



CHURCHFIELDS
JUNIOR SCHOOL

Science Policy

January 2021

Approved by Governing Body: January 2021

Next Review due: January 2024

Purpose of Policy

Science is a core subject in the National Curriculum. This policy will form the basis upon which we map out the statutory orders for Science at Key Stage 2. It will outline the purpose, nature and management of how science is taught and learned in our school and will inform new teachers of expectations.

The policy reflects the views of all the staff of the school. It has been drawn up following consultation with curriculum leaders and has full agreement of the Governing Body and staff.

All staff are fully aware of their role in its implementation. Staff have access to the Policy via the school's server via the Teacher's Drive. Parents can access the science policy via the school website.

Aims and Outcomes

- To develop pupils' enjoyment and interest in science and an appreciation of its contribution to all aspects of everyday life.
- To promote pupils' curiosity and encourage them to engage in discussions and ask questions to further their understanding.
- To introduce pupils to correct and ambitious scientific terminology and encourage its usage.
- To use a range of investigations and practical activities to further pupils' ability to work scientifically and apply their knowledge to the real world.
- To develop pupil's prediction, observation, data recording, evaluation and analysis skills.
- To promote active discussion, debate, team work and reasoning skills.

Science and the Primary Curriculum

Primary science encompasses physical, chemical and biological aspects of our world, as well as the ability to work scientifically and investigate different concepts. Science lessons should challenge pupils' beliefs and understanding, enabling them to confidently question and discuss the elements involved in the science curriculum and where appropriate carry out their own investigations.

Science is taught through units based on the national curriculum and where able, cross-curricular links are made. The curriculum intent, which shows the progression of knowledge and sequence of learning across KS2 can be found in Appendix 1. Progression throughout primary school is enabled through year groups being aware of, and building on, knowledge taught in previous years. Teachers are confident in ensuring children have a solid basis in their scientific understanding and practical skills.

Key concepts of the scientific units are revisited throughout each year to ensure knowledge is secure in the pupils' long term memories so future year groups can build on embedded concepts.

The role and responsibility of the subject leader

- To support and guide the classroom practice of teachers and support staff.
- To ensure coverage, continuity and progression in planning.
- To monitor and evaluate the effectiveness of Science teaching and learning.
- To update documentation where necessary.
- To ensure practical resources are fully functioning.
- To produce action plans for the School Development Plan, prepare bids and manage the Science budget effectively.
- To liaise and consult with outside agencies where appropriate.
- To prepare and lead INSET.
- To attend relevant INSET training.
- To review regularly the contribution made by Science to a meaningful curriculum.

The role and responsibility of the subject leader

All children will be given an equal opportunity to maximise their individual potential; this is regardless of ability, gender, race, religion, disability or talent. Activities both within and outside the classroom are planned in a way that encourages full and active participation by all children, matched to their knowledge, understanding and previous experience.

Equal emphasis will be given to the roles of both men and women in society, at all levels of scientific enquiry. Every effort will be made to ensure that activities are equally interesting to both boys and girls and children are exposed to both male and female famous scientists.

Teaching and Learning

Children should:

- Develop a knowledge and appreciation of the contribution made by famous scientists to our knowledge of the world including scientists from different cultures.
- Be able to relate their scientific studies to applications and effects within the real world.
- Develop deep knowledge and understanding of the science contained in the National Curriculum programmes of study and be able to explain the aspects in relation to the real world.
- Be given opportunities to master each unit, understanding it in great depth and its application to the real world.
- Develop a strong sense of enquiry and feel confident in questioning and challenging concepts, making suggestions and investigating their beliefs and understanding.
- Be able to create an initial investigation question and plan based on a stimulus and use scientific knowledge and terminology to support their predictions.
- Be able to make informed choices when selecting equipment for a range of practical activities.
- Understand and justify the need for a fair test and apply this to their practical investigations.
- Be able to make and take accurate measurements and observational notes and record these clearly in a range of tabular and graphical forms.
- Be confident in explaining results, including anomalies, and analyse why these results occurred with increasing detail and scientific based justifications.
- Show a strong ability to discuss their thoughts and ideas.
- Be able to make links between different scientific concepts

The teaching of science should be varied, exciting and challenging, using strategies appropriate to the concept or skills being taught.

Working scientifically / Investigative work: Every science lesson focuses on developing a specific scientific skill, alongside the scientific knowledge outlined in the learning objective. These skills range from asking testable questions to identifying variables and planning a fair test. There is progression in the development of these skills throughout KS2. Practical investigative work is carried out regularly- at least once per half term- and children are given opportunities to use a wide range of equipment. Throughout each year, children have the opportunity to engage with each of the six investigation types: fair testing; grouping and classifying; using models; pattern seeking; using secondary sources and observing changes over time.

