St Joseph
Catholic Multi Academy Trust

Science

Curriculum Map

Science Rationale

As a Catholic school, our aim is that every child achieves their full potential as an individual, made in the image and likeness of God. This encompasses every dimension of the child: spiritual, moral, social, academic and physical. We believe that knowledge empowers and enables pupils to feel and be successful, and that this is the entitlement of every child. Our approach to Science is that Science matters in the world and therefore pupils have the right to be scientifically literate. As pupils learn science, they also learn about its uses and significance to society and their own lives. The fundamental aim of the Ark Curriculum Plus science curriculum is that, through learning a body of knowledge relating to key concepts, alongside learning about the practices of science, pupils will be equipped with the knowledge and skills required to understand the uses, limitations, and implications of science, today and in the future.

Intent		Implementation		Impact	
Alignment to National Curriculum	At St Ambrose Catholic Academy, we intend to deliver a curriculum that is engaging, exciting and enjoyable. The Ark Curriculum+ science curriculum is fully aligned to the National Curriculum. The units of work ensure pupils gain the knowledge they need to discover, understand, and begin to explain the world and phenomena around them whilst also ensuring pupils are equipped with the skills and knowledge of processes through which science is achieved and applied. The knowledge builds sequentially in the three disciplines, with pupils often revisiting an idea or concept in a later unit. In some units, progression is clear. However, in others, it is within a more complex thread of learning: Biology, Chemistry and Physics.	Pedagogical Approaches	Science Mastery aims to enable pupils to recognise the connectedness of science, and how each new topic connects to everyday life and familiar contexts. Each unit provides a strong foundation of scientific knowledge and skills that can empower and equip pupils to participate, challenge, and reshape the world around them. The National Curriculum states that science teaching should ensure pupils develop: • their scientific knowledge and conceptual understanding in the specific disciplines of biology, chemistry, and physics • an understanding of the nature, processes, and methods of science through different types of science enquiries that help them to answer specific questions	Approach to Assessment	Assessment is formal, as with other core subject disciplines. There is ongoing teacher assessment to ensure that the pupils are keeping up with the pace of the curriculum and achieving our goals for them as young scientists. Teachers use formative assessment throughout each lesson. Formative feedback is provided about individual components. Assessment checks for specific misconceptions or missing components are completed at the start of every lesson with a quiz on previous learning. Pupils get purposeful verbal feedback and feedback throughout the lesson, focused on science content and address any misconceptions and missing components. At the end of the unit, pupils are given a quiz covering the six

			about the world around them • a 'toolkit' of the scientific knowledge required to understand the uses and implications of science today and for the future.		lessons to check understanding and retainment of knowledge.
 End Points	The Key Stage 1 and Key Stage 2 curriculum builds on the National Curriculum framework for Early Years Foundation Stage, 'Understanding the World'. The framework gives three Early Learning Goals for this section. The goal **Understanding the World: *The Natural World*** provides pupils with a strong foundation on which to build on their science knowledge and skills. The Ark Curriculum Plus science curriculum ensures that pupils not only have broad and strong substantive knowledge—a coherent knowledge of key scientific concepts—but also an understanding of the scientific method. The content is structured so that pupils learn substantive content (the 'facts') alongside disciplinary content ('how we know this'). By learning substantive and disciplinary knowledge together, pupils	 Teachers' Expert Knowledge	As with all subjects, teachers are expected to demonstrate good subject and curriculum knowledge and are supported with CPD opportunities via online support videos. Teacher guidance is provided on how to teach each step of the lesson and where to find the unit's prior and future learning, the substantive and disciplinary concepts within that unit, and the key terms and knowledge. Slides to support and guide the teacher and pupils through each stage of the lesson. A knowledge organiser resource is provided for pupils and teachers, which includes all the key learning for that unit.	 Performance Data	Assessment data is reported each term on Arbor. Attainment data is reported to parents within the end of year report.

	develop an understanding of the foundations of scientific knowledge and are able to articulate how this knowledge was gained and may be applied in a range of contexts. This enables pupils to begin to make connections between different aspects of their knowledge, securing a deeper level of understanding and providing a springboard to science learning at secondary level and beyond.				
Sequencing	The unit order is built in a way that ensures pupils have the knowledge they need to work scientifically in a meaningful way. Rather than pupils learning solely from practical work, they will gain knowledge of the scientific concept first, before deepening it through 'working scientifically'. The different types of scientific enquiry have been incorporated across the units and, as a result, pupils encounter opportunities to take part in observing over time, pattern seeking, identifying, classifying and grouping, comparative and fair testing, and researching using secondary sources. You can find the prior and future learning in the Unit planning guide for every unit.	Promoting Discussion and Understanding	Each lesson begins with a quiz to recap and recall previous learning. Each lesson not only plans for new learning but provides opportunities for practise and consolidation.	Pupils' Work	Pupils complete the majority of their activities in their workbook. Extra documents are used to support pupil activities when needed: e.g. sorting cards. Every unit's knowledge quiz and score table is in their workbook for KS2 and a separate booklet for KS1. To become experts in the field of science, pupils need to build both substantive and disciplinary knowledge. Substantive knowledge refers to the knowledge of science—its concepts, models, laws, and theories. Disciplinary knowledge is knowledge of the practices of science—also known as the scientific method. It enables scientists to collect, understand, and evaluate scientific evidence.

Addressing Social Disadvantage	Pupils are entitled to understand how science works in their own lives and in the lives of others. Understanding science will support pupils in developing positive attitudes towards the discipline and may mean that pupils are motivated to study science further. Science matters in the world and therefore all pupils have the right to be scientifically literate.	Knowing More and Remembering More	Knowledge and skills build from year to year and it is important that pupils can remember and use knowledge and skills from previous learning. Effective questioning about pupils understanding of Science by the teacher is key to allow pupils to practise new knowledge and to help them make links between new material and prior learning. Opportunities for retrieval practice are included to ensure knowledge is transferred into long-term memory; their performance on their quiz at the beginning of each lesson allows children to use their new skills from previous lessons and to revisit concepts and skills from previous years. Teachers understand the importance of developing fluency and automaticity in order for the children to make progress with the more complex task.	Talking to Pupils	The Science curriculum lead speaks to pupils in all year groups as part of the monitoring cycle to gauge their attitudes towards the Science curriculum, the knowledge, skills and understanding they are retaining, and the wider opportunities that they have been able to experience. This is completed verbally or through a pupil voice survey.
Local Context	All pupils, regardless of background, deprivation or SEND needs have the right to a good quality education. The local area has high unemployment rates and deprivation. The proportion of pupils known to be eligible for PP is well above average.	Teacher Assessment	Teachers assess pupil's learning using questioning and observations of pupil's performance and engagement in the lessons. Using teacher assessment judgements, pupils may have targeted pre or post teach sessions to consolidate knowledge and understanding.	Links/References	