



## Crudgington Primary School Science Policy 2020

Science Policy - Document Status				
Date of policy creation	27/04/20	✓	Named responsibility	Melanie Parsons
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### Science Intent Statement

The 2014 National Curriculum for Science aims to ensure that all children:

- 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 skills required to understand the uses and implications of science, today and for the future. We understand that it is important for lessons to have a skills-based focus, and that the knowledge can be taught through this

At Crudgington Primary School, we encourage children to be inquisitive throughout their time at the school and beyond. The Science curriculum and teaching aims to give all children a strong understanding of the world around them whilst acquiring specific skills and knowledge to help them to think scientifically, to gain an understanding of scientific processes and also understanding of the uses and implications of Science, today and for the future. We are committed to fostering a healthy curiosity in our pupils about our universe and promoting respect for the living and non-living.

Throughout the programme of study, the children will acquire and develop the key knowledge that has been identified within each unit, as well as the application of scientific skills which have been embedded in each topic. Topics are revisited and developed throughout their time at school, this model allows children to build upon their knowledge and increases their enthusiasm for the topics, whilst embedding this procedural knowledge into the long-term memory.

We ensure that the Working Scientifically skills are built-on and developed throughout the children's time at school so that they can apply their knowledge of Science when using equipment, planning and conducting experiments, evaluating investigations, building arguments and explaining concepts confidently and continue to ask questions and be curious about their surroundings. Children are encouraged to become independent learners in exploring possible answers for their scientific based questions and becoming familiar with the key features of scientific enquiry, so that they learn to use a variety of approaches to answer relevant scientific questions. Specialist vocabulary for topics is taught and built up, and effective questioning to communicate ideas is encouraged.

## Implementation & Organisation of Science

At Crudgington Primary School, Science topics have been organised in to a two year rolling plan, which allows for a logical building of knowledge and progression in scientific skills. Over the course of the school year, six units of work should be taught, covering one topic each half term. One of these topics may be in the form of a Science project which may take course over the year or a term. Science takes place weekly, either in two 1 hour sessions or over the course of an afternoon, lasting 2 hours, teachers have flexibility on the organisation of this depending on the content to be taught. Teachers create a positive attitude to Science learning within their classrooms and reinforce an expectation that all children are capable of achieving high standards in Science. Our whole school approach to the teaching and learning of Science involves the following:

- A clear and comprehensive scheme of work in line with the National Curriculum as a basis of work, where teaching and learning should show progression across all key stages within the strands of Science and should plan for practical investigative opportunities within lessons.
- Children have access to key language and meanings in order to understand and readily apply to their written, mathematical and verbal communication of their skills.
- Children will use a range of resources to develop their knowledge and understanding that is integral to their learning and develop their understanding of working scientifically. Teachers demonstrate how to use scientific equipment and model the various Working Scientifically skills, to embed scientific understanding.
- Involving problem solving opportunities that allow children to find out for themselves. Children are encouraged to ask their own questions and are given opportunities to use their scientific skills and research to discover the answers.
- The use of precise questioning in class to test conceptual knowledge and skills, and assess children regularly to identify those children with gaps in learning, to allow all children to access the lessons.
- The building upon the learning and skill development of prior learning and linking ideas together. As the children's knowledge and understanding increase, and they become more proficient in selecting, using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.
- Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching.
- Children are given opportunity to reflect on previous learning and cross-curricular links will be made wherever possible.

### EYFS (as part of Implementation and organisation)

Children will explore Science through making predictions, using their senses and investigating materials and their properties. Science is taught through the strand of, 'Understanding the World'. Science teaching is also linked to other strands of the EYFS framework for learning 2014.

Teachers and Teaching Assistants support children to develop a solid understanding of things occurring around them in their day-to-day lives.

Children are encouraged to be creative and inquisitive as they participate in activities. Children are encouraged to use their natural inquisitiveness, whilst taking part in exploratory play in specific scientific areas as well as areas which link across the EYFS framework.

### Key Stages 1 & 2 (as part of Implementation and organisation)

During Key Stage 1, pupils observe, explore and ask questions about living things, materials and the world around them. They begin to work together to collect evidence to help them

answer questions, find patterns, classify and group objects, research using a variety of sources and become familiar with the concept of a fair test. Children will use reference material to find out about scientific ideas. They will share their ideas and communicate them using scientific language, drawings, charts, and tables. Key areas of Science to be covered include: Everyday Materials, Plants, Animals, including humans, Seasonal Change and Living Things in Their Habitats.

