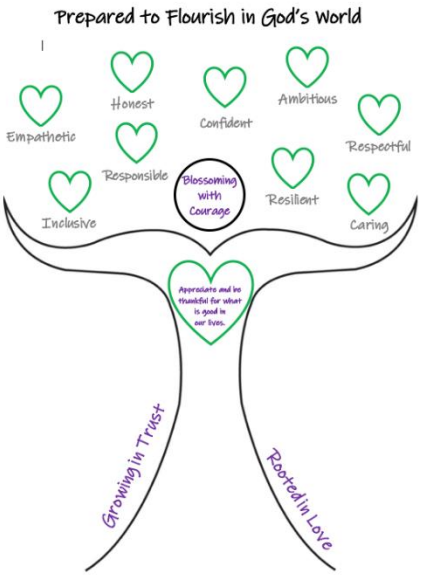
Intent, implementation, and impact Statement: Science at Burford CofE Primary School

At Burford, we are 'Rooted in love, growing in trust and blossoming with courage, prepared to flourish in God's world.'



The importance of understanding that each of us is rooted in love is not under-estimated at Burford:

'Love always trusts, always hopes, always perseveres.'
Corinthians 13:7

Trusting in love gives us the courage to be ourselves. Courage is from the Latin 'coeur' which means 'To tell the story of who you are with your whole heart'. Our intention is for our pupils to leave Burford prepared for 'Life in all its fullness' and ready to tell their own stories.

Our Christian vision has driven us to create a bespoke curriculum for our pupils that pursues the acquisition of wisdom, knowledge and skills alongside educating for aspiration, dignity, and respect. It is also our intention to nurture a sense of community, so that all members of our school develop a deep sense of belonging, both locally and within the wider world. We believe that these attributes will support our pupils to live well together and flourish, as they move on to High School and beyond.

Our curriculum offer is therefore divided into three focus areas: 'Head, Heart and Hands':

Head – **Rigorous academic study.** Enabling pupils to learn more and remember more, creating a change in long-term memory.
Heart – **Living wholeheartedly.** Choosing our own path, free from stereotyping; being curious, aspirational, confident and resilient.
Hands – **Courageous advocacy.** Developing a greater awareness of the challenge's others face in life and how we can make a difference in our school community, local community and further afield.

At Burford CofE Primary School, we believe that a carefully sequenced curriculum can empower our pupils and reduce social inequality, whilst providing the knowledge they need for the next stage of their education. We view our curriculum as a progression model: the mapped-out journey of concept building leading to a change in long term memory and an increase in knowledge. Through interleaving concepts throughout the curriculum, the children will develop a deep and rich understanding, meaning that the knowledge that is acquired is more likely to be remembered.

Our curriculum sets out WHAT will be learned and WHEN it will be learned.

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CURRICULUM INTENT

Our curriculum sets out: the significant and key knowledge that pupils should know and remember as well as the skills that the children will develop and build on; the key concepts that children will return to in different contexts and year groups; the prior learning that the children can build on; the vocabulary that will be introduced as well as the sequencing and progression of the units to be taught.

The importance of science at Burford School

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Aims of the national curriculum:

The national curriculum for science 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 knowledge required to understand the uses and implications of science, today and for the future.

What science looks like in our school:

- Exciting science topics to provide children with the opportunity to explore and investigate the world around them.
- A variety of activities which take place inside and outside of the classroom to engage the children about the world around them.
- Investigations/ practical exploration with the children being able to plan, record and carry out and conclude their learning.
- Opportunities to work individually, in pairs or groups.
- Subject specific vocabulary which is focused on at the start and within each lesson and embedded throughout.
- Different aspects of science are focused upon physics, chemistry and biology.

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- Use a range of media to help the children learn about the world around them.
- Learning about the achievements of famous scientists.
- Opportunities for the children to talk about their observations and discoveries using scientific vocabulary.

Our philosophy:

- Children learning through exploring different topics whilst acquiring new skills.
- Using the children's understanding as a starting point.
- Making links to the world around us.
- High quality modelling of scientific skills and techniques.
- Promoting the use of the scientific method to extend learning.
- Cross-curricular links where possible.
- To foster a healthy curiosity in our children and a passion for science.

By the end of EYFS pupils will:

- Explore the natural world around them, making observations and drawing pictures of animals and plants.
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

By the end of Key Stage 1 pupils will:

- Experience and observe phenomena, looking more closely at the natural and humanly constructed world around them.
- Develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions.
- Begin to use simple scientific language to talk about what they have found out.
- Mostly use first-hand practical experiences, but also appropriate secondary sources, such as books, photographs, and videos.
- Read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

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By the end of KS2 pupils will:

- Develop a deeper understanding of a wide range of scientific ideas and begin to recognise that these change over time.
- Select the most appropriate ways to answer science questions using different types of scientific enquiry.
- Draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to first, to talk about and, later, to write about what they have found out.
- Read, spell and pronounce scientific vocabulary correctly.

