SOUTH LANARKSHIRE COUNCIL

Wester Overton Primary School

Sciences
Position Statement

Reviewed January 2021

Rationale

At Wester Overton Primary School, we understand that Science is an important part of our heritage and we use its applications every day in our lives at work, at leisure and in the home. Science and the application of Science are central to our economic future and to our health and wellbeing as individuals and as a society.

Scotland has a long tradition of scientific discovery, of innovation in the application of scientific discovery, and of the application of Science in the protection and enhancement of the natural and built environment. Children and young people are fascinated by new discoveries and technologies and become increasingly aware of, and passionate about, the impact of Science on their own health and wellbeing, the health of society and the health of the environment.

The Curriculum for Excellence Sciences framework provides a range of different contexts for learning which draw on important aspects of everyday life and work. These contexts are structured under the following five Science Organisers:

Planet Earth

- Biodiversity and interdependence
- Energy sources and sustainability
- Processes of the planet
- Space

Forces, Electricity and Waves

- Forces
- Electricity
- Vibrations and waves

Biological Systems

- Body systems and cells
- Inheritance

Materials

- Properties and uses of substances
- Earth's materials
- Chemical changes

Topical Science

Across the Curriculum for Excellence levels, challenge and progression appropriate to individual abilities is at the heart of learning and teaching to ensure that each child achieves his/her potential. Through active learning strategies, we provide opportunities which support a range of learning styles.

Aims

At Wester Overton Primary School, we aspire to make learning in Science coherent and relevant in order that learners link the purpose and validity of the experiences to their lives, present and future. We strive to make learning in Science motivating, engaging and active, which will enable children to:

- develop curiosity and understanding of the environment and my place in the living, material and physical world
- demonstrate a secure knowledge and understanding of the big ideas and concepts of the Sciences
- develop skills for learning, life and work
- develop the skills of scientific inquiry and investigation using practical techniques
- develop skills in the accurate use of scientific language, formulae and equations
- apply safety measures and take necessary actions to control risk and hazards
- recognise the impact the Sciences make on my life, the lives of others, the environment and on society

- recognise the role of creativity and inventiveness in the development of the Sciences
- develop an understanding of the Earth's resources and the need for responsible use of them
- express opinions and make decisions on social, moral, ethical, economic and environmental issues based upon sound understanding
- develop as a scientifically-literate citizen with a lifelong interest in the Sciences

Principles and Practice

At Wester Overton, pupils' inquiry and investigative skills are developed through experimenting and carrying out practical scientific investigations and other research to solve problems and challenges. All children and young people are encouraged to:

- ask questions or hypothesise
- plan and design procedures and experiments
- select appropriate samples, equipment and other resources
- carry out experiments
- use practical analytical techniques
- observe, collect, measure and record evidence, taking account of safety and controlling risk and hazards
- present, analyse and interpret data to draw conclusions
- review and evaluate results to identify limitations and improvements
- present and report on findings.

The main approaches to Science inquiry are:

- observing and exploring – careful observation of how something behaves, looking for changes over time and exploring 'what happens if...?' and 'how could I...?' questions
- classifying – through identifying key characteristics
- fair testing – through identifying all possible variables and then changing only one while controlling all others
- finding an association – linking two variables to determine relationships.

Assessment

Teachers at Wester Overton are expected to use a range of Assessment is for Learning strategies and assessments to make judgements about pupils' learning and to inform their next steps in learning. Approaches to assessment should identify the extent to which children and young people can apply inquiry and investigative skills in their learning and their daily lives and in preparing for the world of work. For example:

- How well do they contribute to investigations and experiments?
- Are they developing the capacity to engage with and complete tasks and assignments?
- To what extent do they recognise the impact the Sciences make on their lives, on the lives of others, on the environment and on society?

Progression in knowledge and understanding can be demonstrated, for example, through children and young people:

- providing more detailed descriptions and explanations of increasingly complex scientific contexts and concepts
- using a wider range of scientific language, formulae and equations
- presenting, analysing and interpreting more complex evidence to draw conclusions and make sense of scientific ideas.

They will demonstrate their progress through investigations, inquiries and challenges, and through how well they apply scientific skills in increasingly complex learning situations. For example, investigations and

inquiries will become more evaluative, deal with an increasing range and complexity of variables, and involve collecting and analysing increasingly complex information.

Meeting Learners Needs

Staff are expected to differentiate appropriately to ensure that the needs of all children are met. Staff need to be aware of the different learning styles of their pupils and the use of active learning is expected at all stages. This may range from imaginative play in P1 to solving real life problems, to using analytical thinking skills in the later stages. Active learning approaches and collaboration amongst learners in all classes should be encouraged.

Planning for Success

New progressive planners for Science were introduced in Wester Overton in August 2020 these have been implemented across the school. All staff recognise the importance of quality record keeping, in order to help track and monitor children's progress. Progression and next steps should be evident in forward planning evaluations.

Throughout the progressive pathway planners, investigation and cognitive skills become more complex as learners' conceptual understanding develops within increasingly complex Science contexts.

Supporting innovation and quality learning and teaching

Wester Overton Primary School's Senior Leadership Team will track and monitor progress in Science through forward plan reviews. Staff are provided with quality, constructive feedback and advice, in written and oral form. The SLT engage in regular professional dialogue with staff about pupils' progress.

The SLT will actively seek to develop teacher leadership at every opportunity and will provide guidance to staff with all matters pertaining to the learning and teaching of Science, where necessary.

Staff at Wester Overton are expected to employ a skilful use of varied teaching and learning approaches in the teaching of Science, including:

- active learning and planned, purposeful play
- development of problem solving skills and analytical thinking skills
- development of scientific practical investigation and inquiry
- use of relevant contexts, familiar to young people's experiences
- appropriate and effective use of technology, real materials and living things
- building on the principles of Assessment is for Learning
- collaborative learning and independent thinking
- emphasis on children explaining their understanding of concepts, informed discussion and communication.

Staff at Wester Overton are expected to use a wide range of open-ended experiences, challenges and investigations, including those related to the applications of Science in areas such as engineering, medicine and forensics. This will enable children and young people to develop skills of critical thinking and appreciate the key role of the scientific process.

To increase engagement with STEM subjects, Wester Overton hold a whole school STEM week annually each March, including a STEM Careers Fair for our Primary 7 pupils.

Self Evaluation

In Wester Overton Primary School, we recognise and value the benefits of rigorous self evaluation in informing continued improvement. As such, staff at Wester Overton employ a progressive overview of

Science topics at each stage, and additional topics across the progressive overview have been implemented from August 2020. This will ensure breadth of learning across the Science organisers.

All teachers are actively encouraged to reflect on their own practice in order to help ensure that optimum learning is maximised. Engagement with Quality Indicators is promoted regularly at whole school level throughout the school year and through moderation, individual classroom visits and forward planning meetings.

Through self-evaluation, staff at Wester Overton plan for a balance of learning and teaching approaches, progression in skills, and effective use of interdisciplinary work to deepen and extend learning in the Sciences.

Career Long Professional Learning

Wester Overton Primary School's SLT will provide opportunities for staff to extend their skill and confidence in teaching of Science, through provision of quality CLPL experiences. Wester Overton Primary SLT acknowledges the quality CLPL to be found in providing time for staff to observe others' teaching practice, to engage in quality dialogue with other practitioners and to learn from each other and visitors to our establishment at in school in-service meetings. In keeping with this, the SLT are committed to providing a variety of quality Science CLPL experiences for staff.