Science Policy

Signed:
Headteacher _____ _____
Chair of Governors _____ _____

Science Policy

1.1 Introduction

This policy is to inform all those who work in or are involved with our school about our expectations and organisation in relation to science. It indicates our approach to developing science with children and how we have organised our curriculum coverage, taking into account the National Curriculum and the Foundation Stage Curriculum.

Science provides children with the ability to seek an understanding of the world around them through investigations, problem solving and enquiry. Science activities help children develop learning by encouraging their natural curiosity.

Science activities also promote the development of communication skills and creativity. Through science, children are able to suggest ideas and put forward theories.

1.2 Aims of science

Science encourages every child to develop interests, attitudes and an aesthetic awareness of the world around them.

In the foundation stage (nursery and reception children) we aim for children to explore their environment through play and first hand experiences that encourage investigation, observation, problem solving, prediction, decision making and discussion.

The science curriculum in KS1 (Yrs 1 – 2) and KS2 (Yrs 3 – 6) will enable children to:-

- enjoy science and develop an enthusiasm for the subject;
- develop curiosity and the skills of research;
- ask questions and devise investigations to test their ideas;
- develop an awareness of what is a safe environment;
- develop the scientific skills and strategies of Sc. 1 (scientific enquiry) in order to acquire the ideas and concepts of Sc. 2,3 and 4;
- acquire scientific knowledge and develop learning skills;
- question what they have discovered and analyse results critically;
- develop independent and collaborative learning;
- fulfil the requirements of the science National Curriculum, by providing a broad, balanced and relevant curriculum accessible to all children;
- have an enriched experience in other areas of the curriculum, particularly literacy, numeracy, ICT;
- develop PSHE and citizenship knowledge, skills, attitudes and values;
- develop thinking skills.

2. Organisation of science

In the **Foundation Stage** a clear progression of key skills has been planned to allow continuity throughout and between the nursery and reception. The NC is used partially as a source of reference for planning if appropriate. In the foundation stage, science falls under the area of learning for 'Knowledge and Understanding' of the World. Work is planned for the indoor and outdoor classroom (for more information see Foundation Stage Document).

The school uses the new national curriculum framework for **Keystage 1 and 2** as a starting point for its teaching of science. It sets out in detail the areas of the science National Curriculum to be covered.

Each year group has been given a copy of the units that they are responsible for teaching. Scientific enquiry will be taught as a main focus where possible through contexts that relate to the new curriculum. Within the school, science is mainly taught as a separate subject, although where possible the science topics are linked to other subjects or areas of learning to enhance pupil's experiences and learning.

3. Planning in KS1 and KS2

The curriculum time allocation dedicated to science is approximately 1½ hours in KS1 and 2 hours in KS2, including cross curricular work. Long term planning outlines how the new science curriculum are organised and covered. Medium term planning indicates the coverage of Scientific enquiry skills over the course of each year and the contexts in which various aspects of practical science are addressed. These plans also indicate where there are direct links between the science curriculum, drug education and sex education.

The long term plan for the school identifies which science topics are to be taught and the national curriculum coverage. Year groups plan together the medium and short term work based on what is outlined in the long term plan. Science teaching will be practical based and involve hands on experience wherever possible. It will address children's abilities, knowledge and skills. The teaching of science may start from different points e.g. poems, stories, the raising of questions, objects and interests. Children will be taught to use reference books, equipment and instruments in an appropriate manner.

Practical investigations and activities will form a major part of the learning process. All the children will be taught the skills of scientific

investigation. They will have the opportunity to work with their teacher on 'model' investigations before tackling their own investigations.

4. In the classroom

In the Foundation stage, it is recognised that both the indoor and outdoor classrooms play a key role in scientific enquiry and curriculum delivery.

KS1 and KS2 children will be encouraged to work in a number of ways in science, including as a class, in groups or as individuals. In meeting the requirements of skills for scientific enquiry, small group work will be favoured where possible, as this particular approach is important in developing children's learning in science.

Planning will cater for pupils with differing needs, bearing in mind that every child matters and differentiation is needed for the more able as well as the less able child.

The methods of recording that the children use will be varied. They will be encouraged to present work in the form of diagrams, graphs, tables, charts, orally and in other ways where appropriate. ICT will be available to support and enhance children's scientific learning.

4.1 Equal Opportunities and Special Needs- Inclusion

Planning and teaching should give all pupils equal access to scientific opportunities, whether they are on the special needs register or gifted in science. This may be achieved through careful grouping and questioning of children and also by the teacher's example in terms of attitudes and values. There must be a balance of activities and context that reflect the interest of girls and boys and provide opportunities for non-competitive, collaborative activities. In addition to this, science must be portrayed as an activity undertaken by different cultures through history. Teaching materials should be free of gender bias and use the different cultural and ethnic backgrounds of children to enrich teaching and learning.

