Curriculum Summary

Science

Subject Intent

Science at Gorsefield provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science is all around us, and we want our pupils to develop a sense of excitement, curiosity and engagement with the world around them, whilst ensuring that they have a sound understanding with the knowledge, methods, processes and uses of science. Pupils are encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Disciplinary Concepts

			
Developing Methods to Answer Questions	Scientific Procedures and Measuring	Data Analysis	Evidence to Explain

Structure

Science is taught as a discrete subject in Years 1 to 6, protected in a two-hour weekly session. However, developing children's enquiring minds and curiosity of the world around them is firmly established in nursery and reception. Children explore the natural world through first-hand experiences of weather, seasons and different environments, making observations of plants, animals and changing states of matter. Children are encouraged to ask questions, discuss and investigate their experiences.

In KS1 and KS2, children learn science through several domains: animals including humans, earth and space, electricity, forces and magnets, light, living things and their habitats, materials, plants and sound. These domains are strategically placed within the science curriculum to ensure that knowledge and skills are built on sequentially. It is important to note that some of these domains feature in specific year groups, although this is not a requirement of the National Curriculum. This is an intentional decision in response to the experiences of our children. For example, electricity and electrical safety has been included as part of the Year 1 curriculum.

Working scientifically is a key thread that underpins the science curriculum. In each lesson, children can apply their scientific understanding by working scientifically, to further support their new knowledge and skills. Children can work scientifically by observing over time, pattern seeking, identifying/classifying/grouping, comparative and fair testing and researching using secondary sources. These experiences have been mapped progressively across the curriculum. Alongside this, opportunities for children to embed their Maths skills have also been planned, utilising their developing mathematical skills from the Power Maths curriculum.

The science curriculum is further enhanced by close work with SERRIH, offering CPD for subject leaders and ECTs, as well as unique experiences for children to share and celebrate their scientific enquiry.

Science and Disciplinary Concepts within Rising Stars and Rapid Risers

Our curriculum in Rapid Risers and Rising Stars is based on a child-centred, tailored, specific and individualised approach to learning and teaching. Whilst recognising that children who access our internally enhanced provisions are not accessing the National Curriculum, the Equals curriculum has been developed so that key foundational disciplinary concepts are still a part of their curriculum to ensure they are developing foundational knowledge to support them in acquiring the knowledge skills and key concepts that feature within the national curriculum. Our curriculum focuses on the holistic development of a child's social, emotional, cognitive and physical needs and embraces a healthy balance between explicitly taught knowledge and concepts through adult-directed activities, and ensuring children have opportunities to develop through child-initiated play.

Rapid Risers: Semi Formal Curriculum

For children in *Rapid Risers and Calm Quarters*, a fundamental and foundational skills curriculum is crucial to ensuring that our children are ready and able to learn in their later stages of education. Scientific concepts, knowledge and skills are not taught in formal lessons but via play, communication, art and exploration. The curriculum is designed to develop a sense of excitement and curiosity about the natural world and provide opportunities for children to make sense of the world around them.

My Communication

This unit supports early scientific learning by developing key skills including observing, comparing, predicting, classifying and investigating through play. Group construction activities such as den and tower building not only develop communication skills but enable children to investigate materials, test ideas and solve problems. Children explore how forces affect the objects they are working with and allow them to explore properties of materials such as strength, flexibility and shape.

A range of rhymes and songs help children identify, name and classify humans and animals, including their body parts, by linking lyrics, pictures, sounds, and movements. Sensory-rich provision, including farm, zoo and garden tuff trays, supports investigation using the senses, questioning, identification and exploration of textures and materials, whilst harnessing children's curiosity.

My Art

Throughout this unit, children learn about materials, their properties and how they can be changed and combined through hands-on exploration. By creating faces via collage and mosaics, children learn to observe facial features and identify the position and function of different parts of the face.

Collecting leaves, stones, sticks, and other resources to create textured scenery, helps children compare natural and man-made materials. These activities support early scientific skills such as identifying, sorting and describing.

By mixing primary colours, children learn that materials can change when combined. Printing, rolling and painting activities allow children to explore movement, patterns and cause and effect, such as how wheels, balls or bubbles leave tracks and marks. Printing in a range of mediums and with foods, allows children to explore the properties of materials and support them to identify fruit and vegetables, based on their physical properties. Working with play dough and clay introduces children to how solids can be changed and introduces them to scientific vocabulary such as bend, stretch, soft and hard.

