



# Barley Fields

## Primary School

### Science Policy

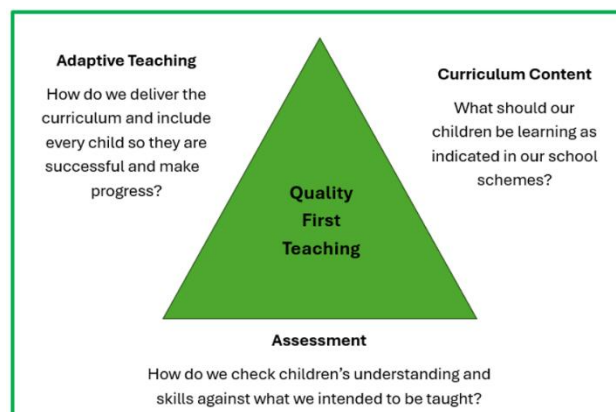
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| <b>Prepared by:</b>                    | <b>C Taylor / Science Team</b> |
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## 1. Curriculum Statement

At Barley Fields Primary we have designed our curriculum based on a curriculum model by John Tomsett (2023).

**Quality first teaching is the primary function** of our school and we use a teaching model that includes an inter-relationship of three pedagogical aspects: **Subject Content, Adaptive Teaching and Effective Assessment.**

**Subject content** for Science is coherently planned and progressively sequenced for all subjects and meets the statutory requirements of the National Curriculum and more. Differentiated layers of curriculum planning are effective in supporting teaching and learning across the school and teaching resources have been created with a consideration of the foundational knowledge, vocabulary and skills children need to achieve well. Planned lesson content is sequential and extends/builds on previously taught knowledge and skills.



### **Intent - This is what we want for our children.**

We recognise the importance of Science in every aspect of daily life and acknowledge its importance in many careers of the future. We are proud to have designed a high quality, bespoke Science curriculum that provides children with the foundations they need to understand how things happen and why things work. We aim to instill a love of Science and aim to deliver fun and stimulating science lessons that nurture children's natural curiosity and encourage respect for living organisms and the physical environment. Enquiry is at the centre of our teaching and we acknowledge that if we are to create the scientists of the future our children need to develop scientific skills alongside knowledge acquisition and children are encouraged to make observations, plan and complete investigations as they progress through school. We offer a hands-on, enquiry-based curriculum that allows children to progressively develop the skills associated with Science as a process of enquiry including promoting questioning, challenging ideas, working practically, investigating, evaluating, making choices and using scientific vocabulary.

Through our curriculum we intend for children to develop an understanding of how important and relevant Science is in their lives, both now and in the future and utilise a range of Careers Days, Science Days and STEM activities to promote this.

By the end of their time in primary school we want our children to have a wealth of scientific knowledge and understanding. To understand what it means to work scientifically, to understand a range of concepts and be able to articulate why things happen and how things work.

Our curriculum characters have been designed to represent the curriculum end points as children progress through school. Our children are regularly exposed to the core skills and knowledge needed to develop as a scientist with the use of the school curriculum character – Simon the Scientist. This character is regularly used to encourage children to reflect on the key skills and concept areas of Science.

**Early Years  
Simon the Scientist  
Natural World**

- ✓ I enjoy exploring the world around me.
- ✓ I draw and write about things I have seen.
- ✓ I can talk about some important processes and changes in the natural world around me, including the seasons.



**KS1  
Simon the Scientist**

- ✓ I enjoy working like a scientist.
- ✓ I ask questions to find out how things work or why things happen.
- ✓ I enjoy planning investigations and can make simple predictions about what might happen or change.
- ✓ I watch carefully and talk about what I have seen.
- ✓ I can draw and write about what I have seen.
- ✓ I can explain why and how things happen.



**KS2  
Simon the Scientist**

- ✓ I enjoy working like a scientist.
- ✓ I can create questions to investigate.
- ✓ I like to plan and carry out different types of investigation fairly.
- ✓ I can gather information in different ways.
- ✓ I am good at observing and recording my results using diagrams, tables and graphs.
- ✓ I can explain why and how things happen using my scientific knowledge.