4.2 We recognise that there are children of widely different scientific abilities in all classes 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 by:-

- setting common tasks which are open-ended and can have a variety of responses;
- setting tasks of increasing difficulty (we do not always expect all children to complete all tasks);

- grouping children by ability in the room and setting different tasks for each ability group;
- providing resources of different complexity, matched to the ability of the child;
- using classroom assistants to support the work of individual children or groups of children;
- provide opportunities for children to take their interest in science further, through an extra-curricular science club.

5. Assessment, record keeping and reporting

The school assessment policy states the procedures in place in the school and should be read in conjunction with this policy. In key stages 1 and 2, the scheme of work outlines the Programmes of Study to be considered during each unit of work and specific learning objectives and skills are also identified. These objectives/skills form the basis for assessment criteria. The assessment process is thereby integrated into the planning stage.

Assessment opportunities are planned against the learning objectives for each topic in the foundation stage. Children are encouraged to reflect on their own work and progress.

Assessment for learning in science will be an ongoing process that informs planning and monitors the attitude, skills and conceptual development of each pupil. It will be carried out in Sc1 through observations of children at work, dialogue with individuals and evaluation of their written work on an ongoing basis, and is recorded on a record sheet.

All parents receive a written report about their child's progress in science annually and at the end of Years 2 and 6 the children are awarded National Curriculum levels of attainment.

6. The contribution of Science to Teaching in other Curriculum areas

6.1 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 non-fiction texts that the children study in the literacy hour are of a scientific nature. The children develop oral skills in science lessons through discussions (for example about the environment) and through recounting their observations of scientific experiments. They develop their writing skills through writing reports and projects and by recording information.

6.2 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, as well as interpreting data presented in tables and graphs.

6.3 Computing

Children use ICT in science lessons to enhance their learning where appropriate. They use it to support their work in science by learning how to find, select, and analyse information on the Internet and other interactive programmes. Children use ICT to record, present and interpret data and to review, modify and evaluate their work and improve its presentation. Sensors and data loggers are used to gather and analyse data, and digital cameras, iPads and microscopes are used to allow children to make more detailed observations.

6.4 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 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.

6.5 PSHE and Citizenship

Through the science curriculum children learn about aspects of personal, social and health education (PSHE) and citizenship. Some opportunities are identified in the scheme of work for different year groups e.g to make choices that improve their health and well being in year 2, or the effects and risks of drugs in year 5. There are many opportunities to develop skills, knowledge and good attitudes and values through science teaching at Wembrook.

6.6 Thinking Skills

Many aspects of science contribute to the development of thinking skills – developing information processing, reasoning, enquiry, creative thinking and evaluation skills.

6.6 Science Week

In 2014, Wembrook held its first ever Science week, which was a huge success. This event gave the opportunity to the children and staff to carry out a range of activities to further develop children's scientific skills and promote science outside of the classroom and into other subject areas. Outside speakers and parents/carers of the children were part of this fantastic week to share the experiences and learning that the children developed in this week. Currently, science week will take place every two years at the school.

7. Resources

The science resources are stored in one main area within the school that is accessible to all staff. Science needs are discussed and ordered as necessary.
The science subject leaders also have a collection of books and publications that may be borrowed at any time. There are also a range of ICT programmes available on the school network to support the teaching of science.

8. Health and Safety

The school as a whole recognises the importance of the health and safety of all the children, teachers and other adults in any science work. The Association of Science Education booklet 'Be Safe' is followed and adhered to. This booklet is kept with the resources in the science leaders' cupboard. Safety issues are highlighted at the medium term planning stage. Risk assessments are undertaken for off site environmental work.

9. Parental Involvement

Children are encouraged all the time in science to look at and question the world around them. Parents can assist this by challenging and questioning their thoughts and ideas and by supporting them when completing any science homework.

10. Monitoring and Review

It is the responsibility of the science subject leaders in conjunction with the school leadership team to monitor the standards of children's work

and the quality of teaching in science. The science subject leaders are also responsible for supporting colleagues in the teaching of science, from being informed about current developments in the subject and providing a strategic lead and direction for the subject in the school. The science subject leaders evaluate strengths and weaknesses in the subject and indicate areas for further improvement. The science subject leaders have specially-allocated time for fulfilling the work leading and managing the science curriculum. The school leadership team take overall responsibility for standards in the subject.