



# Churchill CEVC Primary School

## Science Policy

*With kind hearts and determined minds, we inspire each other to be the best we can be.*

Written by	Science Subject Leader
Ratified by	Curriculum and Standards Committee
Date last reviewed	November 2020
Date of next review	November 2022
Signed – Chair of Governors	<i>S Furniss</i>
Signed – Headteacher	<i>L Woolven</i>

*This policy should be taken as part of the overall strategy of the school and operated within the context of our vision, aims and values as a Church of England School*

## **Intent**

At Churchill Primary School, we see children as incredible and powerful learners. Our team provide exciting experiences and challenges which feed our children's curiosity of the world and embrace their inquisitive nature. We encourage children to be inquisitive throughout their time at the school and beyond. Our science curriculum fosters a healthy curiosity in children about our universe and promotes respect for the living and non-living.

Our curriculum is underpinned by the 2014 national curriculum for science, which 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 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

We believe science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Throughout the programmes of study, the children will acquire and develop the key knowledge that has been identified within each unit and across each year group, as well as the application of scientific skills. We ensure that the 'Working Scientifically Skills' are built-on and developed throughout children's time at the school so that they can apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts confidently and continue to ask questions and be curious about their surroundings.

## **Implementation**

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all pupils are capable of achieving high standards in science. Our whole school approach to the teaching and learning of science involves the following;

- Science will be taught in planned and arranged topic blocks by the class teacher, to have a project-based approach. This is a strategy to enable the achievement of a greater depth of knowledge.
- Through our planning, we involve problem solving opportunities that allow children to apply their knowledge, and find out answers for themselves. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom.
- Planning involves teachers creating engaging lessons, often involving high-quality resources to aid understanding of conceptual knowledge. Teachers use precise questioning in class to test conceptual knowledge and skills, and assess pupils regularly to identify those children with gaps in learning, so that all pupils keep up.
- We build upon the knowledge and skill development of the previous years. As the children's knowledge and understanding increases, 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. This is developed through the years, in-keeping with the topics.
- Teachers demonstrate how to use scientific equipment, and the various 'working scientifically skills' in order to embed scientific understanding. Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning and workshops with experts.
- Children are offered an increasing range of extra-curricular activities, visits, trips and visitors to complement and broaden the curriculum. These are purposeful and link with the knowledge being taught in class.

## **Impact**

The updated and reformed curriculum is enabling the provision of fun, engaging, high-quality science education, that provides children with the foundations and knowledge for understanding the world.

Through various workshops, trips and interactions with experts, along with our close ties to the Academy, children are developing the understanding that science has changed our lives and that it is vital to the world's future prosperity.



During the next year we are looking to extend the opportunities for children to learn about careers in science, so that the children have access to positive role models within the field of science from the immediate and wider local community. From this exposure, we intend for all children to feel they are scientists and capable of achieving. Children at Churchill overwhelmingly enjoy science and this results in motivated learners with sound scientific understanding.

### (Quotes)

### Teaching and Learning

- Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom.
- Teachers ask a range of questions which enable all children to take part, listening carefully to answers and taking learning forward, using open and closed questions and allowing children time to think.
- Planning involves teachers creating engaging lessons, involving high-quality resources to aid understanding of conceptual knowledge
- Teachers use precise questioning in class to test conceptual knowledge and skills, and assess pupils regularly to identify those children with gaps in learning, so that all pupils keep up.
- New vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years and links with the topics.



- The key knowledge for each topic and across each year group is mapped across the school and checked at the end of each science topic.
- Teachers demonstrate how to use scientific equipment, and the various scientific skills in order to embed scientific understanding.
- Teachers find opportunities to develop children's understanding by accessing outdoor learning.

