THE WESTCLIFFE FEDERATION

KINNERLEY C.E PRIMARY SCHOOL SCIENCE

Intent/Implementation/Impact

Our knowledge and skills rich curriculum builds from the Early Learning Goals in the EYFS statutory framework and Development Matters to the National Curriculum Objectives for Y1-6. The curriculum makes links with the wider world, advancing the Spiritual, Moral, Social and Cultural development of our learners and growing their understanding of British Values. Our curriculum is delivered as part of cohesive units of work, promoting the School Motto 'Dream, Believe, Aspire, Achieve' and underpinned by our school vision:

To create a school community based on Christian values, in which we strive to foster a love of learning, pride in achievement, and the spiritual and moral compass of our children, equipping them to find their own special place in society and the world.

EYFS SCIENCE LINK

This document demonstrates which statements from the 2020 Development Matters are prerequisite skills for Science within the national curriculum. The table below outlines the most relevant statements taken from the Early Learning Goals in the EYFS statutory framework and the Development Matters age ranges for Two and Three and Three and Four-Year-Olds and Reception to match the programme of study for Science. The most relevant statements for Science are taken from the following areas of learning: Communication and Language • Personal, Social and Emotional Development • Understanding the World

Two and Three year olds	Communication and Language	• Listen and respond to a simple instruction • Generally focus on an activity of their own choice and find it difficult to be directed by an adult. • Listen to other people's talk with interest, but can easily be distracted by other things.
	Personal, Social and Emotional Development	• Notice and ask questions about differences, such as skin colour, types of hair, gender, special needs and disabilities, and so on
	Understanding the World	• Explore and respond to different natural phenomena in their setting and on trips • Explore materials with different properties. • Explore natural materials, indoors and outside
Three and Four Year olds	Communication and Language	• Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"
	Personal, Social and Emotional Development	• Make healthy choices about food, drink, activity and tooth brushing.
	Understanding the World	• Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about what they see, using a wide vocabulary. • Begin to make sense of their own life-story and family's history. • Explore how things work. • Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things. • Explore and talk about different forces they can feel.

			• Talk about the differences between materials and changes they notice
Reception	Communication and Language		• Learn new vocabulary. • Ask questions to find out more and to check what has been said to them. • Articulate their ideas and thoughts in well-formed sentences. • Describe events in some detail. • Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. • Use new vocabulary in different contexts.
	Personal, Social and Emotional Development		• Know and talk about the different factors that support their overall health and wellbeing: - regular physical activity - healthy eating - tooth brushing - sensible amounts of 'screen time' - having a good sleep routine - being a safe pedestrian
	Understanding the World		• Explore the natural world around them. • Describe what they see, hear and feel while they are outside. • Recognise some environments that are different to the one in which they live. • Understand the effect of changing seasons on the natural world around them.
ELG	Communication and Language	Listening, Attention and Understanding	• Make comments about what they have heard and ask questions to clarify their understanding.
	Personal, Social and Emotional Development	Managing Self	• Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.
	Understanding the World	The Natural World	• Explore the natural world around them, making observations and drawing pictures of animals and plants. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter

LEVEL EXPECTED AT THE END KEY STAGE 1/ KEY STAGE 2

Key Stage 1 National Curriculum Working Scientifically	Lower Key Stage 2 National Curriculum Working Scientifically	Upper Key Stage 2 National Curriculum Working Scientifically
During years 1 and 2, pupils should be taught to use the following practical scientific	During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the	During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes

methods, processes and skills through the teaching of the programme of study content: • asking simple questions and recognising that they can be answered in different ways; • observing closely, using simple equipment; • performing simple tests; • identifying and classifying; • using their observations and ideas to suggest answers to questions; • gathering and recording data to help in answering questions.	programme of study content: • asking relevant questions and using different types of scientific enquiries to answer them; • setting up simple practical enquiries, comparative and fair tests; • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers; • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions; • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables; • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions; • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; • identifying differences, similarities or changes related to simple scientific ideas and processes; using straightforward scientific evidence to answer questions or to support their findings.	and skills through the teaching of the programme of study content: • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary; • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate; • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs; • using test results to make predictions to set up further comparative and fair tests; • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations; identifying scientific evidence that has been used to support or refute ideas or arguments.