In Lower Key Stage 2, children are encouraged to extend the scientific questions which they ask and answer about the world around them. They will explore everyday phenomena and the relationships between living things and familiar environments and begin to develop their ideas about functions, relationships and interactions. Children will make some decisions about which types of enquiry will be the best way of answering questions including observing changes over time, noticing patterns, grouping and classifying, carrying out simple comparative and fair tests, finding things out using secondary sources. They will make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including new equipment such as thermometers and data loggers. Children will begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them and help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used. Key areas of Science to be covered include: Plants, Animals, including humans, Living Things in Their Habitat, Rocks, Light, Forces and Magnets, Electricity, Sound and States of Matter.

The principal focus of Science teaching in Upper Key Stage 2 is to enable children to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. In Upper Key Stage 2, children should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. Children will take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate, choosing the most appropriate equipment and explaining how to use it accurately. They will identify patterns that might be found in the natural environment. They will make their own decisions about what observations to make, what measurements to use and how long to make them for and whether to repeat them. Key areas of Science to be covered include: Plants, Living Things in Their Habitat, Animals, including humans, Earth and Space, Light, Forces, Electricity, Properties and Changes of Materials and Evolution and Inheritance.

## Resources

The Science scheme of work followed, 'Engaging Science', provide resources for activities linked to lessons and topics. Teachers have access to the 'Concept Cartoons' which can be used in conjunction with the work scheme to provide opportunities for scientific thinking and discussion. Written resources are kept on the 'T' drive 'Workgroup' or in the co-ordinator's subject file, whilst tools, materials and teaching aids are stored in science storage boxes. Existing products and examples of work from previous units will also be held with the co-ordinator. The co-ordinator is responsible for ensuring that consumable resources are replenished when necessary. Other members of staff should inform the co-ordinator when resources have run out or are broken.

## **Assessment – Measuring Impact**

Class teachers assess a pupil's progress through observation, recorded work and specially planned assessment activities in line with our assessment objectives. The learning outcomes in each unit show how children might demonstrate what they have learnt. Pupils should be involved in actively evaluating and thinking about what they might do differently in experiments. Each half term, teachers will highlight both the knowledge and working scientifically assessment grids for each child to demonstrate that they have achieved this target.

Examples of work will be kept as evidence of each unit of work across all Key Stages. These examples of work will also demonstrate the performance of children at different levels within their year group. These should be passed onto the co-ordinator upon completion of the unit and will then be stored in the Science subject file.

## **Inclusion and Equal Opportunity**

Curriculum planning will ensure that all pupils have an equal opportunity to take part in the full scheme of work and its associated practical activities. Where appropriate, work will be adapted to meet pupils' needs and, if appropriate, extra support given. Pupils that are more able will be given suitably challenging activities. Gender and cultural differences will be reflected positively in the teaching materials used.

It is important that pupils are given the opportunity to realise their full potential. Differential activities provide for a range of tasks, which are appropriate to the individual to ensure such personal development. In this, careful consideration has to be given to pupil task groupings, which fully takes in to account their strengths and weaknesses to ensure the fullest participation of all. This should benefit individual confidence and self-esteem.

## **Health and Safety**

Children should be taught the correct and safe use of equipment and the carrying out of simple safety procedures as an intrinsic part of their Science lessons. A risk assessment should be carried out in line with school policy in regards to any school trips, experiments or learning in the outside environment. Safety equipment is available in the Science resource area. It is the teacher's responsibility to ensure any investigations carried are done so in a safe way for the protection of their class.

## **Subject Leader Role/ Monitoring and Review**

The Science co-ordinator is responsible for monitoring the standards of children's work and the quality and breadth of teaching. The coordinator supports colleagues in the teaching of Science by informing them of current developments in the subject and by providing a strategic lead and direction for the subject in school.

The co-ordinator is also responsible for evaluating strengths and weaknesses in the subject and identifying areas for improvement and development. Subject Leader release time will enable the coordinator to fulfil the role, monitoring children's work and observing teaching in the subject.

The co-ordinator will:

- Be responsible for the development of Science in school.
- Monitor the Science curriculum and update school policy when and where necessary.
- Monitor the effectiveness of Science in school by means of book scrutiny, ensuring the quality of the learning environment and overseeing assessment in line with the current school assessment policy.
- Support teachers in their planning and strategies for classroom management.
- Disseminate new information.
- Support teachers in delivering the curriculum and arrange staff development and INSET training where appropriate.
- Develop links with local Secondary Schools to improve development of Science in Crudgington Primary School.
- Be responsible for purchasing and providing appropriate Science resources
- Consider and minimise risks for all activities in line with current Health and Safety Regulations.

### **Policy Review**

Review April 2020

Review every 2 years

Date for Review: April 2022