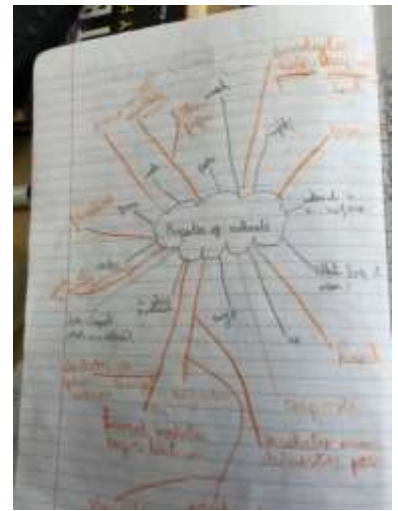
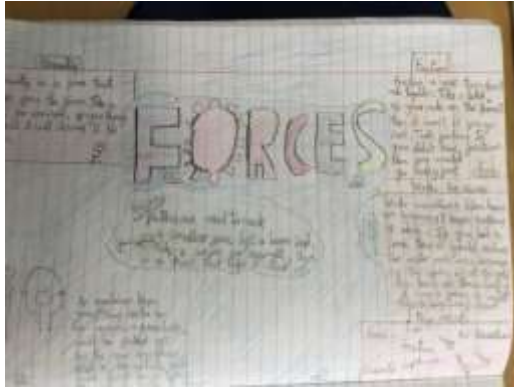




## Scientific knowledge and conceptual understanding

The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage.

Children's starting points are identified at the beginning of each science topic and the children are able to convey and record what they know already. At the end of the block, children's knowledge is checked in line with the key knowledge identified prior to the teaching block. They are encouraged to create a poster for their unit to demonstrate their gained knowledge.



Pupils should be able to describe associated processes and key characteristics in common language, but they should also be becoming familiar with, and use, technical terminology accurately and precisely. They are being encouraged to build up an extended specialist vocabulary and teachers endeavour that this is developed within each lesson and throughout each science topic.



Our science curriculum allows children to have opportunities to apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. This will become more natural as the new scheme of work is embedded.



## The nature, processes and methods of science

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group and this is embedded within lessons and focuses on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils are given opportunity to seek answers to questions through collecting, analysing and presenting data.

## Spoken language

The national curriculum for science reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. Science lessons provide a quality and variety of subject specific language to enable the development of children's confident and accurate use of scientific vocabulary and their ability to articulate scientific concepts clearly and precisely. They are encouraged and assisted in making their thinking clear,

both to themselves and others, and teachers ensure that pupils build secure foundations by using discussion to probing and remedying their misconceptions.

## Assessment

Children's progress is continually monitored throughout their time at Churchill Primary School and is used to inform future teaching and learning. By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study as set out in the National Curriculum. These are set out as statutory requirements. We also draw on the non-statutory requirements to extend our children and provide an appropriate level of challenge.



Children receive effective feedback, both orally and through written feedback, in line with the success criteria. Children are guided towards achievement of the main objective through the use of process based 'success criteria', provided by and explained by the teacher. Children will have these to refer to in the lesson, where they will be evident in their books and used to identify areas of difficulty by children and teachers when reviewing and assessing work.

Assessment for learning is continuous throughout the planning, teaching and learning cycle. However, children are more formally assessed half termly in KS1 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
- Unit assessments

## Organisation

Science will be taught in planned and arranged into topic blocks by the class teacher, to have a project-based approach. There are 5 topics (4 topics for Year 2) that can be covered at any point throughout the year.

Year 1	Animals Inc Humans	Materials	Plants	Seasonal Changes (1)	Seasonal Changes (2)
Year 2	Animals Inc Humans	Materials	Plants	Living things and their habitats	
Year 3	Animals Inc Humans	Magnets/forces	Plants	Light	Rocks
Year 4	Animals Inc Humans	Electricity	Sound	Living things and their habitats	States of matter
Year 5	Animals Inc Humans	Forces	Earth and Space	Living things and their habitats	Materials
Year 6	Animals Inc Humans	Electricity	Light	Living things and their habitats	Evolutions and inheritance

## **Equal Opportunities (eg Gender, race)**

At Churchill Primary School we are committed to providing all children with an equal entitlement to scientific activities and opportunities regardless of race, gender, culture or class.

## **Inclusion**

In school, we aim to meet the needs of all our children by differentiation in our science planning and in providing a variety of approaches and tasks appropriate to ability levels.



This will enable children with learning and/or physical difficulties to take an active part in scientific learning and practical activities and investigations and to achieve the goals they have been set.

Some children will require closer supervision and more adult support to allow them to progress whilst more able children will be extended through differentiated activities. By being given enhancing and enriching activities, higher achieving children will be able to progress to a higher level of knowledge and understanding appropriate to their abilities.