

Bierton C.E Combined School

Science

Date:	September 2024	Review Date:	September 2025
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Intent

At Bierton, we encourage children to be inquisitive throughout their time at school and beyond. The Science curriculum fosters a healthy curiosity in children about our universe and promotes respect for the living and non-living. 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 Bierton 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 children 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 units. 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 find out 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 children regularly to identify those children with gaps in learning, so that all children keep up.
- We build upon the learning 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

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challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the units.

- Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding.

Science Curriculum (2014)

The new science curriculum for 2014 has a strong focus on developing children's conceptual understanding alongside their skills of 'working scientifically'.

In key stage one there is an emphasis on allowing children to learn through observation of the world around them. They should be encouraged to be curious and ask questions about what they notice. There is also a requirement for children to develop an appropriate level of scientific vocabulary.

Key stage two is divided into lower and upper stages. In lower key stage two children are expected to develop their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions.

In upper key stage two pupils are expected to move on 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. At upper key stage two, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates.

Pedagogy

Science is a core subject of the National Curriculum.

At the start of the science unit children should have a front-page unit overview. This includes the title of the unit, key vocabulary and learning questions that will be visited by the end of the unit. It is the expectation that most children will be able to use the vocabulary in the correct context and apply knowledge they have learnt to answer questions.

We expect every science lesson to be broken down into 5 parts. Engage, Prior Learning, Introduce, Build and Apply.

Engage: (Starter, Do Now Activity) Motivate students - provide them with an opportunity to succeed as soon as they start the lesson and recap/consolidate key knowledge from the previous lesson.

Prior Learning: Check misconceptions and assess prior knowledge so that the rest of the lesson can be pitched correctly.

Introduce: Start with the Learning Question and then Introduce new knowledge. Begin with a concrete idea or simple context so that you start from what your students already

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know. Modelling is important here.

Build: Students have the opportunity **to practice** what they have learnt in the introduce section to consolidate learning and develop understanding.

Apply: Students have the opportunity **to apply** what they have learnt to new situations. This will assess understanding and consolidate understanding.

Planning and organisation

Science has been broken down into different units per year group. Each unit has been broken down into clear lessons that must be covered. Each lesson has knowledge and skills that must be covered.

Teachers are to create their short term plan that details how they are going to implement the knowledge and skills of the lesson.

Progression

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. Insecure, superficial understanding will not allow genuine progression: pupils may struggle at key points of transition (such as between key stage one and two), build up serious misconceptions, and/or have significant difficulties in understanding higher-order content.

Monitoring and assessment

The science curriculum is monitored on a regular basis by the science coordinator, who examines pupils' work, monitors classroom practice and planning and ensures parity of entitlement for all pupils across the school.

S/he identifies the training needs of the staff and plans the training programmes. S/he also attends training for Science coordinators run by the local authority and other providers.

To show clearly the level of understanding unit quizzes have been created which will be completed by the pupil at the start of their unit to give the teacher a baseline of their knowledge of that unit and then at the end of the unit to show the progression of their knowledge.

Additional Educational Needs

All classes consist of pupils of varying abilities and with varying needs, and our classroom practice ensures that most of these needs can be met within the classroom organization.

However, when a child has very specific additional needs, support is provided firstly by the school's internal organizational structure, which gives personal assistance and additional practice and is administered by support assistants within the school, often within the

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classroom, during the lessons. Lessons are adapted, where appropriate, to meet the needs of all children's abilities. This could be through questioning, differentiated tasks or pre teaching vocabulary.

Parental Involvement

Parents are kept informed of the science topics that are being taught in school so that they are able to discuss key concepts and support their children's learning. Important information linked to science is sent out in newsletters for parents to read about.

The Subject Leader

It is the subject leader's role to keep up to date with the latest developments in the science national curriculum and to ensure, through staff training and monitoring of pupil's work, that science is being taught and assessed in line with school policy.

Impact

The successful approach to the teaching of science at Bierton CE combined School will result in fun, engaging, high quality science education, that provides children with the foundations for understanding the world, that they can take with them, once they complete their primary education.

Children at Bierton CE Combined School will:

- Demonstrate a love of science and an interest in further study and work in this field
- Retain knowledge that is pertinent to science with a real-life context
- Be able to question ideas and reflect on knowledge
- Be able to articulate their understanding of scientific concepts and be able to reason scientifically using rich language linked to science
- Work collaboratively and practically to investigate and experiment

Headteacher:		Date:	
Chair of Governing Body:		Date:	