

Woodbridge Junior School



Science Policy

Introduction

Science is one of the core subjects in the National Curriculum. Developments in Science are vital to the world's future prosperity. This policy outlines the purpose, nature and management of the Science taught and learnt in our school. At Woodbridge our aim is to deliver an exciting, engaging Science curriculum ensuring that pupils gain both an understanding of how to work scientifically and key knowledge about the world around us.

Science education is about fostering a sense of curiosity to enquire, problem solve and investigate why the world operates the way it does. Science, Technology, Engineering and Mathematics (STEM) is becoming increasingly important in career development, and therefore this should be reflected in the curriculum.

Intent

Science at Woodbridge aims to teach our children the skills, knowledge and understanding they need to question and understand concepts and phenomena that occur in the world we live in. Children learn the skills required for scientific enquiry and they will begin to appreciate the way science will affect their future on a personal, national and global level.

Science at Woodbridge enables children to:

- Become curious about the world around them and the things that they observe, experience and explore.
- Ask and answer scientific questions linked to our topics.
- Develop language skills through predicting outcomes, discussing and designing methods and presenting findings.
- Use progressively technical scientific and mathematical vocabulary across the key stage.
- Draw diagrams and charts to communicate scientific ideas.
- Acquire and refine practical skills necessary to investigate ideas and questions safely.
- Develop the skills to draw conclusions from investigation findings.

Implementation

Teaching and learning style

The school uses a variety of teaching and learning styles through our topic lessons and through discreet science lessons. Our principal aim is to develop the children's knowledge, skills and understanding. We do this through a mixture of whole-class teaching, individual and group activities and investigative work. Teachers encourage the children to ask their own scientific questions, make predictions, design an investigation which answers their question as well as carry out the investigation. Reflection and evaluation is also encouraged after each investigation to instil a sense of responsibility and ownership of the children's learning.

Being a core subject, we have invested in a wide variety of resources to allow the children to be hands on with their investigations. Allowing the children to be interactive with the subject ensures maximum curiosity and engagement.

The children also have the opportunity to use a variety of secondary sources of information, which will enhance learning, as well as gaining first hand experiences, for example, the use of books, photographs, graphs, diagrams, models and ICT.

Where possible, the science curriculum at Woodbridge is enhanced with educational visits and outdoor learning opportunities. We tailor our curriculum to suit the needs of all our learners through differentiation ensuring that all children can experience success in Science.

Science curriculum planning

Science is planned in year group teams and monitored by the Science Coordinator. Our Science planning is topic based as part of our integrated curriculum approach. The National Curriculum is used as the basis of curriculum planning and the following curriculum map shows coverage across year groups.

We have planned the topics in science so that they build upon prior learning, utilising retrieval activities to ensure that knowledge is embedded in children's long-term memory. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit. We also build progression into the science scheme of work, so that the children are increasingly challenged as they progress through the school.



Science Curriculum Map

| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
|----------------|--|---|---|--|--|---|
| School Theme | <i>The Environment</i> | <i>Art</i> | <i>History</i> | <i>Health</i> | <i>Enterprise</i> | <i>Geography</i> |
| Subject Driver | Science & Geography | Art and History | History | Science and PSHCE | Design Technology | Geography and Science |
| Year 3 | <p>Animals, including humans: Health and Movement</p> <ul style="list-style-type: none"> - identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat - identify that humans and some other animals have skeletons and muscles for support, protection and movement | <p>Forces and Magnets</p> <ul style="list-style-type: none"> - compare how things move on different surfaces - notice that some forces need contact between two objects, but magnetic forces can act at a distance - recognise that they need light in order to see things and that dark is the absence of light - notice that light is reflected from surfaces - recognise that light from the sun can be dangerous and that there are ways to protect their eyes - recognise that shadows are formed when the light from a light source is blocked by an opaque object - find patterns in the way that the size of shadows change. | <p>Rocks, Fossils and Soils</p> <ul style="list-style-type: none"> - compare and group together different kinds of rocks on the basis of their appearance and simple physical properties - describe in simple terms how fossils are formed when things that have lived are trapped within rock - recognise that soils are made from rocks and organic matter | <p>Animals, including humans: Health and Movement</p> <ul style="list-style-type: none"> - identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat - identify that humans and some other animals have skeletons and muscles for support, protection and movement | <p>How Plants Grow</p> <ul style="list-style-type: none"> - identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers - explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant - investigate the way in which water is transported within plants - explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. | <p>Light and Shadow</p> <ul style="list-style-type: none"> - recognise that they need light in order to see things and that dark is the absence of light - notice that light is reflected from surfaces - recognise that light from the sun can be dangerous and that there are ways to protect their eyes - recognise that shadows are formed when the light from a light source is blocked by an opaque object - find patterns in the way that the size of shadows change. |
| Year 4 | <p>Electricity</p> <ul style="list-style-type: none"> - associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit - compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches | <p>Sound</p> <ul style="list-style-type: none"> - identify how sounds are made, associating some of them with something vibrating - recognise that vibrations from sounds travel through a medium to the ear - find patterns between the pitch of a sound and features of the object that produced it | <p>Living things and their habitats</p> <ul style="list-style-type: none"> - recognise that living things can be grouped in a variety of ways - explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment - recognise that environments can change and that this can sometimes pose dangers to living things | <p>Animals, including humans</p> <ul style="list-style-type: none"> - describe the simple functions of the basic parts of the digestive system in humans - identify the different types of teeth in humans and their simple functions | <p>States of matter</p> <ul style="list-style-type: none"> - compare and group materials together, according to whether they are solids, liquids or gases - observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) - identify the part played by evaporation and condensation in the | <p>Animals, including humans</p> <ul style="list-style-type: none"> - construct and interpret a variety of food chains, identifying producers, predators and prey. |



