science teaching resources.
2. Implement agreed and planned schemes of work and programmes of study.
3. Coordinate recording and presentation of the children's work and their own summative assessments.
4. Advise the Principal of action required pertaining to resources and standards etc.
5. Encourage ways of involving parents in their children's learning and promote liaison between school and home.
6. Provide support to LSAs who work on science topics with their children and so improve the quality and continuity of science teaching and learning throughout the school for all pupils.

EYFS

We teach science in Reception classes as an integral part of the topic work covered during the year. Children are guided to make sense of their physical world and community through opportunities to explore, observe and find out about people, places, technology and the environment. As the Reception class is part of the EYFS, we relate the scientific aspects of the children's work to the objectives set out in the guidelines, which underpin the curriculum planning for children aged 0-5 years.

THE CONTRIBUTION OF SCIENCE TO OTHER CURRICULUM AREAS

English

Science contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. Some of the texts that the children study in Literacy lessons are of a scientific nature. The children develop oral skills in science lessons through discussions (for example of the environment) and through recounting their observations of scientific experiments. They develop their writing skills through writing reports and projects and by recording information.

Mathematics

Science contributes to the teaching of mathematics in a number of ways. The children use weights and measures and learn to use and apply number. Through working on investigations they learn to estimate and predict. They develop the skills of accurate observation and recording of events. They use numbers in many of their answers and conclusions and also use graphs.

Personal, social and health education (PSHE) and citizenship

Science makes a significant contribution to the teaching of personal, social and health education. This is mainly in two areas. Firstly, the subject matter lends itself to raising matters of citizenship and social welfare. For example, children study the way people recycle material and how environments are changed for better or worse. Secondly, children benefit from the nature of the subject in that it gives them opportunities to take part in debates and discussions. They organise campaigns on matters of concern to them, such as the consequences of pollution. Science promotes the concept of positive citizenship.

Spiritual, moral, social and cultural development

Science teaching offers children many opportunities to examine some of the fundamental questions in life, for example, the evolution of living things and how the world was created. Through many of the amazing processes that affect living things, children develop a sense of awe and wonder regarding the nature of our world. Science raises many social and moral questions. Through the teaching of science, children have opportunities to discuss, for example, the effects of smoking and the moral questions involved in this issue. We give them the chance to reflect on the way people care for the planet and how science can contribute to the way we manage the earth's resources. Science teaches children about the reasons why people are different and, by developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people.

Equal Opportunities

We teach science to all children, whatever their ability. Science forms part of the school curriculum policy to provide a broad and balanced education for all children. We provide learning opportunities that are matched to the needs of children with learning difficulties. Our work in science considers the targets set in the children's Individual Education Plans (IEPs).

ASSESSMENT AND RECORDING

We assess children's work in science by making informal judgements as we observe them during lessons. On completion of a piece of work, the teacher marks the work and comments as necessary, offering next steps as appropriate.

Ongoing assessment includes:

- Observing children at work, individually, in pairs, in a group, and in classes
- Questioning, talking and listening to children
- Considering work/materials/ investigations produced by children together with discussion about this with them
- Retrieval quizzing / questioning

At the end of terms one and three the class teacher includes written statements about a child progress in science which are included in the general school report.

Children take informal tests in science at the end of every year. Teachers assess the children's work in these tests, which are related to the learning intentions and feed back to parents during the Spring Term Parents Consultation Evening.

RESOURCES

We are developing our resources for all science teaching units in the school. We keep these in a central store where there is a box of equipment for most units of work. The library contains a good supply of science topic books for children and the teacher's library contains teacher guides and photocopiable resources.

HEALTH AND SAFETY

Teachers should be following the LWSF Health and Safety policy in all lessons that require children to handle items such as:

- batteries
- wires
- glass
- lights/torches
- sharp objects
- magnets
- liquids and food-based items that include but are not limited to – oil, vinegar, rice, bicarbonate soda and ice

Teachers need to ensure that children are aware and prepared for any potential risks.

MONITORING AND REVIEW

Monitoring of the standards of children's work and of the quality of teaching in science is the responsibility of the classroom teacher and Principal.

This policy is an evolving document and will be reviewed as and when statutory changes are made which affect the teaching of science, or when the requirements of the school change.

Updated August 2023
Next review due: August 2025

Lucy Meyer
Principal