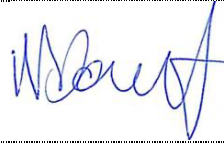




Science Curriculum Policy

November 2024

Signed (Chair of Trustees):	
Date:	November 2024
Review:	November 2025

Arbor Academy Trust reviews this policy annually. The Trustees may, however, review the policy earlier than this, if the Government introduces new regulations, or if the Trust receives recommendations on how the policy might be improved.

Science Curriculum Policy

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Introduction

We teach a high-quality science education curriculum that 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 are encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They are encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Aims

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 and be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future. The national curriculum for science reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely.

We aim for children to:

- develop scientific knowledge and conceptual understanding
- develop ideas about everyday phenomena
- use technical terminology accurately and precisely
- build up an extended specialist vocabulary.
- apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data
- understand the social and economic implications of science
- understand of the nature, processes and methods of science by 'working scientifically'
- use a variety of approaches to answer relevant scientific questions
- be curious and ask questions about what they notice
- broaden their scientific view of the world around them
- recognise that scientific ideas change and develop over time.

How we teach Science

Our science curriculum and pedagogical approach ensures teachers will provide opportunities for children to:

- experience and observe phenomena
- observe changes over time
- Look for patterns in findings

- identify, classify and group
- carry out comparative and fair testing (controlled investigations);
- research using secondary sources
- collect, analyse and present data
- ask questions about what they observe and make decisions about which types of scientific enquiry are likely to be the best ways of answering them
- experience first-hand practical lessons
- analyse functions, relationships and interactions systematically
- draw conclusions based on their data and observations
- use evidence to justify their ideas
- use their scientific knowledge and understanding to explain their findings.

We believe that a variety of teaching styles should be used in science lessons. We want to develop children's knowledge, skills, and understanding. This can be done through whole-class teaching and targeted scaffold. We engage the children in an enquiry-based research activity, we encourage the children to ask, as well as answer, scientific questions. Children have the opportunity to use a variety of data, such as statistics, graphs, pictures, and photographs and apply analytical and evaluative skills. Children use technology in science lessons where it enhances their learning and take part in role-play and discussions, they also present reports to the rest of the class. They engage in a wide variety of problem solving activities. We involve the pupils in 'real' scientific activities, including researching local environmental problem or carrying out a practical experiment and analysing the results.

Within a variety of topics we expect all the pupils to develop the following key skills as young scientists, predicting, observing, classifying, comparing, contrasting and making models. We want the children to gather data, measure and communicate their findings. We recognise that there are children of widely different scientific abilities in all classes and we ensure that we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child.

We can achieve this in a variety of ways by:

- setting common tasks which are open-ended and can have a variety of responses;
- grouping children by ability in the room and setting different tasks for each ability group;
- providing resources of different complexity, matched to the ability of the child;
- using additional adults where possible, to support the work of individual children or groups of children.

The Foundation Stage

Science makes a significant contribution to the objectives in the Early Learning Goals (ELG) of developing a child's knowledge and understanding of the world, e.g. through investigating what floats and what sinks when placed in water. We teach science in our Nursery and Reception classes as an integral part of the topic work covered during the year. As the reception class is part of the Foundation Stage of the National Curriculum, we relate the

scientific aspects of the children's work to the objectives set out in the Early Learning Goals (ELGs) which underpin the curriculum planning for children aged three to five.

Teaching Science to children with special educational needs

We teach science to all children, whatever their ability. Science forms part of the school curriculum policy and provides a broad and balanced education to all children. Through our science teaching we provide learning opportunities that enable all pupils to make progress. We do this by setting suitable learning targets and responding to each child's different needs in consultation with the Inclusion Manager. The SEND Code of Practice demands that children with SEND are entitled to reasonable adjustments and access to the curriculum. So, we teach science to all children considering how they learn best and how they can access the concept. Teachers use data and knowledge of each child to vary the resources and make adjustments that ensure the children access the science curriculum.

We do this by setting suitable learning challenges and responding to each child's different needs. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected standards. When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors including classroom organisation, teaching materials, teaching style, variation so that we can take some additional or different action to enable the child to learn more effectively. This ensures that our teaching is matched to the child's needs. Intervention through SEN Support and EHC plans will lead to the creation of an Individual Education Plan (IEP) for children with special educational needs. The IEP may include, as appropriate, specific targets relating to science. We enable pupils to have access to the full range of activities involved in learning science. Where children are to participate in activities outside the classroom, for example, a trip to a science museum, we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

Assessment and recording

To consider each child's attainment in science, we assess their progress against the National Curriculum. We consider our science curriculum to be the progression model and assess if the children are working at expected levels as they move through the science curriculum. We assess children's work in science by making informal judgements as we observe them during lessons. On completion of a piece of work, the teacher marks the work and comments as necessary. We use these grades as the basis for assessing the progress of each child and teacher's use this information for scaffolded support for children. The information is passed on to the next teacher at the end of the year. The science subject leader keeps samples of children's work digitally or in a portfolio and use these to demonstrate what the expected standard of achievement is in science for each age group in the school. At the end of a unit of work they make a summary judgement about the work of each pupil in relation to the National Curriculum expectations and the teacher records the attainment grades on Sims.

Resources

Equipping and resourcing science lessons underpin our expectation for supporting all children. The skills, experience and knowledge of all staff are valued and all contribute within the school. There is a range of resources to support the teaching of science across the school. All classrooms have the basic resources and equipment within their classroom. Any extra resources needed are accessible to the entire school in the science resources storage areas which is used as the central storage area. A range of software is available to support work with the computers.

Monitoring and review

Monitoring of the standards of children's work and of the quality of teaching in science is the responsibility of the science subject leader and SLT. The work of the science subject leader also involves supporting colleagues in the teaching of science, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in the school. The science subject leader gives the head teacher a termly report in which they evaluate strengths and weaknesses in the subject and indicates areas for further improvement. The head teacher or Head of School allocates regular management time to the science subject leader so that they can review samples of children's work and undertake lesson observations of science teaching across the school. A named member of the school's governing board is briefed to oversee the developments of science. This governor meets regularly with the subject leader to review progress.

Subject	Term	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Science	Autumn	Plants and seasonality	Living things and their habitats	Rocks & forces and magnets	Living things and their habitats & Animals, including humans	Earth and Space & Forces	Living things and their habitats & Animals including humans
	Spring	Everyday materials	Uses of everyday materials	Plants	States of matter	Living things and their habitats	Evolution and inheritance
	Summer	Animals , including humans	Animals, including humans	Animals, including humans & Light	Sound & Electricity	Properties and changes of materials	Electricity & Light