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CURRICULUM IMPLEMENTATION

Our curriculum is ambitious for all pupils, regardless of their starting point. We aim for our classrooms to be places of 'high demand – low threat'. We provide support through modelling, paired talk, scaffolding and worked examples rather than highly differentiated activities or sheets. We aim to offer all children the opportunity for stretch and extension, through offering challenging tasks that build on the core learning.

Opportunities to use high quality texts are identified in all curriculum areas. Reading is not only an important skill in its own right but can expose children to new vocabulary as well as provide a richer understanding of a topic which can underpin their new knowledge.

New vocabulary is prioritised frequently and is recorded on our working walls in order to support pupils to become familiar with it and use it in their own work and talk.

We support pupils to know more and remember more through offering frequent opportunities for retrieval practice.

How does it work in science?

- Science is taught in the EYFS as an integral part of the topic work covered throughout the year. Children are encouraged to explore and investigate independently during continuous provision.
- Knowledge and understanding are taught in blocks with a new topic each term/half term and scientific experiments are carried out each half term.
- There are regular practical sessions where children have opportunities to develop their investigative skills.
- Purposeful displays support current learning which includes vocabulary and reflect progression in learning.
- A range of engaging resources enable the children to carry out exciting experiments to deepen their learning and develop their understanding of the concept that is being taught.
- There are opportunities for paired, group and class discussion and debate to consolidate learning.
- Children learn about the achievements and contributions of key scientists from the past and modern times

What do adults do to enable children to flourish in science?

- Plan exciting progressive lessons which build on prior knowledge.
- Support, encourage and nurture a love of science.

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- Create a learning environment that supports learning and engages children's interest in the topic being studied.
- Demonstrate how to use scientific equipment, and the various 'Working Scientifically' skills in order to embed scientific understanding.
- Regular book scrutiny, pupil meetings and planning audits.
- Whole school professional development.

How do we help children who need additional support?

- We use teacher assessment to identify who needs support.
- We remove barriers for the children and provide a range of ways for the children to record their understanding.
- We differentiate the learning when it is appropriate.

How do we challenge children in science?

- Learning is differentiated when necessary.
- Challenge through questioning.

How do we ensure all children can access the science curriculum?

- Children are sat in mixed ability tables to support each other.
- Repetition of key concepts.
- Using a range of teaching styles within the lesson.

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CURRICULUM IMPACT

The impact of children's progress and their ability to know more and remember more will be visible through a range of methods. These may include end of unit assessments or quizzes, hot and cold tasks, spoken responses, progress over time in pupils' books, extended writing or even an end of unit project.

What will you see in science

- Engagement and perseverance.
- Children practising and applying knowledge to different situations.
- Happy, confident, and independent learners.
- Children posing their own questions and hypothesis for investigation
- Children working cooperatively in paired/group work.
- A classroom environment with displays including vocabulary, to support learning.
- Children discussing, reflecting and sharing their learning.

How do we know how well our pupils are doing in science?

- Use of assessment at the start and end of each topic enables progress in knowledge and understanding
- Lessons are planned with children's prior knowledge/assessed level known to ensure progression.
- Teachers assess the individual progress of a child against the learning objective for the lessons/units of work. At the end of the year, the teacher makes a summary judgement about the work of each child in relation to the National Curriculum 2014.
- Book look and pupil voice.
- Use of surveys and questionnaires (pupils and staff).

What do we do with the assessment data we collect?

- We use hot and cold tasks to see what knowledge the children have previously retained and what they still need support with.
- Use it to support questioning
- Target children
- To make the next teacher aware of next steps.

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How do we know that our children are flourishing in science?

- Pupils are enjoying their science lesson.
- Pupils are retaining what they have learnt.
- The children are able to explain what they have learnt.
- Pupils work well independently and in pairs to develop their understanding and work through a task.
- Pupils are reflective about their learning

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CULTURAL CAPITAL

What is Cultural Capital?

The National Curriculum defines cultural capital as: 'the essential knowledge that pupils need to be educated citizens, introducing them to the best that has been thought and said and helping to engender an appreciation of human creativity and achievement'. This powerful knowledge can be split into two categories: powerful subject knowledge and powerful personal knowledge.

Powerful Subject Knowledge in science

- The Science curriculum
- The Health Education dimension of the PSHE programme, including strands on drugs, smoking and alcohol
- Design and Technology units related to food preparation and nutrition
- The knowledge of how and why children need to take care of their personal fitness and wellbeing.
- The knowledge of how and why children need to understand the elements of safety relating to science.
- The knowledge of local, national and worldwide scientific events/discoveries and their importance on society.
- The knowledge of famous scientists that have affected the world today.

Powerful Personal Knowledge in science

- How to eat healthy.
- Activity-based visits related to specific scientific topics.
- Understanding what opportunities are available to children in the future to allow them to become life-long learners.
- Eliciting, valuing and linking students' prior knowledge and experiences from home, family and social contexts to school science.
- Highlighting the relevance and transferability of science for students' daily and future lives.

Other useful information: Suggested Reads