

# Whitchurch Combined School

## Science Policy



### Intent

Our main objective in the delivery of Science at Whitchurch is to bring the world around us to life. Two of our school values are to 'Be Curious' and 'Be Respectful'. We seek to develop the exciting world of curiosity as we encourage the children to actively live out the key skills as they learn core knowledge based principles. Our hope is that the children will see themselves as scientists: where they learn to respect the living and non-living; ask questions and seek to find answers in inquisitive, imaginative and analytical ways. Our aim is for them to gain knowledge that stays with them.

At Whitchurch School we follow the statutory guidance for Science as stated in the New Primary Curriculum 2014.

- 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

Science teaches the foundations for understanding the world through early specific areas of Physics, Chemistry and Biology. It encourages children to find out about why things happen in the way they do. It teaches methods of enquiry and investigation. Children should learn the early knowledge and concepts, whilst developing a sense of curiosity about natural phenomena. The children should be encouraged to explore, question, and explain what they are seeing, to predict how things will behave and analyse causes.

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. Key skills are also mapped for each year group and are progressive throughout the school. The curriculum is designed to ensure that children are able to acquire key scientific knowledge through practical experiences; using equipment, conducting experiments, building arguments and explaining concepts confidently. The school's approach to science takes account of the school's own context, ensuring access to people with specialist expertise and places of scientific interest as part of the school's commitment to learning outside the classroom. Cross-curricular opportunities are also identified, mapped and planned to ensure contextual relevance. Children are encouraged to ask questions and be curious about their surroundings and a love of science is nurtured through a whole school ethos and a varied science curriculum.

### Implementation

The enjoyment of Science is evident around the school. In classrooms, teachers create a positive attitude to science learning through 'Working Walls for Science' and a classroom environment where children are encouraged to be curious and respectful. Our whole school approach to the teaching and learning of science involves the following;

- Science is taught in planned and arranged topic blocks by the class teacher which incorporates a project-based approach. This is a strategy to enable the achievement of a greater depth of knowledge.
- Existing knowledge is checked at the beginning of each topic. This ensures that teaching is informed by the children's starting points.

- Through planning, teachers 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, 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. Tasks are selected and designed to provide appropriate challenge to all learners.
- We build upon the knowledge and skills development of the previous years, through the use of our Science Skills and Knowledge Progression Map. Working Scientifically skills are embedded into lessons to ensure that skills are systematically developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching. 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. The flower, fruit and vegetable beds create an opportunity to explore changes over time. The woodland areas create opportunities to create insect and wildlife homes and explore changes across the seasons
- Children are offered a wide range of extra-curricular activities, visits, trips and workshops with experts to complement and broaden the curriculum. These are purposeful and link with the knowledge being taught in class.
- Regular events, such as Science Week and Selfie-Science Challenges in half term holidays allow all pupils to come off-timetable during the school day and engage their family units in science exploration, to provide broader provision and the acquisition and application of knowledge and skills.
- At the end of each topic, key knowledge is reviewed by the children and rigorously checked by the teacher and consolidated as necessary.
- Each Science lesson begins with a Science Flashback where children answer quick questions to revise knowledge from a lesson in the current topic, one from the previous topic and one from a previous year. The aim of this is to continually revise what they have learnt so that they can remember more.
- 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.

Developing a greater sense of curiosity is linked to our teaching of the scientific key skills alongside the knowledge based objectives of the curriculum. We use a variety of teaching and learning styles in Science lessons. Sometimes whole class teaching, while at other times we engage the children in group, paired or individual enquiry-based activities.

In each lesson, children are guided towards the learning objective, through the use of success criteria and differentiated opportunities. The LO and success criteria are shared at the beginning of the lesson and reviewed by children (teacher in KS1 and EYFS) at the end. This supports teacher assessment whereby a review work of children's work is made and individual target areas identified. A working wall will be used to support and celebrate learning throughout each unit of work. This will also be used to support the acquisition of key knowledge and will support the accurate use of an extended specialist vocabulary.

We recognise that there are children of very different scientific abilities in all classes and we ensure that we provide suitable learning opportunities for all children by using differentiated activities, resources etc. and by using the TAs to support the work of individual children or groups of children.

