# Overview of Science Intent and Implementation at Bawdeswell Primary School

At Bawdeswell Primary School we aim to deliver a high-quality science education that provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. We intend to develop a lifelong curiosity and interest in the sciences. 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. When planning the science curriculum, we intend for children to have opportunities to learn through systematic investigations, leading them to be equipped for life and to be able to ask and answer scientific questions about the world around them. 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. We intend to encourage children to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

The national curriculum for science aims to ensure that all pupils:

- 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.

We teach Science through the school as follows:

**Beech Class (YrR/1)**
**Cycle A**
In the Let's explore project, children find out about living things in their local environment, using their senses to explore. In the project Animal Safari, children explore how animals survive in the wild, and what all animals need to survive. They observe different features of animals, and learn about similarities and differences between animal groups. They learn about unfamiliar animals worldwide, and learn the term 'habitat'. In the Summer term, children further develop their knowledge of animals in the On the Beach project, as they learn about Marina animals and compare their features. They are introduced to floating and sinking, and build a knowledge of materials and their properties as they carry out investigations to discover waterproof fabrics. Splendid skies explores the weather, and Enchanted Woods brings exploration of the local woodland habitats.

**Cycle B**
In cycle B, children start the autumn term with Everyday Materials, linking this learning to the design and technology project Shade and Shelter. In the Human Senses project, they learn about parts of the human body and those associated with the senses. In the spring project Seasonal Changes, they learn broadly about seasonal changes linked to weather, living things and day length. They revisit some of this learning in later in the project Plant Parts. They finish with the project Animal Parts, linking back to their knowledge about body parts and senses and identifying commonalities.

**Maple Class (Yr2/3)**
**Cycle A**
In Cycle A, children begin the autumn term with the project Human Survival, learning about the survival needs of humans, before expanding to study animals within their habitats in the project Habitats. Building on previous learning, children learn about the uses of materials in the spring project Uses of Materials, and begin to understand changes of materials through simple physical manipulation, such as bending and

twisting. The spring Plant Survival project also explores survival, with children observing what plants need to grow and stay healthy. Finally, in the project Animal Survival, children bring together learning from the autumn term, thinking about what animals need to survive

**Cycle B**
In the autumn term, children learn about the skeletal and muscular system in the project Skeletal and Muscular Systems. This learning again links to other animals, with children identifying similarities and differences. Children also learn about healthy diets alongside the autumn term design and technology project Cook Well, Eatwell. In the spring term, properties of materials are revisited in the project Forces and Magnets, with children identifying magnetic materials and learning about the non-contact force of magnetism. They also begin to learn about contact forces, investigating how things move over surfaces. Science learning about rocks and soils is delivered through the geography project Rocks, Relics and Rumbles. Children begin to link structure to function in the summer Plant Nutrition and Reproduction project, identifying the plant parts associated with reproduction and water transport. Children finish the year with the project Light and Shadows, where they are explicitly introduced to the subject of light, with children learning about shadows and reflections, revisiting language from previous learning, including opaque and transparent.

**Elder Class (Yr 4/5/6)**
**Cycle A**
In the autumn term, children learn about the digestive system, again making comparisons to other animals, in the project Digestive System. The second autumn term project Sound introduces the concept of sound, with children identifying how sounds are made and travel. They learn and use new vocabulary, such as pitch and volume, and identify properties of materials associated with these concepts. In the spring term project States of Matter, children learn about solids, liquids and gases and their characteristics. They understand how temperature drives change of state and link this learning to the project Misty Mountain, Winding River, in which children learn about the water cycle. Up to this point, children have had many opportunities for grouping and sorting living things. In the spring project Grouping and Classifying, children explore classification keys. Finally, in the summer term, children study electricity by creating and recording simple circuits in the project Electrical Circuits and Conductors. They also build on their knowledge of the properties of materials, identifying electrical conductors and insulators.

**Cycle B**
In the autumn term, children broaden their knowledge of forces, including gravity and air and water resistance, in the project Forces and Mechanisms. They revisit learning from design and technology projects to explore various mechanisms and their uses. Their knowledge of gravity supports the autumn term project Earth and Space, so they can understand the forces that shape planets and our solar system. They also develop their understanding of day and night, first explored in the project Seasonal Changes. Having learned that animals and plants produce offspring in earlier projects and studied plant and animal life cycles in Sow, Grow and Farm, children now focus on the human life cycle and sexual reproduction in the spring term project Human Reproduction and Ageing. In the summer term project Properties and Changes of Materials, children revisit much of their prior learning about materials' properties and learn new properties, including thermal conductivity and solubility. At this point children draw on their knowledge of materials, and learn about irreversible changes, including chemical changes.

**Cycle C**
The children learn about the circulatory system and its roles in transporting water, nutrients and gases in the autumn term project Circulatory System. Science learning about classification is delivered through the spring term geography project Frozen Kingdoms. In the spring term, children also build on their knowledge about electrical circuits, now learning and recording standard symbols for circuit components and investigating the function of components and the effects of voltage on a circuit in the project Electrical Circuits and Components. In the summer project Light Theory, children recognise that light travels in straight lines from a source or reflector to the eye and explain the shape of shadows. Finally, in the project Evolution and Inheritance, children learn about inheritance and understand why offspring are not identical to their parents. They also learn about natural selection and how this can lead to the evolution of a species.

We use the Cornerstones Curriculum resources for Science throughout our school to support high quality teaching.


Cornerstones