



Witchampton CofE First School

Rationale

Science is a systematic investigation of the physical, chemical and biological aspects of the world which relies on first hand experiences and on other sources of information. The scientific process and pupils' problem-solving activities will be used to deepen their understanding of the concepts involved. The main aspects of science to be studied will be determined by the programmes of study of the National Curriculum 2014.

Through science, pupils at Witchampton CofE First School will continue to deepen their respect, care and appreciation for the natural world and all its phenomena.

Aims

- to develop pupils' enjoyment and interest in science and an appreciation of its contribution to all aspects of everyday life;
- to build on pupils' curiosity and sense of awe of the natural world;
- to use a planned range of investigations and practical activities to give pupils a greater understanding of the concepts and knowledge of science;
- to introduce pupils to the language and vocabulary of science;
- to develop pupils' basic practical skills and their ability to make accurate and appropriate measurements;
- to develop pupils' use of computing in their science studies;
- to extend the learning environment for our pupils via our environmental areas and the locality;
- to promote a 'healthy lifestyle' in our pupils.

Objectives

The following objectives derived from the above aims will form the basis of our decisions when planning a scheme of work. Assessment will also be related to these objectives:

- to develop pupils' enjoyment and interest in science and an appreciation of its contribution to all aspects of everyday life;
- to develop a knowledge and appreciation of the contribution made by famous scientists to our knowledge of the world including female/male and Christian scientists, and scientists from different cultures;
- to encourage pupils to relate their scientific studies to applications and effects within the real world;
- to develop a knowledge of the science contained within the programmes of study of the National Curriculum.

To build on pupils' curiosity and sense of awe of the natural world:

- to develop in pupils a general sense of enquiry which encourages them to question and make suggestions;
- to encourage pupils to predict the likely outcome of their investigations and practical activities

To use a planned range of investigations and practical activities to give pupils a greater understanding of the concepts and knowledge of science:

- to provide pupils with a range of specific investigations and practical work which gives them a worth-while experience to develop their understanding of science;
- to develop progressively pupils' ability to plan, carry out and evaluate simple scientific investigations and to appreciate the meaning of a 'fair test'.

To develop the ability to record results in an appropriate manner including the use of diagrams, graphs, tables and charts:

- to introduce pupils to the language and vocabulary of science;
- to give pupils regular opportunities to use the scientific terms necessary to communicate ideas about science;
- to develop pupils' basic practical skills and their ability to make accurate and appropriate measurements;
- within practical activities give pupils opportunities to use a range of simple scientific measuring instruments such as thermometers and force meters and develop their skill in being able to read them.

To develop pupils' use of IT in their science studies:

- to give pupils opportunities to use IT (video, digital camera, data logger) to record their work and to store results for future retrieval throughout their science studies;
- to give pupils the chance to obtain information using the internet.

Relevance

Wherever possible science work will be related to the real world and everyday examples will be used.

Teaching and Learning Overview

Teaching is in line with the recommendations of the National Curriculum, with modifications in place which allow for the individual and differentiated needs of the children. It takes full account of the different experiences, strengths and interests of the children whilst also complying with the requirements and guidance on inclusion

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*
- *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.*

Pupils will be involved in a variety of structured activities and in more open-ended investigative work, such as:

- activities to develop good observational skills;
- practical activities using measuring instruments which develop pupils' ability to read scales accurately;
- structured activities to develop understanding of a scientific concept;
- open ended investigations.

On some occasions pupils will carry out the whole investigative process themselves or in small groups.

Home learning is sometimes related to science topic to extend children's learning at home.

Each year the whole school takes part in British Science Week, run by the British Science Association, to help foster a love of science and celebrate science through entertaining and engaging activities.

Science and Inclusion

In all classes, children have a wide range of abilities, and we seek to provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. The study of science is planned to give pupils a suitable range of differentiated activities appropriate to their age and abilities. Science forms part of the school aim to provide a broad and balanced education to all children. Through our Science teaching, we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, the more able, and those learning English as an additional language (EAL), and we take all reasonable steps to achieve this. The grouping of pupils for practical activities takes into account their strengths and gaps and ensures that all take an active part in the activity and gain in confidence.