Intent

It is our intention that through our Science curriculum we develop in all young people a lifelong curiosity and interest in the sciences. When planning the science curriculum, we intend for children to have the opportunity, wherever possible, to learn through varied systematic investigations, leading to them being equipped for life to ask and answer scientific questions about the world around them. As children progress through the year groups, they build on their skills in working scientifically, as well as on their scientific knowledge, as they develop greater independence in planning and carrying out fair and comparative tests to answer a range of scientific questions. Our scheme of work, predominantly using PlanBee, uses stimulating themes to engage our children, ensures that children have a varied, progressive and well-mapped-out science curriculum that provides the opportunity for progression across the full breadth of the science national curriculum for KS1 and KS2. Pupils will develop disciplinary skills and understanding as well as substantive knowledge. Our Science curriculum aims to explore the children's own environment whilst broadening their horizons. As with all our curriculum it will align with our Christian based school values of Community, Kindness, Courage and Thankfulness.

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Implementation

We implement a two year long term plan for each class. Using PlanBee Science scheme of work which includes detailed lesson plans with the scientific knowledge teachers need to deliver effective Science teaching and learning. The acquisition of key scientific knowledge is an integral part of our science lessons.

Our Science lessons include slides to help explain scientific concepts and challenge children to think scientifically, practical enquiries and experiments, and a range of Science resources such as activity cards, information sheets and worksheets. Every lesson addresses National Curriculum Science objectives, so teachers can plan for, and track, progression throughout the academic year.

Teachers use linked knowledge organisers which enable children to learn, retain and reinforce key scientific vocabulary and knowledge contained within each unit. The progression of skills for working scientifically are developed through the year groups and scientific enquiry skills are of key importance within lessons. Wherever possible units of work are introduced or enhanced by visits or visitors to provide context and interest for the pupils.

Each lesson has a clear focus. Scientific knowledge and enquiry skills are developed with increasing depth and challenge as children move through the year groups. They complete investigations and hands-on activities while gaining the scientific knowledge for each unit. Teachers are aware that pupil cohorts may be starting the planning cycles at different points, and so enable opportunities to recap/introduce concepts where necessary. The sequence of lessons helps to embed scientific knowledge and skills, with each lesson building on previous learning. There is also the opportunity to regularly review and evaluate children's understanding, using a variety of effective retrieval practices. Activities are effectively differentiated so that all children have an appropriate level of support and challenge, particularly important as our classes consist of two groups. Teachers are equipped with secure scientific subject knowledge, enabling them to deliver high-quality teaching and learning opportunities while making them aware of possible scientific misconceptions. Teachers assess regularly to inform future planning.

Impact

Using the PlanBee scheme and other complementary resources including display materials, will result in an increase in the profile of science across the school. The learning environment across the school will be more consistent with science technical vocabulary displayed, spoken and used by all learners. Whole-school and parental engagement will be improved through the use of science-specific home learning tasks and shared use of knowledge organisers. Progress will be seen through a child's ability to know more, understand more and explain more, and through retrieval practice activities. Progress will be measured in different ways. Children who feel confident in their science knowledge and enquiry skills will be excited about science, show that they are actively curious to learn more and will see the relevance of what they learn in science lessons to real-life situations and also the importance of science in the real world. Attainment and progress will be measured across the school using our school assessment sheets. Impact can also be measured through useful, low time-consuming methods such as key questioning built into lessons, child-led assessment such as success criteria grids, and KWL grids and summative assessments aimed at targeting next steps in learning.