- Knowledge organisers for every topic can be found on the school website. They should be used throughout each topic to help children learn key information and definitions. Knowledge organiser activities could include quizzing, fill the blanks or word match activities. More information about the use of knowledge organisers can be found in the Teaching and Learning policy.
- Children should be exposed to opportunities to present their work in different ways. These could include: written work in books, posters, labelled diagrams, verbal presentations, I.C.T. presentations, iPad videos.
- Children should have regular opportunities for varied levels of communication. Science lessons allow for independent work, paired talk, paired work/presentations, group work/presentations, group discussions and whole class discussions. Talking allows all children to feel involved and have their

contributions valued. It helps to ensure information is embedded. Discussions often lead to debates, which are invaluable for children developing their justification skills and the use of correct terminology.

- Children should be given opportunities to conduct their own research, both in and out of school, using a range of devices such as: Library books, I.C.T, iPads, videos, pictorial stimuli, sound clips and workshops and school trips where appropriate.

Assessment, Attainment and Progress

All teachers' plans will include a clear Learning Objective, Success Criteria and Working Scientifically skill taken from the Medium Term Plan on the T:Drive.

In Science, assessment is completed at the end of each topic, in the form of a 10-mark quiz. These provide information to inform a range of areas: accurate assessment of a child's attainment; future planning; the next teacher of progress made, and to be of use in preparing the annual report to parents. The data is recorded on tracker for each topic covered, using a scoring system of 1-10 (2=with adult support, 4=Working towards, 6=At expected, 8=Greater depth shown, 10=Gifted and Talented).

At the start of each unit, each child will have an assessment sheet containing the key knowledge for that topic taken from the National Curriculum (see school website for examples) and specific 'Working Scientifically' skills to be covered. Once that aspect of the curriculum has been taught, the children self-assess using a 1, 2 or 3 tick system. The teacher, using a range of assessment opportunities- including the end of unit assessment, then ticks whether the child is working towards the expected standard, at the expected standard or showing greater depth understanding for that topic. The data for 'Working Scientifically' is added to tracker at the end of each term, using the aforementioned scoring system.

In marking, green pen comments are used to challenge those who have achieved the Learning Objective or to challenge children's misconceptions. Marking to correct errors should be done every lesson and must follow the marking code. For more details, refer to Feedback and Marking policy.

The Science leader monitors teaching and progress in Science by:

- Informal discussions with teachers, LSAs and children
- An annual resource audit
- Assessing work and progress
- Observing lessons
- Planning scrutiny
- Book scrutiny

Resources

Resources are kept in the Science Leader's classroom organised into labelled trays and boxes. Resources are allocated to every class on a weekly basis during the 'Science Technicians' pupil leadership group. In the case that Science Technicians are unable to operate, the Science Leader will provide resources for each class at the start of every term. Teachers should check available resources prior to start of new topics and approach Science Leader if required resources do not appear to be available.

Children are briefed before using equipment to ensure correct and safe usage. When engaged in practical work, children should behave in a considerate, responsible manner, showing respect for other people and the equipment.

Children will have the opportunities to use the following resources: stopwatches, magnets, cells, wires, bulbs, switches, thermometers, sieves etc. in a range of environments: classroom, playground, field etc.

Review

This policy is reviewed by staff and governors every three years. Parents are most welcome to view copies of this policy on the school's website and comments are invited from anyone involved in the life of the school.

Lower School Science - Sequence of Learning

Year 3

1. Animals including Humans – Skeleton, muscles and nutrition
2. Forces and Magnets
3. Rocks
4. Light
5. Living Things and their Habitats – Plants

Year 4

1. Sound
2. Electricity
3. Animals including Humans – Digestive system
4. States of Matter`
5. Living Things and their Habitats – Classification

Rationale for science topics:

- The topics taught in Year 3 and 4 are those recommended in the National Curriculum for each year group, within the Lower Key Stage 2 Programme of Study.
- Children begin Year 3 with Animals including Humans, as they build on their understanding of the basic needs of animals and the importance of exercise and diet for humans, as explored in Year 2. Rocks are taught alongside the geography topic of Volcanoes, allowing them to make connections between scientific concepts and real life examples. Light and Living Things are taught at the end of Year 3 when the environmental conditions best enable the children to explore the learning objectives.
- Sound is taught at the start of Year 4 as it is an entirely new topic for the children and therefore enthuses and excites them at the start the academic year. Animals including Humans is taught in the spring since the topic of digestion contains a lot of challenging, subject-specific vocabulary. States of Matter and Living Things are taught at the end of Year 4 when the environmental conditions best enable the children to explore the learning objectives.

