

Science Policy

Science represents a way of organising knowledge built up through experimental testing of ideas. At Cheddington, pupils will have the opportunity to make observations, ask questions and investigate the world around them. They will be encouraged to formulate hypotheses, develop systematic investigations and communicate their findings to others; as well as an understanding of how science can be used to rationally explain what is occurring, predict how things will behave and analyse the causes.

How Science supports the pedagogy and expectations of the school

The study of Science contributes to the fundamental mission of the school by enabling learners to be ready to move on to the next stage of their learning, engendering enthusiasm and embedding the values of our school. This is achieved through our planned curriculum and we aim for all learners to make good progress from their start point with the majority attaining age related expectations by the end of Year 6.

Skills such as the ability to critically analyse, synthesise new ideas, solve problems, and link new information to already known concepts and principles are central to scientific understanding and support the pedagogy and expectations of the school. As a result, the Science curriculum is designed to be broad and balanced, teaching both academic knowledge and skills and those personal skills which will enable the children to be successful in life. Through the sequentially planned curriculum we offer learning experiences which enable the children to develop both deep learning and their cultural capital, so that this understanding can be used for problem solving in new, unfamiliar contexts.

Aims

- To stimulate a child's interest in science and provide the opportunities for them to fulfil their potential.
- To develop each child's understanding of scientific knowledge and concepts and their ability to apply them in every day contexts.
- To develop an understanding of the nature, processes and methods of science by encouraging the children to plan and carry out scientific investigations choosing the most appropriate equipment for themselves.
- To enable children to learn about chemistry - materials and their properties.
- To enable children to learn about biology - life processes and living things.
- To enable the children to learn about physics – the physical processes which govern our planet.
- To equip the children with the scientific knowledge required to understand the uses and implications of science today and for the future.

There are key skills involved in the study of Science: to observe, record and investigate; to use scientific vocabulary accurately and precisely. These are developed across the school years by exploring a range of subject content in which the children develop secure knowledge and understanding of key scientific concepts.

The contribution of the subject to the values, aims and objectives of the school

At our school we aim to encourage all children to develop states of being that will help them to become good citizens of the 21st Century. Five core values; respect, determination, patience, passion and teamwork; supported by others, create the states of being.

Science contributes to the fundamental mission and values of the school by enabling the children to be ready to move on to the next stage of their learning, instilling a passion to confidently explore so that they have a deeper understanding of the world we live in. Scientific skills provide children with the opportunity to draw upon their prior knowledge and behaviours to build on their cultural awareness, knowledge and competencies. These key investigative, comparative and analytical skills are invaluable as our children apply these to their life's journey across the range of studied subjects

and into the wider world. It is in this way that Science supports the development of citizenship and PHSE/RSE as whole curriculum strands.

Our vision is 'To nurture our children's young roots, through providing excellence in teaching and learning, thereby enabling and empowering them to fly as citizens of the 21st Century with a fascination for learning and life.' Science at Cheddington will develop a passion for the world they live in, inspiring pupils to ask questions, investigate their ideas and to hypothesise through sharing ideas. Pupils will be encouraged to challenge preconceptions about the world around them and curious discussion is promoted and valued.

Curriculum Intent: Science

Through a planned coherent Science curriculum, pupils will understand why science is so important, and become scientifically curious with an enthusiasm for learning increasing amounts of Scientific knowledge about the world around them. They will develop and progress their skills in:

- Planning, communication and sources.
- Enquiring, testing, obtaining and presenting evidence
- Observing and recording
- Considering and evaluating evidence

To do this they will develop the confidence to embrace curiosity and experience the awe and wonder of increasing their scientific knowledge and understanding. Methods, processes and uses of science will be explored; developing a sense of excitement and curiosity about natural phenomena which will enable pupils to develop the confidence and ability to ask, investigate, answer and explain questions about the world around them. All pupils will learn to think, discuss, investigate, share and learn as scientists.

At KS1 they learn this through focussed studies and investigations of Plants, Animals, including humans, Living things and habitats, Materials.

At KS2 they continue to learn, develop and progress their skills through further focussed studies and investigations of Plants, Animals, including humans, Living things and habitats, Materials, Chemical Processes, Earth and Evolution, Forces, Light and Electricity.

Entitlement

Within the curriculum, the approximate time allocated for Science is 2 hours per week per class group in Key Stages One and Two. Early Years pupils will develop their scientific enquiry, investigation and explorative skills through opportunities to explore the world around them through access to high quality continuous provision and Teacher led activities.

How the intent is implemented

Pupils will learn to work scientifically through first-hand experience and through the use of different scientific equipment. Pupils are encouraged to question, to propose enquiries, to devise experiments and to communicate their findings.

The teaching and learning may include:

- Pupils learning to work scientifically through first-hand experience.
- Pupils encouraged to question, to propose enquiries, to devise experiments, to communicate their findings.
- Use of ICT both to support investigation and for recording purposes.
- The use of different scientific equipment.

