

Woodlands Primary School

Science Policy



Updated: December 2021

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Science Policy Document

“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” (National Curriculum 2015).

Aims and Objectives

Science is a core subject within the National Curriculum. The aims of teaching Science at Woodlands Primary School are consistent with our school philosophy and take account of the new National Curriculum 2014. Through early experiences children begin to develop ideas which enable them to make sense of the world around them. They bring these informal ideas into the classroom and the aim of science education is to channel their natural curiosity into scientific investigation, which will equip them with the necessary strategies to develop more formal and complex concepts. We aim to provide a rich, stimulating and varied environment with ample opportunity for active exploration and discovery with the teacher in role of ‘enabler’.

Through science in our school we aim to:

- Encourage the development of positive attitudes to science
- Deliver the National Curriculum in Science in ways that are imaginative, purposeful, well controlled and enjoyable
- Help in developing and extending the children’s scientific concept of their world
- Deliver clear and accurate teacher explanations and skilful questioning
- Make links between science and other subjects
- Develop the use of scientific language, recording and techniques
- Enable children to become effective communicators of scientific ideas, facts and data
- Develop the following skills of investigation – collecting, presenting, analysing data, observation, measuring, predicting, hypothesising, experimenting, communicating and interpreting
- Challenge More Able and Talented children further

Time Allocation

At Woodlands, we ensure that Science is given due prominence as a core subject. Each class undertakes a minimum of one weekly Science lesson per week (KS 1 – 1½ hours per week minimum, KS 2 – 2 hours per week minimum).

Teaching and Learning

Science is important because: -

- It is a body of knowledge essential to our understanding of the world around us
- The process of scientific investigation forms the basis of most intellectual enquiry
- The skills and knowledge of science have a wide application in everyday life

Science is a core subject in the National Curriculum. The fundamental skills, knowledge and concepts of the subjects are set out in “Science in the National Curriculum” where they are categorised into areas:

1. Working Scientifically, which is taught through contexts taken from:
2. Biology
3. Physics
4. Chemistry

Early Years Foundation Stage

During the Early Years Foundation Stage, particular attention is given to activities based on first hand experience that encourage exploration, observation, problem solving, prediction, critical thinking, decision making and discussion. Under the area of learning entitled ‘*Understanding the World*’, children are developing the crucial knowledge, skills and understanding that form the foundation for later work in Science. Evidence of learning and development is recorded in each child’s Learning Journal, used to inform assessment and planning of children’s next steps in learning.

Curriculum, Planning and School Organisation

Planning in Science is a process in which all teachers are involved to ensure that the school delivers full coverage of the National Curriculum and Early Years Foundation stage. Science is delivered as part of Woodlands Creative Curriculum through an annual cycle as appropriate across phases. The topics set out provide a vehicle to deliver the Science Curriculum and ensure that the programme of study is covered, which has been incorporated into the Woodlands ‘Creative Curriculum’ to ensure progression between year groups and guarantees topics are revisited. This planning is monitored on a termly basis by the Science co-ordinators – with assistance in planning being provided if required.

Within any one class and within the range of Science topics/work children are given the opportunity to work as a class, as individuals and as part of a group.

At Woodlands, we believe strongly in encouraging learning through investigation with an emphasis on first hand experiences. However, it is also acceptable to use demonstration, exploration and teacher led investigations when circumstances, resources and the needs of individuals and groups require. Group work offers the children opportunities to work together, sharing ideas, offering suggestions and provide first-hand experience. Work is carefully differentiated and matched to each group, both to support children who experience difficulties, and to extend more able pupils.

Cross Curricular Links

Science has particular links to subjects in other areas of the curriculum including:

- Literacy: Speaking and listening, using information texts, shared texts, formulating tables, non-chronological report writing, writing investigations, labels, captions, instructions and dictionaries.
- Numeracy: Practical use of counting, measuring apparatus and data handling skills.
- Design and Technology: Integration within the creative curriculum

- Geography: To investigate the impact of climate change on human habitats, seasonal changes and renewable energies
- Computing: The provision for the use of technology in Science at Woodlands is excellent and all teachers work to maximise the use of resources in their teaching. The children are given the opportunity to research, plan, predict, test and improve their ideas using relevant resources to improve understanding, aid communication and enhance presentation.
- Computing has been a useful tool for developing enquiry skills by allowing the virtual testing of ideas. This also involves more tasks involving interpreting and analysing results. Computing provides various opportunities to investigate (e.g. virtual experiments, Concept Cartoons, Digital microscope, the Internet, Cameras etc) and to interpret results (e.g. databases, graphs)
- Helps to develop more independence and can provide an excellent extension and challenge for more talented pupils, whilst supporting others where necessary.
- Espresso, which includes computing linked science resources, both to aid planning and teaching and in the form of virtual experiments and short video clips to enhance children's learning.
- PE: Healthy living and lifestyle choices
- SMSC: Humans including needs, life cycles, similarities and differences, choices to improve well being, personal hygiene, disease and medicines.

Assessment

The purpose of assessment is to show what a pupil has learned and mastered so as to inform decisions about the next steps.

