

Our Science Curriculum



Chandag Infant School

EYFS

Science is incorporated in The Early Learning Goal for 'Understanding the World: The World'

Characteristics of Effective Learning

The ways in which a child engages with other people and their environment - playing and exploring, active learning, and creating and thinking critically – underpin learning and development across all areas and support the child to remain an effective and motivated learner.

'Understanding the World'

This is a specific area of the Early Years Curriculum that includes essential skills and knowledge about the world and provides firm foundations on which children can build their scientific understanding. Early Years children will be actively involved in play and exploration and be encouraged to be creative. They will be supported to think critically and ask questions, which will help them to make sense of their world through well-planned play opportunities.

The Early Learning Goal for 'Understanding the World: The World'

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.

First hand experiences and pupil offer:

Science at Foundation Stage is introduced indirectly through activities that encourage children to explore, problem solve, observe, predict, think, make decisions and talk about the world around them. Children will have opportunities to explore creatures, people, plants and objects in their natural environments. They will observe and manipulate objects and materials to identify differences and similarities. For example, they may look at an egg whisk, sand, paper and water to learn about things that are natural and manmade and their different functions. Children will also learn to use their senses, for example by feeling dough or listening to sounds in the environment, such as sirens or farm animals. They will be encouraged to ask questions about why things happen and how things work. They might do activities such as increasing the incline of a slope to observe how fast a vehicle travels, or opening a mechanical toy to see how it works. They will also be asked questions about what they think will happen to help them communicate, plan, investigate, record and evaluate findings.

Year 1 Outcomes	Year 2 Outcomes
<p>Skills</p> <p>Working scientifically</p> <ul style="list-style-type: none"> I can ask simple questions I can observe closely, using simple equipment I can perform simple tests I can begin to identify and classify <p>Knowledge</p> <p>Plants</p> <ul style="list-style-type: none"> I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. I can identify and describe the basic structure of a variety of common flowering plants, including trees. <p>Animals including humans</p> <ul style="list-style-type: none"> I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. I can identify and name a variety of common animals that are carnivores, herbivores and omnivores. I can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets). I can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. <p>Everyday materials</p> <ul style="list-style-type: none"> I can distinguish between an object and the material from which it is made. I can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. I can describe the simple physical properties of a variety of everyday materials. I can compare and group together a variety of everyday materials on the basis of their simple physical properties. <p>Seasonal changes</p> <ul style="list-style-type: none"> I can observe changes across the 4 seasons. I can observe and describe weather associated with the seasons and how day length varies. 	<p>Skills</p> <p>Working scientifically</p> <ul style="list-style-type: none"> I can ask simple questions and recognise that they can be answered in different ways I can observe closely, using simple equipment I can perform simple tests I can identify and classify I can gather data to help in answering questions I can record data to help in answering questions I can use my observations and ideas to suggest answers to questions <p>Knowledge</p> <p>Living things and their habitats</p> <ul style="list-style-type: none"> I can explore and compare the differences between things that are living, dead, and things that have never been alive I can identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. I can identify and name a variety of plants and animals in their habitats, including microhabitats I can describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. <p>Plants</p> <ul style="list-style-type: none"> I can observe and describe how seeds and bulbs grow into mature plants. I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. <p>Animals including humans</p> <ul style="list-style-type: none"> I notice that animals, including humans, have offspring which grow into adults. I can find out about and describe the basic needs of animals, including humans, for survival (water, food and air). I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. <p>Uses of everyday materials</p> <ul style="list-style-type: none"> I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. I can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Year 1	<p>Human body- identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</p> <p>Properties of materials, distinguish between an object and the material from which it is made. Supertato, making protective clothing. Describe the simple physical properties of a variety of everyday materials</p>	<p>Weather –Seasons</p> <p>Making a season’s wheel. Observe changes across the four seasons. Describe weather associated with the seasons and how day length varies.</p>	<p>Polar animals – identify and name a variety of common animals</p> <p>Identify carnivores, herbivores and omnivores Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</p>	<p>Materials and their properties linked to science week and a range of child initiated investigations.</p>	<p>Living things Plants and trees</p> <p>Grow sunflowers and school grounds investigation. Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</p> <p>Describe the basic structure of a variety of common flowering plants, including trees.</p>	<p>Materials and their properties/investigation</p> <p>Making boats/rafts and testing them.</p> <p>Observing closely, using simple equipment Performing simple tests.</p>
Year 2	<p>Observing -Materials and their properties when making own chocolate/cereal bars.</p> <p>Human body - Balanced diet linked to ingredients and sugar intake including the digestive system.</p> <p>Food chains – linked to honey bees (local link to bee keeper).</p>	<p>Materials and their properties- Materials for a space suit and performing simple tests.</p> <p>Planets/Space</p>	<p>Compare alive/dead/never lived on Galapagos. Identify and classify.</p> <p>Observing closely using simple equipment – making volcanoes.</p> <p>Understand basic human needs – study explorers and what they need to survive.</p> <p>Animals and their parents – identify and name animals in their microhabitats. Big bird watch RSPB.</p>	<p>Materials properties. Performing simple tests and investigations – castle siege, building walls and knocking them down.</p> <p>Transparent/opaque investigation - creating a visor for a knight.</p>	<p>Life cycles and food chains of different animals.</p> <p>Animal adaptations - Identify habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. Mini-beast hunting.</p> <p>Plants – Planting herbs. observe and describe how seeds and bulbs grow into mature plants</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p>	<p>Gathering and recording data to help in answering questions. Measuring distance. Materials and their properties.</p> <p>Making parachutes</p>



