Woodside Academy

Science Policy

"We want the very best teaching and learning experiences for all our children"
from School Vision Statement "Excellence Through Opportunity"

Agreed by the Governing Body 25/09/2020

Objectives

Aims of Science
At Woodside we aim for our children to:

- have a curiosity about science, how things work and the world around them,
- question how and why things work and have an open-mindedness for investigation,
- respect the evidence gathered and draw conclusions from it,
- have an independence in their thinking and hypothesis
- have a sensitivity towards living and non-living environments,
- 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

Achieving and Maintaining High Standards

'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 2014

At Woodside we expect pupils to be able to describe associated processes and key characteristics through use of technical terminology accurately and precisely. As we teach subjects in across-curricular way, pupils will apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. Pupils will also

develop a sensitivity towards social and economic implications of science. Children will be taught using different contexts to maximise pupils' engagement with and motivation towards the study of science.

The Teaching of Science Across the School

The above underpins all teaching and learning at Woodside Academy. We have an agreed approach to developing children's Science as stated in the opening paragraph. In line with the National Curriculum children will be using the five main lines of enquiry in their learning. These lines of enquiry are:

Skills of:

- **Observation over time** – Children use first hand experiences and their senses to explore and investigate to acquire new information over a certain time period.
- **Pattern seeking** – Children look for patterns in what they have observed.
- **Identification, classification and grouping** – Children can use pictures or real-life objects to sort them by classification or identify the name of an object.
- **Investigation through comparison and fair testing –** Children need to be able to fairly set up their own experiments thinking about how to keep the test fair and how to eliminate variables.
- **Researching using secondary sources –** Children to use secondary sources of information to research scientific theories.

Whilst teaching these five lines of enquiry, we will ensure that we are still challenging children by using the following processes:

- **Interpretation -** Children need to look at the data they have collected and interpret what is useful to then decide upon an appropriate investigation.
- **Hypothesising –** To use their scientific knowledge, understanding and observation skills to develop a theory or prediction in terms of a principle or concept that is to be tested and investigated.
- **Questioning –** Children need to think of what information they need to be answered in order to investigate their hypothesis. Children then think of appropriate questions to tally.
- **Gathering, recording and communication –** Children need to be able to carry out their experiment or investigation and collect and record their findings in an accurate and clear way. The children need to learn draw conclusions from their findings and communicate this through an appropriate means (verbal, visual) presentation.

The skills necessary for the investigation of science are complex and need fostering over a period of time. The nature of these skills changes and develops as the child grows and builds upon them. They are very much the tools of this subject. By nurturing these skills the children are encouraged not to passively accept stated facts or knowledge, but to think for themselves, to question what is going on around them and see things from a deeper perspective.

To achieve and develop our stated skills and attitudes, our curriculum content is offered in a varied way. Children have scientific experience throughout their school life, mainly as an individual subject but where possible in an integrated cross-curricular way. Children learn about a wide variety of scientific areas which we build upon and develop as the children mature and their knowledge grows.

There is also a strong emphasis on teaching children about caring for our World and sustainability issues (such as recycling, use of electricity, fuel consumption and pollution etc.) and these issues are embedded in the science curriculum.

The Foundation Stage

In Early Years, science is taught as part of 'Understanding the World' and is very much topic based and centred around child-initiated learning. Children are given the opportunities to experience, explore and verbalise different scientific ideas. Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.

On entry, judgements are made against Development Matters statements to identify their prior understanding. Children are assessed throughout the year through observation, questioning, conversation, group or individual work.

Key Stage One

At Woodside, we aim to enable Key Stage One pupils to experience and observe and look more closely at the natural and humanly constructed world around them. They are encouraged to be curious and ask questions about what they notice. They are helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They are encouraged to begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways.

We aim to ensure that most of the learning about science is done through the use of first-hand practical experiences. However, it is important that there is some use of appropriate secondary sources, such as books, photographs and videos are used also.

Lower Key Stage Two

The aim of teaching pupils at Key Stage Two is to enable pupils to broaden their scientific view of the world around them. We do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They are encouraged to ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They then draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

Upper Key Stage Two

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. We do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They also begin to recognise that scientific ideas change and develop over time. They select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

Planning

The school's science coordinator will take overall responsibility for ensuring effective planning and consistency of approach by teachers in accordance with the National Curriculum 2014.

Planning is carried out by partner teachers and overseen by science coordinator with guidelines set at medium term planning stage using the following units of work. Plans are saved half termly to the shared drive and are monitored and compared with the science objectives by the Science coordinator. We will also be using the science topics to link with the chosen topic for the year group for Eco as arranged by the Eco coordinator. Teachers to arrange the units depending on their topics e.g. cross-curricular links. Teachers are welcome to rearrange the order of the topics but will need to specify which unit in their medium-term plan.

Within certain units of the curriculum children will need to look at famous scientists and be able to access information about them and understand how they relate to the topic they are studying. These scientists are to be discussed by teachers and science coordinator and documented in the medium-term plan. Following the natural progression of the units by the end of year 6 children should be able to identify, name and lists credible features of a range of famous scientist's work.

Year Group	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
1	Plants	Animals including humans	Everyday materials	Seasonal changes 1	Seasonal changes 2	Eco topic
2	Living things and their habitats (1)	Living things and their habitats (2)	Plants	Animals including humans	Uses of everyday materials	Eco topic
3	Plants	Animals including humans	Rocks	Light	Forces and magnets	Eco topic
4	Living things and their habitats	Animals including humans	States of matter	Sound	Electricity	Eco topic

5	Living things and their habitats	Animals including humans	Properties and changes of materials	Earth and space	Forces	Eco topic
6	Living things and their habitats	Animals including humans	Evolution and inheritance	Light	Electricity	Eco topic

Safety in Science

The school is aware of the importance of safety in science and our safety policy follows the BE SAFE (ASE) document for which all staff have been referred. We also have our own risk assessment that has been agreed by staff and governors.

Resources

Our Science resources are kept centrally in the Science cupboard in boxes that are labelled according to the contents, some organised by topic. The contents of the boxes have been listed and a copy given to each member of staff. Staff at Woodside take responsibility for the use and replacement of equipment and the safe handling of it.

Staff Responsibility

It is the responsibility of all teaching staff to:

- Implement this policy
- Complete an order for resources that need replacing and hand this to the Science Co-ordinator for signing
- Save a copy of medium term plans on to the staff shared folder

It is the Science subject leader's responsibility to:

- Order stocks requested by staff, budget permitting, and keep the resources up to date
- Monitor the medium term plans and keep the policy up to date with national guidance
- Monitor lessons and progression being made by all children
- Assess the enjoyment of Science being taught
- Ensure the National Curriculum is being taught completely and correctly

Assessment, Recording and Reporting

At Woodside the assessment of Science takes a number of forms, such as monitoring and sampling of children's work, including some formal observations of lessons, talking to children and observing children's work displayed around the school.

Pupils themselves can also be involved with the assessing of their own work. Each lesson has a clear learning objective to support learning expectations and children are made aware at the start of each lesson about they need to achieve to be successful. This can be achieved by analysing their work in a written or verbal form, this is of value to the pupil as it can clarify what is needed to achieve the next level.

Every half term teachers report children's attainment in Science which is then monitored by the Science Co-Ordinator to ensure progress is made by all children. A report is sent to parents at the end of each year.

Access and Entitlement

Science should be equally accessible to every pupil irrespective of learning difficulties and special needs, which can include gifted members of the class. Cultural differences can be addressed and girls should be given equal opportunities to study all aspects of Science.

Lauren McInerney 2020