## **EYFS**

In the Reception class 'Knowledge and Understanding of the World' is one of the strands of the EYFS, Science is an integral part of this strand. The children progress and develop their skills through cross curricular work and they are assessed against the Early Learning Goals. In particular children are encouraged to investigate places, objects, materials and living things by using all their senses as appropriate. They are encouraged to ask questions about why things happen and how things change, looking at similarities and differences.

## **KS1**

Science is taught from a position of first-hand experience, encouraging children to be curious and ask questions about the world around them. It is often taught through cross-curricular links. Children are encouraged to notice patterns, grouping and classifying, comparing things through simple testing and finding things out through secondary sources of information. They begin to communicate their thinking and offer simple explanations for what they have found. Children are supported to begin to use simple scientific language to talk about what they have found out and communicate their ideas in a range of ways.

## **KS2**

Children continue their science journey with practical enquiry being the bedrock of their experience. They use this to develop their understanding of scientific concepts and skills. Teachers use a range of strategies including, exploration and investigative enquiry. Children record their enquiries using predictions (I think that ... because), using the concept of a fair test. They draw simple conclusions and use scientific vocabulary in their recording. These principles deepen and become more abstract as children progress through the key stage.

The science curriculum at Whitchurch has been designed to provide children with a balance and progression of: (i) scientific knowledge and understanding (facts) and (ii) scientific enquiry (experimentation) through observation, prediction, hypothesising, fair testing, seeking and recording evidence, interpreting results and drawing conclusions.

## **Impact**

Science at Whitchurch enables children to see themselves as scientists that enjoy exploring and understanding the world in a greater depth. These scientists are curious and respectful, reflective and analytical. Our engagement with the local environment ensures that children learn through varied and first hand experiences. Frequent, continuous and progressive learning outside the classroom is embedded throughout the science curriculum.

Through investigative planning projects children are able to ask questions and have learnt key skills to find answers to their questions. The school environment reflects the enjoyment of science through evidence of Science Weeks and Selfie Science half term holiday challenges. Classroom displays demonstrate the curiosity shared and knowledge learnt through Science Working Walls, photos and pupils work displayed within each classroom.

Through various workshops, trips and interactions with experts, children have the understanding that science has changed our lives and that it is vital to the world's future prosperity. Children learn the possibilities for careers in science. They learn from and work with professionals, ensuring access to positive role models within the field of science from the immediate and wider local community. Through our broad and varied curriculum our children ask questions and seek to find answers in inquisitive, imaginative and analytical ways. They gain knowledge that stays with them. They are curious and respectful scientists.

## **Assessment**

As part of the introduction to each new science topic, teachers review what the children know already and identify what they would like to learn. This informs the programme of study so that it takes account of children's starting points as well as their specific interests.

Lessons are planned to ensure that key knowledge is developed over time, over the course of each science block and in the correct sequence. Key knowledge is reviewed by the children and consolidated by the teacher at the end of each unit of work. Lessons within each unit are also planned to ensure the systematic development of the key identified skills across the school.

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.

Children receive effective feedback through teacher assessment, 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 refer to these during the lesson and they precede outcomes of work in children's books. The success criteria are used to identify areas of difficulty by children and teachers when reviewing and assessing work.

On completing Key Stage 1 and Key Stage 2 the teacher uses the aforementioned assessment criteria to inform the level of expectation of each child which is then reported to parents. The mid unit assessment, enables the teacher to assess the scientific process skills that are taught alongside the conceptual knowledge. Parents will receive a written comment and grading as part of the annual report on their child's progress. Opportunities will be given for them to discuss their child's work with staff.

Ongoing assessment also includes:

- 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.

In EYFS, we assess the children's Understanding of the World according to the Development Matters statements.

## **Planning and Resources**

Teacher's planning is developed to fit the needs of their students by the class teachers using a range of resources meeting the goals of the National Curriculum. Lessons are carefully sequenced into smaller manageable steps with Science Flashbacks used at the beginning of each lesson to revise current science knowledge. Planning informs lesson content, specialist vocabulary and key knowledge. Teachers ensure planning includes an appropriate emphasis on skills through practical experiences and approaches.