This curriculum intent will be implemented through ensuring that the National Curriculum is covered sequentially and effectively by each year group as outlined in the Science curriculum grid (See Appendix 1). Furthermore, student's effective progression will be facilitated through this coherent curriculum by the Progression in Science Roadmap (See Appendix 2).

In line with additional school policies, children are safeguarded as Science is delivered in an age-appropriate way with adaptations made based on the needs of the children.

Impact - How the subject is assessed

Through following the programmes of study, pupils will experience increasing confidence, understanding and competence. The scheme of work provides a framework for introducing ideas and skills, opportunities for revisiting ideas and skills previously encountered within different contexts and at deeper levels.

The expectations for the fluency and progression of pupil's progress in Science is outlined in the Science Curriculum Milestones (See Appendix 3). This summative approach enables pupil's clear age-related expectations to be identified and measured as success criteria. This assessment is ongoing and is recorded as the children achieve a particular competence. Children review their successes in achieving the learning intention at the end of every session and are actively encouraged to self-assess against the learning intention. Upon leaving Cheddington Combined School to embark on their journey to Key Stage 3, children will be equipped with the understanding, knowledge and skills to enable them to continue their Science learning journey.

Alongside this, ongoing formative Teacher assessment will form an invaluable tool in order to frequently monitor pupils' knowledge and understanding. This is integral in order to inform effective sequential planning and learning opportunities. Teachers use ongoing assessment throughout each lesson to ensure misconceptions are highlighted and addressed, and to ensure that pupils' prior knowledge is considered.

The role of the Subject Manager

The Science Subject Manager will act as an advocate for Science and will identify clear targets and success criteria for its development. They will monitor progress within this subject area, analyse data, conduct learning walks and undertake Evaluation, Monitoring and Understanding sessions (EMU) in order to give feedback to staff teams and implement any noted actions. The Subject Manager will keep up to date with developments and changes to the required Science curriculum in order to lead to sequential deep learning for the children in all classes and to support and advise colleagues as necessary to enable best practices in the teaching of the subject. Additionally, the subject manager will be prepared to meet with the subject link Governor regularly using the scheduled paperwork and will attend Governor Curriculum Committee meetings as required. In order to ensure best practice and learning opportunities, the Science Subject Manager will maintain current resources to provide for the successful delivery of the subject across the school and raise requests for new resources to the Head Teacher.

Evaluation, Monitoring and Understanding

Science is monitored throughout the year and this process takes place in a variety of ways. A traditional review of completed work is undertaken and combined with formative and summative data. Evaluate, Monitor and Understand (EMU) sessions form an invaluable insight and overview of Science at Cheddington in working practice. These sessions allow for a specific topic within Science to be taught to children from Year 1 to Year 6. This provides the opportunity to explore subject matter with creative and critical thinking where pupil voice is paramount. Learning behaviours are observed which are interwoven with our school's values (respect, teamwork, passion, determination and patience), and takes a key role in the identification of next steps to guide the Subject Leader Action Plan to ensure pupil progress.