## 2. Roles and Responsibilities

### Science Leadership Team

The Science Leads are responsible for:

- Formulating and updating the Science policy when appropriate
- Ensuring staff are aware of the policy's content and that it matches classroom practice as far as possible
- Assisting in the development and review of the curriculum map – long term scheme of learning and the medium-term scheme plans.
- Ensuring the Science curriculum is shared, understood and followed by staff.
- Monitoring and evaluating the implementation and impact of the Science curriculum
- Ensuring appropriate resources are available and regularly updating them within the limits of the school budget and according to needs
- Keep up to date with new developments in Science and attending relevant CPD
- Disseminating information, as it is received from any external source, to staff and children
- Encourage other members of staff in their Science teaching and give support where appropriate
- Ensure that Science maintains a strong profile within the school, through displays etc
- Maintain a portfolio for Science that will include photographs of children at work, curriculum walk reports, examples of planning and examples of children's work.
- Liaison and partnership working with the PRST Science working party

### Teachers are

- Responsible for planning and delivering the Science curriculum in line with the school long term and medium-term schemes of work.
- Delivering high quality and interactive teaching which facilitates progress in Science.
- Accurately assessing pupil progress and attainment in line with school expectations.
- Maintaining a sample of Science teaching and learning within the Interactive Floor Book for the year group

## 3. Teaching Pedagogy and Curriculum

At Barley Fields Primary our approach to teaching Science begins in Early Years with an exploration of the natural world when children explore and investigate the world around them, explore how living things grow and develop and investigate how things change and work. This prepares children for learning in KS1 and 2 when the curriculum gradually builds on common themes and scientific concepts.

Our children follow a carefully structured Science curriculum designed to ensure children know more, do more and remember more as they progress through school. Our curriculum is built around concepts within three strands of learning which are revisited as children progress through school:

- **Biology** – Animals including humans, Plants, Living things and their Habitats, Seasonal Change, Evolution and Inheritance
- **Chemistry** – Materials, Rocks, Fossils and Soil,
- **Physics** – Forces, Electricity, Magnetism, Light, sound, Earth and Space

Scientific enquiry skills are embedded into each science topic and these are enhanced, revisited and developed throughout their time in school. These follow three areas of investigational skill planning, doing, recording and explaining. Our teaching approach allows children to build upon their prior knowledge and increase their enthusiasm for Science whilst embedding prior knowledge into the long-term memory.

Science is taught in blocks of lessons to ensure children have opportunities for a sustained period of study and have time to embed and enhance their learning. The school follows a bespoke science scheme of learning designed using content from the National Curriculum and supported with the White Rose Science Scheme. This approach has been selected because it utilises content created by subject experts and is based on the latest pedagogical research however we have adapted it to suit the needs of our children.

Our scheme of learning for Science supports teaching, ensures continuity and carefully plans for progression and depth. It is underpinned by the appropriate teaching pedagogy for quality first teaching in science and ensures children's learning is practical and hands on. Specialist vocabulary linked to our Science topics is taught and built up, and effective questioning encouraged. Concepts are reinforced by focusing on the key features of scientific enquiry, so that children learn to use a variety of approaches to answer relevant scientific questions.

We are proud to offer a science curriculum that is current and research informed. As such, it is regularly adapted to meet the needs of all learners and reviewed in response to best practice. We have worked with the EEF and the National College on adaptive teaching in the classroom which underpins all our teaching practice and pedagogy.

### **Curriculum Progression**

Science teaching and learning is the responsibility of the class teacher. The curriculum map identifies the progression and sequence of key concepts to be taught in this subject. It is the class teachers responsibility to use the curriculum map to plan and deliver well sequenced lessons. In planning, the delivery of the curriculum will be differentiated to allow for children of all abilities.

### **Early Years Foundation Stage**

In Early Years the children are encouraged to explore and develop their understanding and awareness of the world around them. They will explore, observe and discuss first hand a range of scientific concepts linked to the world around us, living things, materials and physical phenomena such as movement.

### **Key Stage 1**

In KS1 children further develop their understanding of the world around them which they have gained in the Foundation Stage. Children observe, explore and ask questions about living things, materials and physical phenomena.

