

Woodthorpe J.I. School

Science Policy

1. The Philosophy and Ethos:

We live in an increasingly scientific and technological age where children need to acquire the knowledge, skills and attitudes to prepare them for life in the 21st century.

We, at **Woodthorpe Junior and Infants School**, believe that the teaching of science develops in children an interest and curiosity about the world in which they live, and fosters in them a respect for the environment.

We believe that science promotes communication in a specific and precise language involving mathematical and logical thinking. It allows children to develop ways of finding out for themselves and gives them practice in problem solving.

We believe that science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Through the programmes of study in the National Curriculum science document children will acquire and develop these skills throughout their Primary years.

1.1 Aims and Objectives:

Through the framework of the National Curriculum, science aims to:

- ❖ Equip children to use themselves as starting points for learning about science, and to build on their enthusiasm and natural sense of wonder about the world.
- ❖ Develop through practical work the skills of observation, prediction, investigation, interpretation, communication, questioning and hypothesising, and increased use of precise measurement skills and ICT.
- ❖ Encourage and enable pupils to offer their own suggestions, and to be creative in their approach to science, and to gain enjoyment from their scientific work.
- ❖ Enable children to develop their skills of co-operation through working with others, and to encourage where possible, ways for children to explore science in forms that are relevant and meaningful to them e.g. exploring outside school.
- ❖ Teach scientific enquiry through contexts taken from the National Curriculum for science.
- ❖ Encourage children to collect relevant evidence and to question outcome and to persevere.
- ❖ Encourage children to treat the living and non-living environment with respect and sensitivity.
- ❖ Stress the need for personal and group safety by the correct usage and storage of resources.

The objectives of teaching science are to enable children to:

- Ask and answer scientific questions
- Plan and carry out scientific investigations
- Evaluate evidence, and present conclusions clearly and accurately

and to develop their knowledge and understanding about:

- Life processes and living things

- Materials and their properties
- Physical processes of electricity, light, sound, forces and the solar system
- The work of scientists

2. Teaching and learning style

We use a variety of teaching and learning styles in science lessons. Our principle aim is to develop children's knowledge, skills and understanding. Sometimes we do this through whole-class teaching, while at other times we engage the children in an enquiry-based research activity. We encourage children to ask, as well as answer scientific questions. They have the opportunity to use a variety of data, such as statistics, graphs, pictures and photographs. They use ICT in science lessons because it enhances their learning. They take part in role-play and 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, investigating a local environmental problem, or carrying out a practical experiment and analysing the results.

2.1 We recognise that in all classes, children have a wide range of scientific abilities, and we ensure that we 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:

- setting 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);
- grouping children either by ability - and setting different tasks for each ability group – or working in mixed ability groups.
- providing resources of different complexity, matched to the ability of the child;
- using teachers or classroom assistants to support the work of individual children or groups of children.

2.2 Continuity and progression throughout the school are monitored by the science subject leader who - where possible - has a teaching input in all classes within both key stages.

3 Equal Opportunities:

At **Woodthorpe Junior & Infants School**, we are committed to providing all children with an equal entitlement to scientific activities and opportunities.

3.1 Inclusion:

At our school we teach science to all children, whatever their ability and individual needs. Science forms part of the school curriculum policy 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 adapt our teaching to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents and those learning English as an additional language. For further details see individual whole-school policies including SEN/Inclusion policy.

3.2 When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors –

classroom organisation, teaching materials, teaching and learning styles, differentiation – so that we can take some additional or different action to enable the child to learn more effectively. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels. This ensures that our teaching is matched to the child's needs.

- 3.3** We enable all pupils to have access to the full range of activities involved in learning science. Where children are to participate in activities outside the classroom (a trip to a science museum, for example), we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

4. Science curriculum planning

- 4.1** Our school follows the National Curriculum Programme of Study for Science.
- 4.2** We carry out our curriculum planning in science in three phases (long-term, medium-term and short-term). The long-term plan maps the scientific topics studied each term throughout both key stages. The science subject leader works this out in conjunction with teaching colleagues in each year group.
- 4.3** Our medium-term plans, are based on our Connected Curriculum scheme and give details of each unit of work for each term. The science subject leader keeps and reviews these plans.
- 4.4** The teacher delivering Science lessons to a class, whether the Science co-ordinator or the class teacher, is responsible for writing the daily lesson plans for each lesson (short-term plans). These plans list the specific learning objectives and expected outcomes of each lesson. The Science co-ordinator will keep the class teacher informed about children's progress in any lessons that s/he teaches.
- 4.5** The topics in Science are planned in conjunction with the Connected Curriculum so that they build on prior learning. Children of all abilities have the opportunity to develop their skills and knowledge in each unit, and progression is built into the science scheme of work, so that children are increasingly challenged as they move up through the school.