Policy reviewed: Autumn 2022

Date of next review: Autumn 2026

Appendix 1

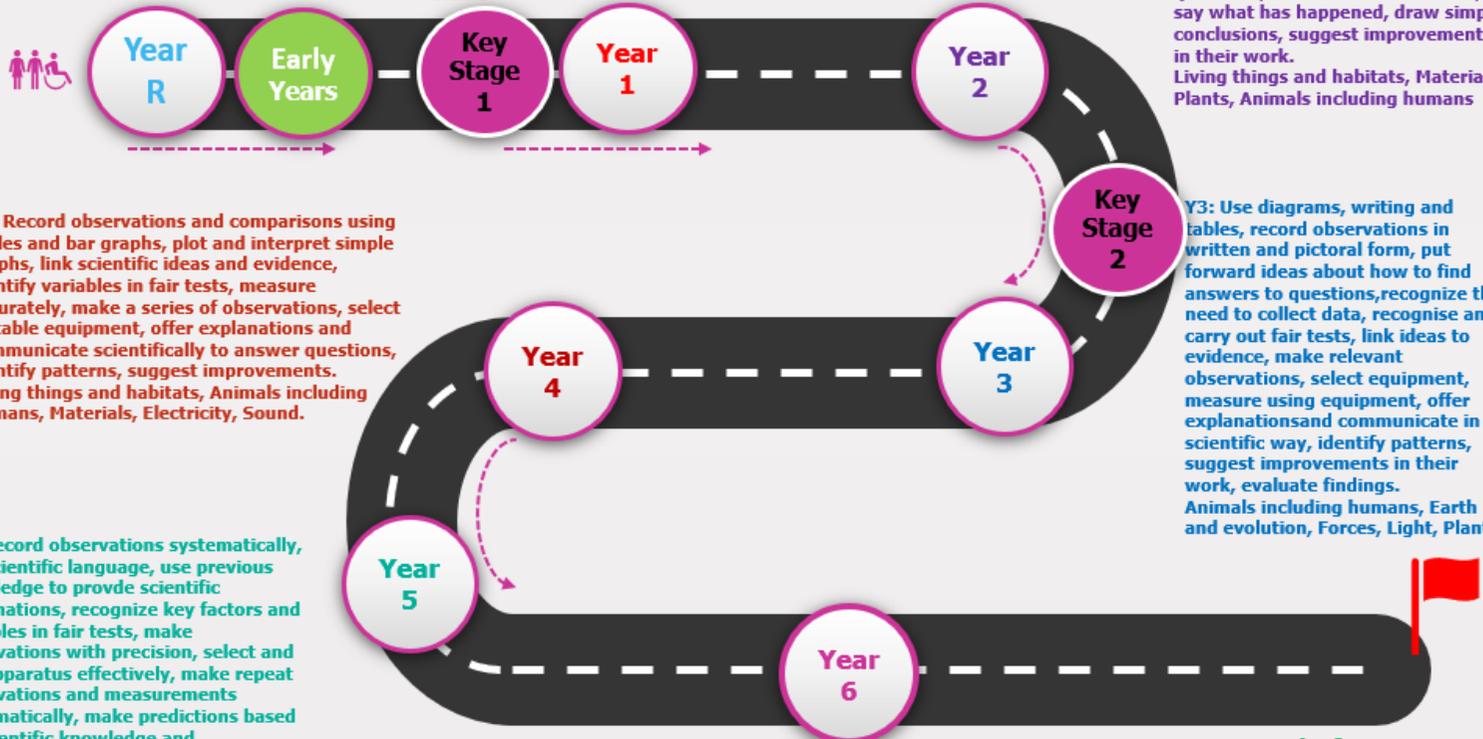
SCIENCE 2021/22

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Seasons	Animals including humans	Materials		Plants	
Year 2	Living things and habitats		Sorting materials and their uses. Animals including humans	Changing materials	Lifecycles of plants (Blue Tits Study)	Animals including humans (SRE)
Year 3	Animals including humans	Rocks, Earth and Evolution	Forces	Light	Plants	
Year 4	States of Matter		Living things and habitats	Animals including humans (Digestion and teeth)	Electricity	Sound
Year 5	Earth Sun and Moon	Forces	Materials	Chemical Processes	Living things and their habitats	Animals including humans
Year 6	Living things and habitats Earth and Evolution		Electricity Experimenting like Scientists	Experimenting like Scientists Light	Animals including humans (Circulation and healthy lifestyle)	

Working Scientifically is covered throughout our coverage of the National Curriculum topics. Each topic teaches the required key learning.

Progression in Science

The Journey Starts
All children to achieve a GLD by end of Year R



Y1: Draw simple pictures, identify key features, talk about what they see and do, ask questions, test ideas, say what they think will happen, compare some living things, make observations, draw and label, make simple comparisons and groupings, say what has happened and whether this was expected. Animals including humans, Living things and habitats, Materials, Plants

Y2: Describe observations using scientific vocabulary, suggest how to find things out, ask questions, use simple equipment to aid observation, make observations relevant to their task, respond to questions, collect and record data, say what has happened, draw simple conclusions, suggest improvements in their work. Living things and habitats, Materials, Plants, Animals including humans

Y4: Record observations and comparisons using tables and bar graphs, plot and interpret simple graphs, link scientific ideas and evidence, identify variables in fair tests, measure accurately, make a series of observations, select suitable equipment, offer explanations and communicate scientifically to answer questions, identify patterns, suggest improvements. Living things and habitats, Animals including humans, Materials, Electricity, Sound.

Y3: Use diagrams, writing and tables, record observations in written and pictorial form, put forward ideas about how to find answers to questions, recognize the need to collect data, recognise and carry out fair tests, link ideas to evidence, make relevant observations, select equipment, measure using equipment, offer explanations and communicate in a scientific way, identify patterns, suggest improvements in their work, evaluate findings. Animals including humans, Earth and evolution, Forces, Light, Plants.

Y5: Record observations systematically, use scientific language, use previous knowledge to provide scientific explanations, recognize key factors and variables in fair tests, make observations with precision, select and use apparatus effectively, make repeat observations and measurements systematically, make predictions based on scientific knowledge and understanding, draw conclusions consistent with evidence, relate evidence to scientific knowledge and understanding, explain differences in results, make practical suggestions for improvements to working methods. Earth and Space, Forces, Materials, Living things and habitats, Animals including humans.

Y6: Choose scales for graphs, identify measurements and observation that do not fit into main patterns, begin to explain anomalous data, communicate quantitative data using scientific language, describe evidence for scientific ideas, use scientific knowledge, measure with precision using fine scale divisions, make enough measurements or observation as required, make reasoned suggestions to improve working, interpret evidence to lead to new ideas, explain conclusions showing understanding of scientific ideas. Living things and habitats, Earth and evolution, Light, Electricity, Animals including humans.

End of KS2
Children will leave Cheddington Combined School scientifically curious with an enthusiasm and confidence to investigate using scientific methods which can be used to extend their scientific knowledge and understanding of the world around them.