Science

Intent

At Wye Forest Federation, we are always striving to be the best we can be and we recognise how science impacts every aspect of our daily lives. We want our children to love science and as a core subject, we give the teaching and learning of science the prominence it deserves.

The science curriculum has been carefully crafted to enable learners to be **active**, excited and challenged while working within the parameters of our class structure and the National Curriculum. A high-quality science education provides the foundations for understanding our **diverse** world through the scientific disciplines of biology, chemistry and physics.

Science has changed our lives and is vital to the world's future health and prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science to allow them to engage with it. By 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.

We endeavour to ensure that the Science curriculum we provide gives children the confidence, **independence** and **sense of belonging** to continue to further develop their skills into the next stage of their education and life experiences.

Implementation

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all children can achieve their best in science working independently or collaboratively. This is set out thus:

<u>Teaching & Learning</u>

- The school has a detailed **curriculum map** illustrating the topics taught across our classes.
- The **skills progression document** illustrates the skills and knowledge pupils learn in each year group and EYFS.
- Teachers use **knowledge organisers** to help them identify the key information that children need to learn for each topic.
- Science will be taught as set out by the year group requirements of the National Curriculum. This is a strategy to enable the accumulation of knowledge and allows progress in repeated topics through

the years. This means that the subject may need to be discreetly taught to individual year groups where appropriate.

- Science lessons will be taught weekly or blocked where appropriate for class needs.
- Pupils will focus on one science skill per term. For example, Term 1 will be dedicated to questioning, Term 2 to recording data, and Term 3 will be spent reporting on findings. Although each skill is related and there are links between them, there is minimal crossover as they are taught, so each becomes firmly embedded.
- Each unit has been given a Big question as developed by our school drivers to help teachers build each unit around a theme or give pupils an independently led investigation.
- Through our planning, we ensure lessons are active and practical when possible and involve problem solving opportunities, allowing children to find out for themselves how to answer questions in a variety of ways. Children are encouraged to ask their own questions and be given appropriate equipment to use their scientific skills to discover the answers.
- Engaging lessons are created with each lesson having both practical and knowledge elements. Teachers use precise questioning in class to test conceptual knowledge and skills and children are regularly assessed to identify those children with gaps in learning, so that all children keep up.
- There is a strong focus on specific vocabulary and a specific list of key words has been produced for each science topic.
- We build upon the learning and skill development of previous years. As the children's knowledge and understanding increases, and they become more proficient in selecting and using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.
- Working Scientifically skills are explicit in lessons to ensure these skills are being developed throughout the children's school career and are given the same prominence as scientific knowledge.
- New vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the theme of the lesson.
- Teachers use a 3 Key questions approach at the start of every lesson. These questions are revisional and based on prior knowledge or used to consolidate previous learning.
- Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding. Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning and workshops with experts.
- Misconceptions identified after lessons are addressed through school's mark scheme or through a consolidation question.
- To close home learning gaps and gaps created by previous curriculum coverage teachers complete an individual elicitation activity at the start of each unit. This can take the form of a what do you already know, what do you want to find out activity or a small quiz. Teachers then use this to identify prior knowledge gaps that will need to be filled during the unit and adapt planning as needed.
- The Early Years Foundation Stage (EYFS) follows the 'Development Matters in the EYFS' guidance which aims for all children in reception to have an 'Understanding of the World; people and communities, the world and technology' by the end of the academic year.
- Science is not taught discretely unless through a focused lesson and is instead weaved into their day as they direct their learning.

- As part of this the skills progression map includes a section for EYFS and is designed to start helping children develop skills used in Year 1 and beyond. These skills coverage are then mapped out in the EYFS Long Term Plan.

Assessment

- After each science unit, children will be assessed against **progression of skills map** using a 'best fit' approach.
- We assess predominantly using formative assessments.
- Assessment information is regularly updated onto INSIGHT at the end of each term.
- Work scrutiny ensures progress is monitored within classes and year groups.

EYFS: The reception year

Science is all around us and children in Bluebells explore science under the strand, "Understanding the world". Work is practical in nature and children are assessed visually with images and comments posted on **Tapestry.**

Impact

A cumulative approach to scientific learning will help to give pupils a scientific framework which enriches language and pupils' understanding of key knowledge, concepts and skills. This will develop later learning, not just in science but also across the curriculum. By the time pupils leave the Wye Forest Federation in Year Six they will have a coherent knowledge and understanding of a wide range of different scientific topics and have the skills necessary to engage with any topic they set their minds to.

The successful approach at the Wye Forest Federation results in a fun, engaging, high-quality science education, that provides children with the foundations for understanding our diverse natural world. Our engagement with the local environment ensures that children learn through varied and first-hand experiences. Learning takes place outdoors where possible so pupils can investigate their immediate environment. Through various workshops, trips and interactions with experts, children have the understanding that science has changed our lives and that it is vital to the world's future prosperity. Pupil voice is used to further develop the Science curriculum, through questioning of pupil's views and attitudes to Science to support the children's enjoyment and build independence so that we can motivate learners.