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Moulton CEVCP School

Science Policy

Why is science important?

Science teaches an understanding of natural phenomena which stimulates and excites pupils' curiosity about the world around them. It helps children understand why things work in the way they do. Science allows children to engage with their environment on different levels. It teaches methods of enquiry and investigation to stimulate creative thought. Children will learn to ask scientific questions and begin to appreciate the way in which science will affect the future on a personal, national, and a global level.

Our Aims:

Our aims in teaching science are to enable our children to:

- be curious about the world around them;
- ask and answer scientific questions;
- be engaged learners, accessing practical experiences;
- plan and carry out scientific investigations, using equipment (including the use of computers) correctly;
- develop understanding and usage of scientific vocabulary;
- 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;
- know and understand how scientific ideas contribute to technological advance that improve the quality of our everyday lives; and
- evaluate evidence, and present their conclusions clearly and accurately.

Implementation:

Science is a core part of our school curriculum and all pupils engage with scientific concepts weekly.

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 the 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 have the opportunity to use computers in science lessons to enhance 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 children in real scientific activities, for example investigating a local environmental problem or carrying out a practical experiment and analyzing the results. Specialist teachers and visitors are invited in to run curriculum-based sessions to provide a range of different experiences for our children.

We recognize 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 number 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);
- providing opportunities for children to choose how to present their learning;
- differentiating tasks in response to individual need;
- giving opportunities for children to work together;
- providing resources of different complexity, matched to the ability of the child;
- using teaching assistants to support the work of individual children or groups of children.

Our focus moving forward is to increase and develop the scientific literacy of our pupils. In order for pupils to do this, they need a good knowledge of scientific content and practice at completing scientific

experiments. Learning and being encouraged to use scientific vocabulary will support the development of scientific literacy. As teachers, when we use scientific terms and phrases during explicit teaching of science and throughout the school day, we model scientific thinking and questioning, including doubts and dilemmas that are part of making sense of the world. The more opportunities we provide for students to explore and experience science, the more their scientific literacy will develop. We can maximize these opportunities by beginning in the Early Years with our youngest children. The scientific method, once learnt, can be used in many other subjects where children are asked to investigate a question or phenomena.

Planning:

The school uses the National Curriculum for science as the basis of its curriculum planning. Our curriculum has been adapted to the local circumstances of the school in that we make use of the local environment in our fieldwork. We continue to develop our school grounds in order to move more of our learning outside into the natural environment.

We plan science in three phases: long-term, medium-term and short-term. The long-term plan maps the scientific topics studied in each term during the key stages. We look for opportunities to provide cross-curricular links, combining scientific study with learning in other subject areas.

Our curriculum overviews give details of each unit of work for each term. We ensure complete coverage of the National Curriculum without repeating topics.

The class teacher is responsible for planning each lesson. Each lesson should have a specific learning objective that build upon previous learning, both in the current academic year and previous academic years. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit, and we also build progression into the science scheme of work, so that the children are increasingly challenged as they move up through the school. At the end of each unit, teachers should complete the science assessment grids to highlight which aspects are secure and which aspects may need covering again before this topic is taught again in later years.

All provision and planning is monitored by the subject leader.

The Foundation Stage:

We teach science in the reception classes as an integral part of the topic work covered during the year. As the reception class is part of the Foundation Stage of the National Curriculum, we relate the scientific aspects of the children's work to the objectives set out in the Early Learning Goals (ELGs) which underpin the curriculum planning for children aged three to five. Science makes a significant contribution to developing a child's knowledge and understanding of the world, for example through investigating what floats and what sinks when placed in water.

How science contributes 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 children study in English 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. 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. Children are given the opportunity to use technology to create graphs to help them present experiment data. Many of their answers and conclusions involve numbers and statistics.

Personal, Social and Health Education (PSHE) and Citizenship

Science makes a significant contribution to the teaching of PSHE and citizenship. This is mainly 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 the better or worse. Secondly, the subject gives children numerous opportunities to debate and discuss. They can organize campaigns on matters of concern to them, such as helping the poor or homeless. Science thus 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 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.

Computing:

Use of computers enhances the teaching of science in our school significantly. It also offers ways of impacting on learning which are not possible with conventional methods. Software and the internet is used to animate and model scientific concepts and to allow children to investigate processes which it would be impracticable to do directly in the classroom. Data loggers are used to assist in the collection of data and in producing tables and graphs. Children use computers to record, present and interpret data, to review, modify and evaluate their work, and to improve its presentation. Children learn how to find, select, and analyze information on the internet and in other media.

Inclusion:

At our school, we teach science to all children, whatever their ability and individual needs. Science forms and 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 strive hard to meet the needs of those pupils with special education needs, those with disabilities, those with special gifts and talents and those learning

English as an additional language, and we take all reasonable steps to achieve this.

How we keep science safe:

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 the activity, to ensure that the activity is safe and appropriate for all pupils.

Safe practice is promoted at all times. Particular attention is paid to any substance that may aggravate individual pupils' allergies. Safety issues are identified in medium-term planning and risk assessments are completed when activities are identifies that are unusual and beyond the scope of normal safety practice.

Assessment:

Teachers 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 children to help guide their progress. All children are encouraged to make judgements about how they can improve their learning.

At the end of a unit of work, the teacher makes a summary judgment about the work of each pupil. They will complete the assessment grid for the class, detailing which children excelled at that unit and which required further input to achieve objectives. Teachers should try to make detailed comments and be specific about which areas children have excelled in or struggled with. At the end of the year, science attainment is reported. The terms 'emerging', 'expected' and 'exceeding' will be used to describe the attainment. Information is passed on to the next teacher at the end of each year and parents in end of year reports.

The science subject leader reviews a sample of children's work half termly to check coverage.

Resources:

Learning resources are kept in the science cupboard and the drawers in the main hall. Class specific resources are kept in individual classrooms. Relevant equipment is taken to the class by teacher or responsible pupils. Individual teachers are responsible for the

maintenance of these areas. Children are taught not to be careless and to use consumables efficiently.

Monitoring and Review

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 planning, teaching, assessing, for being informed about current developments in the subject, and for providing a strategic lead and direction for science in the school.