Chandag Infant School Science Curriculum

Intent: Our intent for science at Chandag Infant School aims to give all children a strong understanding of the world around them whilst acquiring specific skills and knowledge to help them to think scientifically, to gain an understanding of scientific processes and also an understanding of the uses and implications of Science, today and for the future. Scientific enquiry skills are embedded in each topic the children study and these topics are revisited and developed throughout their time at school to ensure a consolidation and progression of skills. This model allows children to learn deeply and build upon their prior knowledge, increasing their enthusiasm for the topics whilst embedding this procedural knowledge into the long-term memory. All children are encouraged to develop and use a range of skills including observations, planning and investigations, as well as being encouraged to question the world around them and become independent learners in exploring possible answers for their scientific based questions. Specialist vocabulary for topics is taught and built up, and effective questioning to communicate ideas is encouraged. Concepts taught are reinforced by focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions.

Implement: Our curriculum is organised through a thoughtfully devised 'working scientifically' skills progression which allows for the introduction of new scientific skills and learning whilst providing frequent opportunities for deep learning through revisiting prior learning and application of skills in different areas of study. To ensure deep learning and progression, these skills have been written into long term and medium term planning across KS1. Planning for science is a process in which all teachers are involved to ensure that the school gives full coverage of, 'The National Curriculum programmes of study for Science 2014' and, 'Understanding of the World' in the Early Years Foundation Stage. Our pupils will experience and observe phenomena, looking more closely at the natural and humanly constructed world around them. They will be encouraged to be curious and ask questions about what they notice. They will 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 will 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. Most of the learning about science will be done through the use of first-hand practical experiences, but there will also be some use of appropriate secondary sources, such as books, photographs and videos. Science teaching at Chandag Infant School involves adapting and extending the curriculum to match all pupils' needs. We ensure that all children are provided with rich learning experiences that aim to:

- Prepare our children for life in an increasingly scientific and technological world today and in the future.
- Help our children acquire a growing understanding of the nature, processes and methods of scientific ideas.
- Help develop and extend our children's scientific concept of their world.
- Build on our children's natural curiosity and developing a scientific approach to problems.
- Encouraging open-mindedness, self-assessment, perseverance and developing the skills of investigation – including: observing, measuring, predicting, experimenting, communicating and explaining.
- Develop the use of scientific language, recording and techniques.
- Develop the use of technology in investigating and recording.
- Make links between science and other subjects.

Through events such as Science week, Wow days, visits from Scientists and forest school we foster a sense of awe and wonder in the children. We address gender stereotypes by ensuring all genders are represented in posters, power points and visits from Scientists to ensure children are equally represented and encouraged to believe they are all Scientists.

Year 2 children are trained to become science leaders at playtime to challenge themselves to take responsibility for their own science learning as well as leading a group of children on their own independent science journeys. Children identified as needing emotional and/or behavioural support take part in science activities led by the Science leader to increase motivation and natural curiosity by incorporating high levels of hands on activities.

British values are addressed in science by ensuring the children have the opportunities to take the views and opinions of others into account, understanding safety rules when working with scientific equipment, making choices when planning simple tests, thinking about scientific discoveries that have come from other cultures and working as a team.

Impact: We measure outcomes through both formative and summative assessments. Through devising desired knowledge, skills and vocabulary in long term and medium term planning, teachers can confidently use formative assessments, which inform their short term planning. Annotations on planning, observation notes, photographs, screen shots, book creator to capture children's ideas, alongside examples of quality work in children's books are used to evidence impact. In term 6 a summative teacher assessment against the intended outcomes for the end of each year group is made by the class teacher for each child; this is shared with curriculum leader and SLT providing important information regarding which pupils are exceeding, at or below age related expectations. Pupil voice is undertaken throughout the year by the Science leader and misconceptions are collated and shared to staff to inform planning ensuring that these can be addressed. This information informs future curriculum action plans and provision to ensure a responsive and ever evolving school curriculum. This successful approach at Chandag Infant School results in a fun, engaging, high-quality science education, that provides children with the foundations for understanding the world, the ability to confidently express their opinions, speculate and explore concepts practically. Our engagement with the local environment ensures that children learn through varied and first hand experiences of the world around them. So much of science lends itself to outdoor learning and so we provide children with opportunities to experience this. Through various workshops, trips, forest school, interactions with experts, links with Wellsway and Sir Bernard Lovell Secondary School, IKB Academy and local charities, children have the understanding that science has changed our lives and that it is vital to the world's future prosperity.