Science Statement of Practice

Vision

At Wolverham Primary School, we aspire for a high-quality science education which will help pupils learn about the world around them by asking questions and finding answers through observation and experimentation. We have carefully designed our curriculum so that children gain this knowledge as they progress through the school with English texts and our key words (identity, courage, power, changes, choices and community) supporting the wider curriculum. Through our science curriculum, we aim to inspire pupils' curiosity about the world around them. We want the children to leave Wolverham with an inquisitive nature about the natural world, an understanding of how things work, and have developed useful skills such as observing, questioning, and problem-solving.

Intent

At Wolverham, we want the children to have a real enthusiasm about science and have the confidence to ask questions and find ways to answer them. We endeavour to ensure that the science curriculum we provide will give all children the confidence and motivation to continue to further develop their skills into the next stage of their education and life experiences.

In science lessons, we place importance on both substantive and disciplinary knowledge. To ensure engagement, we use every opportunity to incorporate practical investigations and activities and this, in turn, helps our pupils to learn and retain new knowledge and vocabulary. We have mapped out investigations to ensure coverage of the five main types (observing over time, pattern seeking, identifying, grouping and classifying, comparative/fair testing, and researching). These methods allow children to explore scientific concepts through hands-on activities and experiments, fostering their understanding of the scientific process.

We intend for our children to have real life experiences and learn about science in an active and creative way. STEM festivals, links with local industry and trips have all added to the science curriculum

Curriculum

Our science curriculum for Key Stage 1 and 2 follows the units of the National Curriculum. We have the flexibility to move units around within a year group to take advantage of any links we can make to other topics and themes. Pupils in Key Stage 1 cover exploratory units in Light and Sound to prepare children for topics in Key Stage 2. This progressive approach, where skills, knowledge and vocabulary are built upon year by year, ensures that children leave Wolverham ready for Key Stage 3.

In EYFS, we spark the children's scientific enquiry skills by looking at the world around them, encouraging them to be curious and ask questions. We believe it is important to support the children's scientific thinking as soon as they start school in order for them to develop them as scientists as they make their way up through school. Using their scientific knowledge and vocabulary, the children will be able to talk about the world and phenomenon around them and raise scientific questions.

Although science is not timetabled to be taught daily, we do, where possible, make links with other areas of the curriculum, in order for the children to recognise the importance of having strong scientific knowledge and skills to encourage them in becoming well-rounded individuals (e.g. – measuring during experiments).

In addition, emphasis is placed on developing strong oracy skills which will then lead to the development of effective written answers. Children in Key Stage 2 take part in regular reading sessions, some of which focus on science-based knowledge.

Implementation

Memory Joggers

Children are given a memory jogger to use as a visual aid throughout each unit of study. The memory joggers have **what the children should already know** (linking to the theme or unit from previous years and units), clear **knowledge end points**, key vocabulary and the **skills** they will explore and develop, all to support them whilst learning this a unit.

In KS1, the memory jogger is stuck into the floor book and shared at the start of a lesson. In KS2, it is stuck into their topic book and the floor book. Again, these are referred to at the start of a lesson. Teachers share and use the information on the memory joggers with pupils in every lesson and will then create a low stakes quiz for the end of each unit. Throughout the unit, recapping and checking of children's understanding of the key knowledge ensures this remains a focus.

Scientific Vocabulary

The science vocabulary is progressively sequenced across year groups in order for the children to develop as scientists, using language that will help them to make predictions, plan investigations and explain findings. For every unit, key words or phrases are also chosen that are specifically linked to the study.

Retrieval Strategies

In order for the children's knowledge to be embedded in their long-term memory, a variety of retrieval activities are incorporated into every lesson. Flashbacks are used at the start of each lesson (or similar using Blooket) that will revise previous learning from other year groups as well as units taught that year. Staff then use this to support with any misconceptions or address at the start of the next lesson. These also help children make links across year groups and enable the them to identify where they are transferring previously taught knowledge and skills.

Staff also use the floor book as a retrieval tool. During each lesson, they make reference to the floor book and show the children work they have previously completed and then how the new learning links to this.

Impact

At Wolverham, the children are aware that what they are learning is purposeful and helping them to ask questions and explore solutions in order for them to be successful in later life. Children have a sound understanding of what they have learned and why it is important.

Assessment of Learning

During a unit, retrieval strategies and enquiry questions are used for teachers to continually assess children's knowledge and understanding of subject matter and their ability to put it into context.

They are used as regular check-ins for the children to define their scientific vocabulary and make links to prior learning.

End of unit assessments

From Year 2 to Year 6 children are given an end of unit check to assess their substantive knowledge of their history unit. The unit check will sometimes have the key information or vocabulary missing

or ask children to complete some of the key knowledge. In Year 1, this is completed as a class or in small groups. The teacher makes notes as to anything they found difficult and use this for future teaching.

Marking and Feedback

Independent work is monitored throughout the lesson and feedback provided in a 'live' manner. Often, whole class discussions and group discussions take place during this time as the children are taught to collaborate like scientists, which involves considering opposing viewpoints and alternative results.

Children know that expectations of handwriting, spelling and presentation remain just as high in science lessons as in any other subject.

Appendix 1

Vocabulary:

Key Substantive Knowledge – Established factual knowledge. These are the knowledge statements found on the progression document which are then transferred to the Memory Joggers.

Disciplinary Knowledge – Knowledge of how to work scientifically. These are the skills that the children build upon as they move through the school. They are mapped out on the progression document and then placed in the skills box on the Memory Jogger for each unit.

There are 5 recognised types of scientific investigations within the Primary Curriculum. These are mapped out for each year group/topic to ensure a full and even coverage across the school.

1. Observing Over Time:

This involves tracking changes in a system or phenomenon over a period, like how a plant grows or the changes in a compost heap.

2. Pattern Seeking:

This involves identifying relationships or recurring features within data or observations, such as determining if a taller plant produces larger seeds.

3. Identifying, Grouping, and Classifying:

This involves differentiating and categorising objects or organisms based on observable characteristics, like sorting clothes by their ability to keep you warm or cool.

4. Comparative Testing:

This involves conducting controlled experiments to explore the impact of different variables on a particular outcome.

5. Researching:

This involves using secondary sources, like books or the internet, to gather information about a topic, which may be difficult to directly investigate in a classroom setting, such as how people told time before clocks.