Upper School Science - Sequence of Learning

Year 5

1. Earth and Space
2. Forces
3. Living Things and their Habitats – Life Cycles
4. Animals including Humans – Gestation
5. Properties and Changes of Materials

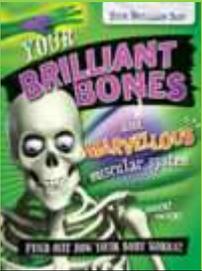
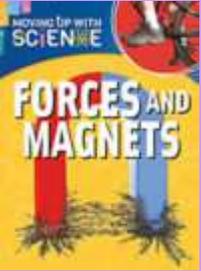
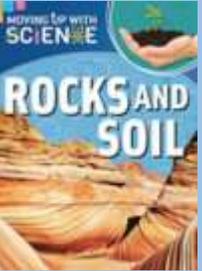
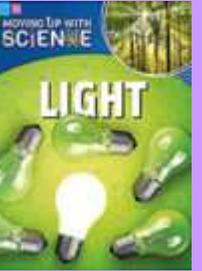
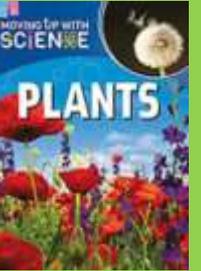
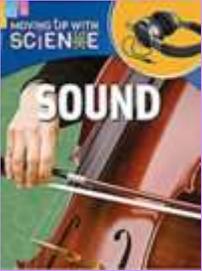
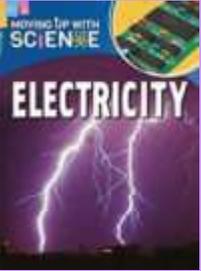
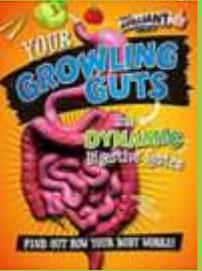
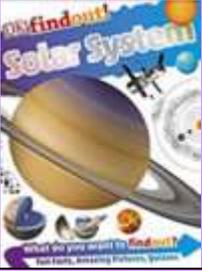
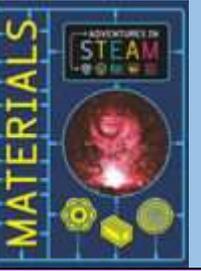
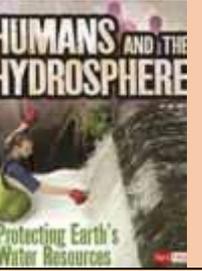
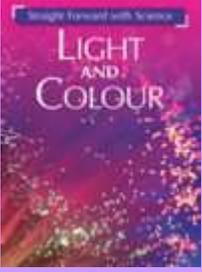
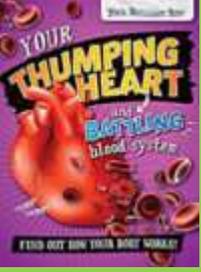
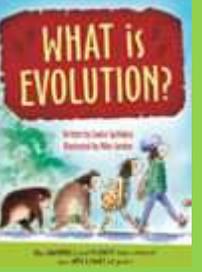
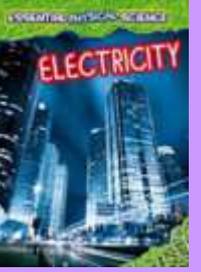
Year 6

1. Light
2. Animals including Humans – Circulatory system
3. Living Things and their Habitats – Classification
4. Evolution and Inheritance
5. Electricity

Rationale for science topics:

- The topics taught in Year 5 and 6 are those recommended in the National Curriculum for each year group, within the Upper Key Stage 2 Programme of Study.
- Year 5 start the year with Space as it is an entirely new topic for the children and therefore enthuses and excites them at the start the academic year. Forces follows the Space topic, allowing the children to further enhance their understanding of concepts briefly explored already, such as gravity. Living Things is taught in the spring, when the environmental conditions best enable the children to explore the learning objectives. Properties and Changes of Materials are taught alongside D&T lessons, allowing children to apply their scientific vocabulary and knowledge to practical projects.
- Year 6 start the year with Light. This is a topic they have not explored since Year 3, so it provides an opportunity to refresh and build upon their existing knowledge. Living Things is taught before Evolution, as knowledge of classification underpins the children's understanding of Evolution and Inheritance. Electricity is taught at the end of Year 6 to ensure that resources are plentiful since it does not clash with Year 4.

Appendix 2 – Curriculum Intent

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3	Animals including humans 	Forces and Magnets 	Rocks 	Light 	Plants 	Environmental science Littering
Year 4	Sound 	Electricity 	Animals including humans 	States of matter 	Living things and habitats 	Environmental science versus animal extinction 
Year 5	Space 	Forces 	Living Things 	Animals including humans N/A	Properties of materials 	Environmental science water use 
Year 6	Light 	Animals including humans 	Living things and habitats 	Evolution 	Electricity 	Environmental science energy and fossil fuels 