Organisation

Science is taught in a whole-class setting, by the class teacher. The lessons are designed to motivate children from the first moment and are mainly practical in focus. They have clear, achievable objectives and incorporate different learning styles. SEND children have access to the curriculum through variation of task, grouping or support from an adult.

Continuity and Progression

Foundation Stage pupils investigate science as part of Understanding of the World. Children are encouraged to investigate through practical experience; teachers guide the children and plan opportunities that allow the children to experience and learn whilst experimenting for themselves. By careful planning, pupils' scientific skills and knowledge gained at Key Stage 1 will be consolidated and developed during Key Stage 2.

As many children are taught in mixed year groups, a 2-year rolling programme is implemented in Key Stage 1 and Lower Key Stage 2. Lessons are differentiated according to ability, with focus on stretching and challenging the more able, whilst supporting those who need it. This allows progression and continuity, ensuring that new learning takes place and all the programmes of study have been addressed by the time the children have reached the end of Key Stage 1 and Year 4. For us, successful learning starts with differentiation.

Pupils in Key Stage 1 are introduced to science through focused observations and explorations of the world around them. These are further developed through supportive investigations into more independent work at Key Stage 2. The knowledge and content prescribed in the National Curriculum will be introduced throughout both key stages in a progressive and coherent way.

Cross-curricular skills and links

Science pervades every aspect of our lives and we will relate it to all areas of the curriculum. We also ensure that pupils realise the positive contribution of Christians, both men and women to science and the contribution from those of other cultures. We will not only emphasise the positive effects of science on the world, but also include problems, which some human activities can produce.

Equality of Opportunity

All children have equal access to the science curriculum and its associated practical activities. The Head of School and class teachers at Witchampton CofE First School are responsible for ensuring that all children, irrespective of gender, learning ability, physical disability, ethnicity and social circumstances, have access to the whole curriculum and make the greatest possible progress. Where appropriate, work will be adapted to meet pupils' needs and, if appropriate, extra support given. More able pupils will be given suitably challenging activities. Gender and cultural differences will be reflected positively in the teaching materials used.

Across the Trust

We have consulted with St. Johns First School on planning and assessment and efforts to establish links with other Trust first schools and middle school Science departments are continuing.

Resources

Specialist pieces of equipment and those posing a potential safety risk will be held centrally and staff access when required. There is a range of science books in the school library that children have access to.

Assessment and Record Keeping

Throughout the school teachers assess whether children are working towards/at or above the expected level for their age based on their understanding and application of the content of the National Curriculum 2014. Progress and attainment is reported to parents through parents' evenings and end of year reports.

Formative assessment is used to guide the progress of individuals in Science. It involves identifying each child's progress in each area of the Science curriculum, determining what each child has learnt and what therefore should be the next stage in their learning. Teachers in the course of their teaching carry out formative assessment informally through questioning, oral feedback and written work.

Suitable tasks include:

- small group discussions, usually in the context of a practical task;
- specific arrangements for particular pupils;
- individual discussions in which children are encouraged to approve their own work and progress.

Summative assessment takes place at the end of each term and at the end of each academic year, when a level of the child's attainment is given. This assessment may be carried out through discussion and/or assessment sheets. For Year 2 children this is informed by the optional SATs test and teacher assessment.

Wherever possible, experimental and investigative work forms the basis for the teaching of Science. Children are given as many opportunities as possible to carry out investigations and experiments.

Feedback and Marking (see policy)

Much of the work done in science lessons is of a practical or oral nature and, as such, recording will take many varied forms thus making marking different. 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-assess or peer assess their own or other's work.

Monitoring and Evaluation

The Head of School monitors planning; the standards of the children's work and the quality of teaching in Science (to be supported by the Science Leads in the Trust middle schools). As Witchampton CofE First School is a small school, the Head of School takes primary lead, but all teachers share the responsibility for supporting each other in their teaching, being informed about current developments in the subject, and contributing to the strategic lead and direction for Science in the school. Findings are shared with the Trust CEO and the Science Action Plan is updated as appropriate.

Transition to Middle School

The Head of School and Year 4 teacher will liaise with middle school Science Leaders to ensure continuity and a good transition to middle school.

Health and Safety

Pupils are taught to use scientific equipment safely when using it during practical activities. Class teachers and Teaching Assistants check equipment regularly and report any damage, taking defective equipment out of action.

Next Steps – see Action Plan