Children explore floating and sinking by building simple structures and testing them in water. They learn that the shape of and materials used to create a structure affects whether it will float. This further supports children's understanding of how forces work on the world around them.

Rising Stars: Formal Curriculum

For children in *Rising Stars*, scientific concepts, knowledge and skills are predominantly taught and explored in The World About Us, Physical Well-Being and Outdoor Schooling units. These units are divided into sections, which are taught over a half-term.

The World About Us

Food

Throughout this section, children learn what foods and drinks are, why we need them and how to make safe and healthy choices. They begin by identifying edible and non-edible items, including understanding that some foods must be prepared, cooked or removed from packaging before they are safe to eat. Children explore foods with skins or outer layers- learning which can be eaten, which should be removed, and why food hygiene and safety are important.

Children learn to distinguish between food and drink and explore liquids and their properties. They develop an understanding that all living things need food and water to survive, supported by observing how plants grow under different conditions. By growing food and learning about farming, they develop an appreciation of how food is produced and why some foods come from different parts of the world.

The seasons, the change and the passing of time

In this section, children learn to recognise and describe the four seasons and understand how weather and daylight change throughout the year. They explore the key features of each season, including colder winter temperatures, frost and bare trees; signs of new life in spring such as flowers, blossom and young animals; warmer weather and longer days in summer; and cooling temperatures and falling leaves in autumn.

Children develop skills in observing and recording weather by regularly measuring temperature and noting changes in their local environment. By revisiting the same outdoor area over time, they build a clear picture of how plants, trees and weather change across the seasons. They use photographs, drawings and simple data to create displays that show these patterns and help them compare seasonal differences. By keeping a year-long temperature chart, children begin to recognise patterns, compare hotter and colder periods, and understand how weather changes over time. Recording and anaylsing data, teaches the children how to make predictions, draw conclusions and ask questions about their scientific learning.

Water

In this section of work, children explore the properties, uses and importance of water through hands-on investigation. They learn to recognise differences between hot and cold water, using their senses to compare temperature, and observe how water behaves when mixed with materials such as soap, food colouring and everyday objects. Children investigate which materials absorb water and which are waterproof, developing scientific understanding of the properties of materials as well as their uses.

To develop their understanding of states of matter, they observe changes in water as it freezes, melts and evaporates- comparing ice, liquid water and steam. By collecting and examining water from different sources, children learn that water can be clean or dirty and that not all water is safe to use. They learn how it travels through pipes and drains to sewage systems, which provides them with opportunities to explore how materials can be separated via filtration.

Physical Well-Being

Throughout this unit children learn how food affects their bodies and why healthy eating is important. This builds upon the knowledge and skills taught in the *Food* section. Children are introduced to simple food groups: grains, protein, fruit and vegetables, dairy, sugar, and fats. They learn what each group does for the body. For example, grains help digestion, protein helps build strength and energy, fruit and vegetables help keep the body healthy and dairy supports strong bones and teeth. They also learn that sugar and fats are fine in small amounts, but too much can be unhealthy. This learning supports their understanding of a balanced meal. Learning this along with the importance of good sleep and hygiene supports our learners to understand how to maintain good physical health and mental well-being.

Outdoor Schooling

In the summer term, children learn how living things depend on their environment and how people can help care for nature. They explore planting trees, bulbs, wildflowers, and seeds, learning that plants grow from seeds and need the right conditions to survive. Activities such as seed bombs, leaf collecting and growing plants from a range of seeds and beans help children understand plant life cycles and seasonality of food.

Children learn about habitats by creating and maintaining natural spaces. Making paths, clearings, mini ponds, and caring them to see observe how habitats support different plants and animals. They also collect acorns and chestnuts to grow new trees, learning how forests can be protected and renewed over time. Regular wildlife surveys teach children how to observe, record, and compare the number and types of trees, plants, animals, birds, insects, fungi, and water life in an area.

By building bug hotels, log piles, bird boxes, and hedgehog houses, children learn that animals need safe shelters for nesting, feeding and hibernation. They discover how different animals have different needs, such as solitary bees needing small tubes or birds needing clean nesting boxes each year.

Children also learn about caring for wildlife responsibly by feeding birds, providing water, and following the ‘Leave No Trace’ principle, including litter picking and protecting natural spaces. This unit helps children understand ecosystems, biodiversity and the importance of looking after the environment, so plants and animals can thrive.