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**St. Mary’s R.C Primary School**

Primary Curriculum – **Science**

**Intent: Why we teach science**

At St Mary’s we believe a high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world’s future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through 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. Our science curriculum is based on an adapted model of the Early Years Framework and the National Curriculum. Progression documents have been introduced to build on the skills needed to meet the end of Key Stage objectives in the National Curriculum. Our long-term plan is broad and balanced, allowing children to access a wide variety of high-quality scientific experiences.

**Key Skills are:**

* Develop a rich and varied scientific vocabulary which is modelled and represented in each classroom and stage from foundation to year 6.
* Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
* Develop understanding of the nature, processes, and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.
* Equip with the scientific knowledge required to understand the uses and implications of science, today and for the future.
* Encourage curious, questioning, minds. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions. Children should be encouraged scientific evidence to answer questions or to support their findings- presenting and communicating these in different ways.
* Develop skills of observation and investigation.
* Develop an ability to describe associated processes and key characteristics in common language, but children should also be familiar with, and use, technical terminology accurately and precisely

The principal focus’ of science teaching across key stage 1 and 2 is to first enable pupils to experience and observe phenomena, looking more closely at the natural and humanly constructed world around them. Then, as they move into key stage 2, broaden their scientific view of the world around them and finally to have a deeper understanding of a wide range of scientific ideas. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions. They should draw simple conclusions and use an increasing range of scientific language, first, to talk about and, later, to write about what they have found out. They should be helped to understand the importance of working scientifically.

Central to this is giving children plenty of opportunities to build upon prior knowledge, allowing them to know more, commit that knowledge to their long term memory and to be able to retrieve it at the appropriate time. A core element is teaching the children to understand that improvement only comes through asking questions of themselves and taking risks; mistakes and apparent failures are the building blocks of improvement and should be appreciated and explored.

**Implementation: How we teach Science**

Each year group has statutory units to teach covering the scientific disciplines of biology, chemistry and physics. In foundation stage the curriculum is taught through topics and continuous provision providing high quality experiences linked to the early learning goals, vocabulary is introduced from the foundation stage.

The Science curriculum is taught through Progressive School Curriculum Document (PSCD), which is in line with the National Curriculum programmes of study for Science 2014 and, ‘Understanding of the World’ developing awe and wonder in the Early Years Foundation Stage. In addition to we use Switched on Science planning scheme to aid teaching staff in their subject knowledge, organisation and delivery. Each class has access to two hours of high-quality science lessons every week (Year 1-6). Each lesson builds upon previous skis and allows focused time for these to become embedded.

Science is linked to class topics where possible and has strong links with other core subjects. Maths skills such as statistics and measurement are essential to investigation and within English development of vocabulary and spoken language with instructional and report writing alongside comprehension and summarising. We ensure that all children are exposed to high quality teaching and learning experiences through a broad and balanced curriculum, which allow them to experience variety and explore their outdoor environment using the local area such as the canal paths and parks. forest schools support this as well as trips.

**How does St. Mary’s curriculum meet the needs of the children at our school?**

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| **Religious Values**  **The teachings of Jesus are central to every aspect of our learning, so we:** | * Must nurture their physical, spiritual and mental wellbeing by recognising and developing their God-given talents to their full potential. * Value the unique nature of every child by teaching them to respect and care for the wonder that is their human body and the environment around them (E.g. healthy diet, exercise, etc.). |
| **Key life skills for learning**  **Provide a curriculum that will equip children with the values, skills and attributes needed to be independent thinkers and courageous learners, so we:** | * Provide children with opportunities to rehearse, apply and master our core learning behaviours of being able to focus, co-operate, reflect, work independently, be inventive, show resilience, self-belief and curiosity. * Understand that skills and concepts acquired through science are not exclusive to science, but closely linked to those required in all other areas of the curriculum. * Allow children to further develop a growth mindset and understand improvement is something that can be acquired through hard work & effort. |
| **Pupil Premium Grant and Opportunities to embrace cultural capital:**  **Provide extended opportunities to experience a wide range of science experiences which they might not otherwise have chance to access** | * Remove the barriers for children accessing scientific equipment and resources and providing areas such as gardens * These barriers include a pathway to club, equipment and specialist * Provide opportunities for pupils to get involved in science after school, during playtimes and within inter house competitions. * Have expectations that all children will develop at a level that is appropriate to them * Develop areas all year round such as prayer garden that can be enjoyed and used by all. * Encourage a healthy lifestyle by growing fruit and vegetables to be shared with school and wider community. * Value the nature around them showing respect and care for the local environment and beyond taking advantage of forest schools, canal paths and Outwood sculpture trails. * Prepare our children for life in an increasingly scientific and technological world today and in the future. |
| **Curriculum links and wider opportunities** | * Maths skills such as statistics and measurement are essential to investigation * Development of vocabulary and spoken language with instructional and report writing alongside comprehension and summarising in English. * Staying healthy with links to PE exercise and eating healthy (D&T) * Forest schools |

**Impact: What Science gives to our children**

The impact and measure of this is to ensure children not only acquire the appropriate age related knowledge linked to the science curriculum, but also skills which equip them to progress from their starting points, and within their everyday lives.

All children will have:

* A wider variety of skills linked to both scientific knowledge and understanding, and scientific enquiry/investigative skills.
* A richer vocabulary which will enable to articulate their understanding of taught concepts.
* High aspirations, which will see them through to further study, work, and a successful adult life.

We assess children at the start, retrieve knowledge using the progression document consistently, follow the national programme of study supported Switched on Science whilst assessing their working scientifically skills. Then at the end of the unit complete a more formal assessment. This provides each class teacher with a clear vision of study for their class and a good knowledge of children’s strengths and areas for progression.

Assessments are based on teacher judgement, whereby, in each session, any children who are not meeting lesson objectives, and those who are exceeding and performing at a higher level are recorded and targeted for future support in subsequent lessons. These weekly assessments will not only inform future sessions but will also provide a half termly overview of children’s progress within their year group’s expected outcomes.

In the EYFS observations are recorded in the children’s personalised online learning journey- Tapestry. Pupils are

assessed within EAD as well as PD. Progress is tracked, and age-related expectations are reported to parents at the end of the year.

Pupil Voice plays an important role in the children’s enjoyment, engagement, and development and crucially, within a lesson, children are given time to reflect on their learning and take part in self, peer and group feedback. Book scrutinies will also be carried out to ensure consistency and identify teachers who need additional supports with focused support for NQTs and RQTs. Regular staff meetings will also be carried out to re-iterate and discuss science needs.

**Future Plans: What Comes Next?**

A future aim is to establish an EYFS science progression document for each strand, linking with continuous provision and current foundation stage topics, beginning lead by the EYFS lead.

A new assessment recording format consistent with other subjects is being created with support from the curriculum lead.

Also, ST Mary’s would like to establish a science club including gardening with specialist support, children will improve the school environment building upon the prayer garden and vegetable patches by growing, maintaining, and sharing their produce.