5. The Early Years Foundation Stage (EYFS)

We teach science in the reception class as an integral part of the topic work covered during the year. As the reception class is part of the EYFS of the National Curriculum, the scientific aspects of the children's work address the objectives set out in the Early Learning Goals (ELGs) The World which underpin the curriculum planning for children aged three to five. Science makes a significant contribution to developing a child's understanding of the world, for example investigating and observing growth and change in plants and living things.

6. Assessment and Record Keeping:

Assessment for learning is continuous throughout the planning, teaching and learning cycle. Teachers will assess children's work in science by making informal judgements during lessons. On completion of a piece of work, the teacher assesses it, and uses this assessment to plan for future learning. Written or verbal feedback is given to the child to help guide his/her progress. Both KS1 and KS2 children are encouraged to

use peer and self-assessment to make judgements about what they have learned and how they can improve their work.

6. However children are more formally assessed termly in Y1 and half termly in Y2 and KS2 using a variety of methods:-
- ❖ 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.
 - ❖ End of unit assessment tests or assessments.
- 6.2 At the end of a unit of work, the science subject leader makes a summary judgement about the work of each pupil in relation to the expected standard for their age. S/he then records these on the school's management information system to track individual progress throughout Key Stages 1 and 2.
- 6.3 The science subject leader makes an assessment of the children's work in science at the end of Key Stage 1 and Key Stage 2. These are reported to parents, along with the teacher assessments that have been made whilst observing children's work throughout the year.
- 6.4 The science subject leader keeps samples of pupils' work that can be used to demonstrate expected levels of achievement in science for each age group in the school.
- 7. The contribution of science to teaching in other curriculum areas**
- 7.1 English**
Science contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing and listening. Some of the texts that the children study in the 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 recording information.
- 7.2 Mathematics**
Science contributes to the teaching of mathematics in a number of ways – particularly data handling. When the children use weights and measures, they are learning to use and apply number. Through working on investigations, they learn to estimate and predict. They develop accuracy in their observation and recording of events. Many of their answers and conclusions include numbers.
- 7.3 Personal, social and health education (PSHE) and citizenship and RSE**
Science makes a significant contribution to the teaching of PSHE and citizenship. Children learn about the importance of a balanced diet and good dental care. The subject matter can also lend itself to raising matters of citizenship and social welfare. For example, when learning about habitats, children are encouraged to recognise the impact that human activity has on the environment. Moreover, children have numerous opportunities to debate and discuss issues. Parts of the RSE curriculum are taught in Science lessons.

7.4 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 the opportunity to discuss, for example, the effects of drug taking, 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.

7.5 Design and Technology

Our Design and Technology Curriculum will be organised, where appropriate, to enhance learning in Science e.g. studying horticulture.

8. Science and ICT

8.1 Information and communication technology enhances the teaching of science in school significantly, because there are some tasks for which ICT is particularly useful. It also offers ways of impacting on learning, which are not possible with conventional methods. Internet resources and software are used to animate and model scientific concepts and to allow children to investigate processes that it would be impracticable to do directly in the classroom. Data logger sensors/apps are used to assist in the collection of data and in producing tables and graphs. Children use digital technology ICT to record, present and interpret data, to review, modify and evaluate their work and to improve its presentation. Children and staff must follow our E.Safety and Acceptable Use policies when using new technologies in Science.

9. Resources

9.1 Resources are kept in a central store, together with audio-visual materials and computer software to support children's individual research. The library contains a good supply of science topic books.

10. Health & Safety

It is important that all teachers are aware of the responsibility they have regarding health and safety both inside and outside the classroom. Teachers need to take account of both the children's and their own health and safety when involved in Science activities.

For further information on health and safety issues and safety points specific to individual science investigations, teachers should refer to the Association for Science Education **Be Safe** publication (a copy of which is kept in the Science Resources Cupboard) or contact CLEAPPS – the national advisory service for teaching practical science and technology.

11. Monitoring and reviewing

11.1 It is the responsibility of the subject leader to monitor the standards of children's work and the quality of teaching in science. The subject leader is also responsible for supporting colleagues in their teaching, for being informed about current developments in the subject, and for providing a strategic lead and direction for science in the school.

The subject leader evaluates strengths and weaknesses in science and indicates areas for further improvement.

11.2 Related policies: RSE, PSHE & Citizenship, ICT, Teaching & Learning, Assessment, Homework, E. Safety, Inclusion.

11.3 This policy will be reviewed at least every three years.

Signed:

Date: 22 September 2016

Review: September 2019