Key knowledge and skills, in line with the National Curriculum are mapped on the whole school 'Science Knowledge and Skills Progression Map' and this shows the key knowledge and skills of each unit and how they build through the school. The school's own context is also considered and opportunities for learning outside the classroom, including the use of specific school resources (such as the nature garden, woodland, pond and raised gardening beds) and relevant educational visits, are included on the map and are planned by teachers. Cross curricular links are also mapped to further support the contextual relevance of the science curriculum.

High-quality science resources to support the teaching of all units and topics from EYFS to Y6, are used consistently and maintained by the subject leader. These are kept in a central store and are labelled and easily accessible to all staff. As well as these, the EYFS classes have a range of resources for easy access to children during exploration. The library contains a rich and varied supply of science topic books to support children's individual research and all classes have access to these during their weekly allocated library slot.

## **Organisation**

Within the academic year, children study science in blocks, as outlined in the overall curriculum framework overview. This allows children to enhance their scientific knowledge and develop working scientifically skills through focused daily learning, throughout the duration of each block. This model also promotes the achievement of a greater depth of understanding by the end of a unit.

## **Equal Opportunities**

At Whitchurch Combined School, we are committed to providing a teaching environment which ensures all children are provided with the same learning opportunities regardless of social class, gender, culture, race, special educational need or disability. Teachers use a range of strategies to ensure inclusion and also to maintain a positive ethos where children demonstrate positive attitudes towards others.

## **Inclusion**

Science teaching considers the needs of different individuals and groups for learners and tasks are designed and differentiated as appropriate to ensure an appropriate level of challenge. Supporting adults are also deployed effectively to ensure focused support where this is necessary.

Teachers use a range of inclusion strategies, including paired work, open questions and direct, differentiated questioning and the activation of prior knowledge and contextual learning. This supports the inclusion and motivation of all learners ensuring that optimum progress is made throughout each part of the lesson.

## **Health and Safety**

The National Curriculum requires teachers to promote amongst children a sense of personal responsibility for their health and safety. Children are given clear guidance when undertaking activities that may pose risks and are carefully supervised. Further guidance can be sought from CLEAPS

## **Resources**

The majority of the school's Science resources are kept in a central store area. The equipment is stored in labelled trays and cupboards. The library contains a good supply of scientific books to support children's individual research. Each class has an interactive whiteboard which has internet access. This gives teachers the opportunity to use websites where appropriate e.g. BBC Science Clips and Explorify. The school's extensive grounds provide a wealth of habitats and natural resources.

## **Role of the Subject Leader**

The subject leader's responsibilities are:

- To ensure the high profile of the subject and provide a strategic lead and direction for science in the school.

- To maintain and ensure use of the central supply of science resources, in accordance with those specific to each year group and topic.
- To support colleagues in their teaching of science and provide CPD support where required.
- To ensure progression of the key knowledge and skills identified within each unit and that these are integral to the programme of study and secure at the end of each age phase.
- To monitor books and ensure that key knowledge is evidenced in outcomes, alongside and as supported, by SLT.
- To monitor planning and oversee the teaching of science.
- To lead further improvement in and development of the subject as informed by effective subject overview.
- To ensure that the science curriculum enables the progress and raises the attainment of all pupils, including those who are disadvantaged or have low attainment.
- To ensure that the science curriculum takes account of the school's context, promotes children's pride in the local area and provides access to positive role models from the immediate and wider local area to enhance the science curriculum.
- To establish links with external agencies and individuals with specialist expertise to enrich teaching and learning in science.
- To organise whole-school science weeks; with one in accordance with the national theme, ensuring a focus on practical and investigative activities.

The subject leader has specially-allocated time for fulfilling the task of reviewing samples of children's work, training, liaising with other subject leaders from other schools and organising science week.

#### **14. Review**

This document will be reviewed annually by the science co-ordinator, who will discuss any changes with the staff.

**Date of Policy:** April 2025

**Policy Review Date:** April 2027