Assessment in Science should recognise the importance of the development of scientific skills and should be carried out by the teacher as an integral part of the learning process. Assessment for Learning is an integral part of how all staff deliver and assess lessons and has been judged outstanding in many lesson observations.

Evidence of assessment will be as follows:

1. Assessment/next steps will be found on planning and in the children's books (tickled pink/ green for growth).
2. Individual assessments are completed after each science topic on Insight tracking against National Curriculum objectives. These records are passed on to the next teacher throughout the Key Stages so that there is note of abilities, particularly SEN and MA&T. The ongoing assessment of investigative and experimental skills is assessed through the 'Working Scientifically' strand.

Inclusion

We strive to ensure all children are confident learners who value themselves and their achievements. We provide opportunities for all children to learn in a multi-sensory, experiential way. We also provide opportunities for children to ask and answer questions and to reflect upon their learning. Teachers at Woodlands understand how young children learn and they plan to accommodate a range of learning styles within lessons. We believe in equality of opportunity so that all pupils should have equal access to opportunities that develop their skills and abilities. We believe that all

pupils should have available to him or her as much support as necessary to maximise their full potential. We acknowledge the need for early intervention to raise attainment and also the need for further challenge for More Able and Talented children.

We have high expectations of our pupils and we provide the highest quality education that is both satisfying and challenging. We constantly strive to improve teaching and learning for all children and we expect them to make progress in line with realistic expectations, based on their potential and against agreed targets.

Equal Opportunities

At Woodlands we work to ensure that all children have the opportunity to gain scientific knowledge and understanding regardless of gender, race, class, physical or intellectual ability. We will ensure that expectations do not limit pupils' achievements and that assessments do not involve any cultural, social, linguistic or gender bias.

Parental/Community Involvement

People with an expertise or interest in a particular Science topic may be invited into school to work with the children. Strong links have been made with Mad Science and URENCO.

We also work closely with The Whitby High School and Liverpool University, where Year 5 and Year 6 children have opportunities to take part in a variety of workshops. Wherever possible and appropriate, educational visits are included in a Science topic, making use of locations accessible to school (e.g. Menai, STEAM festival, Chester Zoo, Liverpool University and the school grounds).

Health and Safety

The safe use of equipment is promoted at all times and the school has adopted for its safety policy, the Association for Science Education leaflet – 'Be Safe' – as recommended by the Cheshire Education Committee (available in both the staff room and the office). All the staff are aware of the ASE guide. In addition, each teacher should be clear as to the purpose of the work and ensure that any testing that needs to be carried out complies with the Health and Safety procedures and has been practised prior to the lesson. Safety hazards should also be pointed out to the children at the beginning of any work.

Environmental Awareness

At Woodlands we realise the importance of teaching our pupils to care for the environment. The school will continue to recycle waste paper and ink cartridges and promote community recycling projects. Improvement of the Nature Area, in both Key Stages, in order to facilitate staff and pupils for their teaching and learning is an on going project.

Resources and Accommodation

A wide variety of Science resources are available in school. Each class has access to a resource cupboard with scientific equipment and a variety of books for the use of the children, within their own classroom and from the school library.

The Science Co-ordinators are responsible for maintaining Science resources, monitoring their use and organising the resource areas. All teachers strive to return equipment to science cupboards in an organised and tidy state. Damaged equipment should be given to the Science co-ordinators to enable replacements to be ordered. Resources are replaced and purchased following the general school ordering procedures and using money from grants where possible

The vast majority of resources are stored centrally on each site so they are available to all staff. Staff need to collect their resources as they need them and ensure they return them to where they came from. Staff should notify the co-ordinator of any extra resources required, of any breakages or losses that occur and of any new materials that might prove useful. Unsupervised children should not be allowed to collect resources.

Moderation and Monitoring

At Woodlands we moderate and monitor science as a part of our self-evaluation approach to maintaining standards and supporting staff in their teaching. Science moderation involves analysis of children's work in relation to learning outcomes and National Curriculum objectives across the school. Science moderation achieves the following:

- Evidence of learning outcomes
- Understanding and agreeing on levels for work
- A range of samples for evidence

Monitoring and Evaluation

The monitoring and evaluation of science teaching is carried out through book and planning monitoring by the science co-ordinators. The objective of the monitoring is to ensure science is being taught well across the school, national curriculum objectives are followed and that children are given opportunities to broaden their knowledge and understanding of each topic while giving opportunities to work scientifically.

In addition, the co-ordinators will

- Pass on updated information, practical ideas and initiatives gathered from courses and literature
- Give support to colleagues in terms of planning and CPD when necessary
- Make sure staff are aware of available resources, and that these are updated as required
- Raise the profile of science as a whole in the school, through displays of children's work and science days
- Continue to make links with local industries and schools to enhance children's knowledge, learning and scientific experience

Issues for the future

Woodlands are currently working with the Ogden Trust and STEM Enthuse partnership. They both provide training, funding for training and CPD, access to resources and opportunities to work collaboratively with local science co-ordinators in

the local area. This will benefit school in multiple ways, such as contributing to raising the profile of science and providing professional support for developing science leadership, teaching, assessment and learning.

Links with local industries, communities, STEM Ambassadors, Mad Science and local universities will continue to be strengthened through 2021-22.

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