Upperwood Academy Approach to

teaching of Science

Intent

At Upperwood academy, we encourage children to remain curious throughout their time with us and beyond. Our Science Curriculum encourages pupils to have a healthy curiosity about the world around them and to appreciate both living and non-living things. Science teaching, through our approach, ensures the development of knowledge, key concepts, and scientific enquiry skills. Children will learn and develop key knowledge that has been identified within each unit and throughout each year group. At Upperwood academy we ensure that children's Working Scientifically skills are reinforced and improved throughout their school careers so that they can apply their scientific knowledge when performing experiments, constructing hypotheses, and confidently expressing key concepts. Science is taught discretely through weekly sessions. Opportunities for the teaching AT1 (Scientific enquiry) are interweaved throughout units of work which allows children to regularly test and explore scientific theories. The HCAT progressive documents support the progression of knowledge and skills a child should learn in science throughout their time at school. The progressive skills have been enhanced from the National Curriculum to ensure coverage is appropriate for each year group.

Implementation

The HCAT progressive document we use at Upperwood academy ensures that appropriate coverage and progression is in place for Biology, Chemistry and Physics and that children are building on their knowledge and skills over time. Science is taught discretely in three categories: biology, chemistry and physics. It is delivered to raise interest, self-esteem, creativity and aspirations of all our children. The science curriculum is rich and varied, which provides our pupils with the skills required for life in the 21st Century.

The Accelerated Learning Cycle, based on the work of Alastair Smith, is applied in all lessons. It stems from the idea of a supportive and challenging learning environment. The cycle has active engagement through multi-sensory learning, encourages the demonstrating understanding of learning in a variety of ways and the consolidation of knowing. Our science knowledge organisers support the planning and delivery of lessons to ensure children develop a deep, sequential understanding of specific knowledge and are able to apply these in a range of situations. A gather, skills, apply approach to planning and delivery of lessons is taken across school to ensure children develop a deep understanding of specific skills and are able to apply these in a range of scientific situations. Ultimately, scientific knowledge and enquiry skills are at the heart of the learning process with the children exploring a wide range of topics, to prepare them for life. Science at Upperwood academy is delivered through knowledge rich and practical skill-based units of work designed by Science and Curriculum Leaders to ensure that all children have the opportunity to study a range of concepts and applications of science which build upon their prior knowledge and understanding.

Impact

At Upperwood academy, formative assessment is ongoing throughout each lesson. It judges progress and enables teachers to make flexible adaptions to their planned teaching. Through this regular ongoing assessment, tasks are matched to the ability of each child through scaffolds, adult support and providing a level of challenge that is stimulating for pupils and questioning skills. Alongside formative assessment, arbor is used as a summative assessment to assess foundation subjects. The analysis of data from arbor, identifies any gaps or misconceptions to be addressed.

Adaptations

At Upperwood Academy our curriculum is ambitious for all pupils, including those children with SEND. Curriculum designers and teachers have high expectations of what SEND pupils can achieve and the curriculum is not diluted or unnecessarily reduced for SEND pupils. Every pupil is different and so what works for each pupil varies. Pupil's individual needs are carefully considered and adaptations are planned to ensure the success of pupils. The way that our curriculum is designed ensures that chunks of learning are sequenced in a coherent way to enable all pupils, including those with SEND, to build on prior knowledge. Cognitive overload can be a barrier to learning which is one of the reason why we have chosen half termly curriculum drivers.

Where pupils are identified with having complex needs it may be appropriate to provide a personalised curriculum which will be based on individual needs and will retain ambition for the pupil. Where working memory is an issue for pupils, including those with SEND, we look to reduce extraneous load as much as possible as well as identifying key information when teaching. Adaptations to support individual pupils will be recorded on personal school support plans.

At Upperwood academy we do not assume that pupils with SEND learn content better through practical work as this can cause distraction and cognitive overload rather than increase clarity or accessibility. The curriculum is not narrowed for any pupils. Knowledge is taught and then pupils are provided with opportunities for scientific enquiry to test and investigate the knowledge taught. Pupils' specific needs determine the types of adaptations which are required. These adaptations are in how the subject is taught rather than the content pupils are expected to learn. Where appropriate, learning will be chunked into smaller steps and pre learning and consolidation time in planned in to support need. Time is also planned to ensure pupils with SEND are pre taught vocabulary to support their understanding. Adaptations may include supporting pupils to pay attention to key aspects as well as reducing excessive or unhelpful demands on working memory.