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|---------------|--|--|--|---|---|--|
| | <ul style="list-style-type: none"> - use recognised symbols when representing a simple circuit in a diagram. | <ul style="list-style-type: none"> - find patterns between the volume of a sound and the strength of the vibrations that produced it - recognise that sounds get fainter as the distance from the sound source increases. | | | <p>water cycle and associate the rate of evaporation with temperature.</p> | |
| Year 5 | <p>Living things and their habitats</p> <ul style="list-style-type: none"> - describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird - describe the life process of reproduction in some plants and animals | <p>Properties and Changes of Materials</p> <ul style="list-style-type: none"> - know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution - use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating - give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic - demonstrate that dissolving, mixing and changes of state are reversible changes - explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda | <p>Forces in Action</p> <ul style="list-style-type: none"> - explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object - identify the effects of air resistance, water resistance and friction, that act between moving surfaces - recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect | <p>Changes and Reproduction</p> <ul style="list-style-type: none"> - describe the changes as humans develop to old age | <p>Earth and Space</p> <ul style="list-style-type: none"> - describe the movement of the Earth, and other planets, relative to the Sun in the solar system - describe the movement of the Moon relative to the Earth - describe the Sun, Earth and Moon as approximately spherical bodies - use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky | <p>Recap Forces and Animals</p> <ul style="list-style-type: none"> - explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object - identify the effects of air resistance, water resistance and friction, that act between moving surfaces - recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect |
| Year 6 | <p>Evolution and Inheritance</p> <ul style="list-style-type: none"> - recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago - recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents - identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. | <p>Electricity</p> <ul style="list-style-type: none"> - associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit - compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches - use recognised symbols when representing a simple circuit in a diagram. | <p>Living things and their habitats: Classifying Organisms</p> <ul style="list-style-type: none"> - describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals - give reasons for classifying plants and animals based on specific characteristics | <p>Animals, including humans: Healthy Bodies</p> <ul style="list-style-type: none"> - identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood - recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function - describe the ways in which nutrients and water are transported within animals, including humans | <p>Light</p> <ul style="list-style-type: none"> - recognise that light appears to travel in straight lines - use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye - explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes - use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them | <p>Scientific Enquiry</p> |

Science and cross curricular links

As well as teaching Science through our topic, we teach and reinforce scientific enquiry skills through other areas of the curriculum. We endeavour to link our Science and topic into our writing genres, giving children a real purpose for writing. Vocabulary is displayed in the classroom to support learning and used continuously within class discussions. Where possible, mathematical and computing links are made within Science. Taking advantage of these cross curricular links also enables the children to make more connections with the learning, therefore embedding knowledge deeper into their long-term memory. Our Science curriculum also promotes children's physical and mental wellbeing by teaching them about keeping their bodies healthy and connecting with the natural world.

Teaching science to children with special educational needs

Here at Woodbridge, we have the ethos of high-quality teaching for all children. Science forms part of the school curriculum policy to provide a broad and balanced education. Through our Science teaching, we provide learning opportunities that enable all pupils to make progress. We do this by setting suitable learning challenges and responding to each child's different needs. The practical nature of the subject allows for Science to be widely accessible and therefore highly engaging for all. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels.

As applicable, Pupil Premium funding may be made available to ensure that children who are in receipt of this funding make progress and are supported to do so.

Impact

Assessment and recording

Assessment is regarded as an integral part of teaching and learning and is a continuous process. It is the responsibility of the class teacher to assess all pupils in their class.

We see assessment as an integral part of the teaching process and strive to make our assessment purposeful, allowing us to match the correct level of work to the needs of the pupils, thus benefiting the pupils and ensuring progress for all.

Ongoing assessment in Science focuses on working scientifically, key knowledge and understanding based on the objectives of the National Curriculum. These are assessed through group discussions with children, observations and through children's written work. The progress of the pupils is recorded at the end of each unit by the class teacher. These assessments are monitored by the Science subject leader.

Teachers will use these assessments to plan further work and to identify pupils who are performing in line, or above or below National Expectations.

Monitoring and review

It is the responsibility of the Science Subject Leader, the Headteacher and Governors to monitor the standards of children's work and the quality of teaching in Science. The Science Subject Co-ordinator is also responsible for supporting colleagues in the teaching of Science, for being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school. An action plan is written and reviewed annually. The Science subject co-ordinator helps with moderation of worksamples and evidence of progress to ensure consistency, with feedback being given to staff on a termly basis.

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