Children begin to work collaboratively with others, enabling them to develop their scientific knowledge and understanding and to link scientific concepts. Children communicate ideas orally using taught scientific language and begin to develop written methods for communicating their ideas (to include drawings, diagrams, use of ICT, tables and charts).

The KS1 curriculum follows the National Curriculum, ensuring all areas of the Programme of Study are covered across both Years 1 and 2. Children are able to observe, explore and ask questions about living things, materials and physical phenomena.

## **Key Stage 2**

In KS2 children build on their learning from KS1. They learn about a wider range of living things, materials and physical phenomena.

They apply their knowledge and understanding of scientific ideas to familiar phenomena, everyday things and their personal health. They make links between scientific ideas and explain things using simple models and theories. They think about the effects of scientific and technological developments on the environment and in other contexts.

Children are encouraged to develop an independent approach to their science learning, through asking questions, suggesting improvements to their work and supporting each other towards achieving a heightened understanding of scientific concepts. They carry out more systematic investigations, working on their own and with others. They talk about their work and its significances, using a wide range of scientific language, conventional diagrams, charts, graphs and ICT to communicate their ideas.

The KS2 curriculum follows the National Curriculum, ensuring all areas of the Programme of Study are covered across Years 3, 4, 5 and 6. Children learn, explore and ask questions about a wider range of living things, materials and physical phenomena. Children think about the impact of scientific developments and technologies on themselves and the world around them.

## **5. Assessment**

Assessment forms an integral part of teaching and learning in Science. This is done formatively as part of the adaptive teaching model used in school; observing children working, listening to their responses to questions and by examining work produced in relation to the expectations set out on our curriculum maps.

Teachers assess the children's work in Science both by making informal judgements as they observe them during lessons and by completing formal assessments of their work, gauged against specific end points set out for each year group and age-related expectations using the SONAR system.

Teachers meet regularly to review individual examples of work against age-related expectations. Summative assessments are reported termly using SONAR for whole school analysis and tracking of pupil progress.

## **Inclusion - Equal Opportunities and SEND**

All children will be treated equally and will be given equal access to the Mathematics Curriculum irrespective of gender, ethnic origin, disability, culture or socio-economic background. All children will be treated with respect and spoken to in a positive manner.

The Science curriculum will be adapted according to the needs of the children. If a child needs specialist equipment or software to access the curriculum, the school will, when practically possible, source the appropriate equipment.

If a child has an EHCP plan and is not able to access the curriculum at the same level as his/her peers, then provision will be made for the child to access the curriculum at their own level.

This policy has been written with reference to and in consideration of the school's Disability Equality Scheme. Assessment will include consideration of issues identified by the involvement of disabled children, staff and parents and any information the school holds on disabled children, staff and parents.

## **7. Resourcing**

Our school has a wide range of resources to support the teaching of Science. Most resources are allocated to Key Stages and some specialised equipment is kept in the Science store located in LKS2. Thematic areas are well resourced and staff should inform the subject leader when resources are low and need replenishing to ensure the subject can be taught appropriately at all times

## **8. Monitoring and Evaluation**

To monitor and evaluate Science the subject leads will:

- Support teachers via explaining the progressive curriculum map, discussing the key concepts in Science, co-planning, team teaching, observing and giving feedback
- Monitoring the delivery of the curriculum against the progression contained in the medium term schemes of learning
- Review and advise the SLT on Science resource provision.
- Work co-operatively with the SENDCo to provide support for children with SEND.
- Discuss regularly with the Head Teacher the progress with implementing this policy in the school.
- Maintain samples of work collated from Year Group Interactive Floor books into a portfolio of work for Science.

## **9. Health and Safety – Equipment and Resource Use**

- Children will be given suitable instruction on the operation of all equipment before being allowed to work with it.
- Children should be strictly supervised in their use of equipment at all times.
- Children should be taught to respect the equipment they are using and to keep it stored safely while not in use.
- Children should be taught to recognise and consider hazards and risks and to take action to control these risks, having followed simple instructions.

## **10. Policy Monitoring and review**

This policy will be reviewed at least every two years.

Any questions or concerns regarding this policy should be made to the Head Teacher or a member of the Science Team.