Science at St Gregory's

Intent

Purpose

At St Gregory's, the curriculum our children experience enables us to live out our Mission Slogan: ***Loving all, like Jesus, we flourish together***. We aim to enable ***all*** our children to ***flourish***, regardless of background or disposition by offering a rich and informed curriculum packed with opportunities for all our children to experience 'life to the full' (John 10:10).

At St Gregory's, we encourage children to be inquisitive throughout their time at the school and beyond. The Science curriculum fosters a healthy curiosity in children about our universe and promotes respect for the living and non-living. We believe science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Throughout the programmes of study, the children will acquire and develop the key knowledge that has been identified within each unit and across each year group, as well as the application of scientific skills. We ensure that the Working Scientifically skills are built-on and developed throughout children's time at the school so that they can apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts confidently and continue to ask questions and be curious about their surroundings.

In keeping with the rest of the curriculum at our school, the learning our children undertake in Science enables them to continuously develop the Seven Skills of the Steward – attributes and attitudes which we believe will be essential so as to enable our children to thrive in the world of the future and help make 'Thy Kingdom come':

Team-working † Problem-solving † Creativity † Peace-making
Empathy † Resilience † Gratitude

Aims

At St Gregory's, in age and stage-appropriate ways, we aim to ensure that all pupils:

- experience a Science curriculum which is meaningful, motivating and memorable
- 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 pupils with the scientific knowledge required to understand the uses and implications of science, today and for the future

Curriculum Design

Careful designing and mapping of the aims and objectives of the National Curriculum for Science has ensured our curriculum is sequenced so as to enable current learning to be founded upon prior development of relevant knowledge, skills and understanding. It has also been created so as to maximise cross-curricular links with other subject areas in order to make our children's learning as meaningful as possible within exciting, relevant topics. The 'Understanding the World' curriculum in EYFS helps to begin this process, laying strong, relevant foundations for the National Curriculum aims. Art, Design & Technology, English, Maths, and Computing all have strong links with our Science curriculum to keep activities engaging.

The program of study for science is set out year-by-year for Key Stages 1 and 2 and follows the National Curriculum. Teachers at St Gregory's base their planning on this program of study for their relevant year groups. Teachers at St Gregory's refer to the White Rose Science Scheme as part of their planning. However, teachers are encouraged to be proactive in finding out about new

innovative resources and best practice to support lessons. At St Gregory's, teachers have the flexibility to meet the core curriculum requirements in other ways should they feel it more appropriate where cross-curricular areas of study offer equally exciting but different ways to explore certain topics and planning is adapted to reflect any changes. As part of the White Rose Science Scheme, the children have the opportunity to learn about different sustainability units which teach the children the importance of caring for animals, plants and the environment. Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics. Teachers at St Gregory's demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding.

Informed by stakeholder voice, the curriculum for Science is tailored to suit the specific needs and interests of the children at St Gregory's, developing knowledge, skills and understanding that fulfil but also embellish the National Curriculum requirements. Amongst other things, this is done in the following ways: we provide real-life purpose for the children's investigations with meaningful end-points so our children see the relevance of this subject area in their lives; we take our children on enriching trips to broaden their life experience and savour the impact of Science on our society as a whole; we stage regular events, such as Science Week or project days, such as STEM Day, to allow all pupils to come off-timetable, to provide broader provision and the acquisition and application of knowledge and skills. These events often involve families and the wider community.

Enrichment

We enrich the Science curriculum in a number of ways:

- Class trips are often linked to the Science curriculum (e.g. EYFS – Farmer Ted's; KS1 - Imagine That; KS2 –Alston Obsrvatory; Brockholes Nature Reserve; BAE STEM activity day at Samlesbury). KS2 children visit the bi-annual Science Festival at UCLAN.
- British Science Week is celebrated.
- STEM Workshop Opportunities

Curriculum Coverage, Review and Assessment

The curriculum is reviewed annually, with developments based on monitoring conducted throughout the year. A whole-school curriculum map is in place which outlines relevant coverage of Science, as well as individual maps for each year group. This has been meticulously planned out with clear progression within year groups, incorporating the EYFS expectations and National Curriculum programme of study.

Assessment opportunities have also been outlined for all key skills relevant to specific year groups in order to monitor progress across the school and ensure the sequencing of learning is progressive.

Provision For All

In keeping with our intention to enable all our children to flourish, the curriculum for Science provides challenge for all groups of children, such as SEND, more able, pupil premium, EAL. This is done through a wide variety of differentiated approaches ranging from in-class support and targeted questioning to use of specific tools, tailored next steps marking and enrichment activities.

Implementation

Subject Knowledge and the Monitoring Cycle

At St Gregory's, we endeavour to ensure that teacher and subject leader expertise is sufficient to successfully support the intentions of the Science curriculum across the school. If in any rare instances this is not the case, then high-quality training (sharing best practice, visits to other leading schools, attending relevant courses) is put in place. The annual audit of Science, as well

as the on-going monitoring cycle, helps to identify any areas of development which may present themselves. These are then fed back into the School Improvement Plan with time allocated accordingly to rectify the situation. During this process, current resources are evaluated and updated so our children are provided with high-quality equipment which allows them to work practically and with increasing accuracy. Specific time is also allocated to Science during Governors meetings, SLT meetings and staff meetings in order to, amongst other things, present situation reports, monitor books and planning and provide CPD training accordingly. The subject leader monitors annually in a wide range of ways, including: book looks, planning looks, lesson observations and pupil voice.

Planning and Progression

All planning outlines the knowledge, skills and understanding expected for each objective covered, as well as when opportunities to practice the Seven Skills of the Steward will take place and how to make the learning memorable, meaningful and motivating. This is consistent across KS1 and KS2 with EYFS incorporating the same elements but in a slightly different format. Children in EYFS are given a wide variety of opportunities to develop their knowledge and skills in adult-led and continuous provision. Vocabulary specific to Science is planned into topics so as to be taught and used by children independently and with understanding.

Incorporating Stakeholders

Survey Monkey surveys are used to ascertain pupil voice at the start and end of topics in order to tailor the learning accordingly and formative assessment is used throughout the topic to inform immediate next steps as well as future learning. Parents are informed of their child's attainment in Science in end-of-year reports and are also encouraged to be involved in their child's learning, for example, during topic homework activities and end-of-topic showcases.

Impact

The curriculum in Science has been created so the objectives are carried out within stimulating cross-curricular topics which link up children's learning from different areas in order to help them see the relevance of what they are doing, making their experiences meaningful and therefore motivating and ultimately memorable. To this end, we aim to enable our children to develop a love for their learning in Science and the practical ways it can enhance the world around us.

The successful approach at St Gregory's results in a fun, engaging, high-quality science education, that provides children with the foundations and knowledge for understanding the world. Our engagement with the local environment ensures that children learn through varied and first hand experiences of the world around them. Frequent, continuous and progressive learning outside the classroom is embedded throughout the science curriculum. Through various workshops, trips and interactions with experts and local charities, children have the understanding that science has changed our lives and that it is vital to the world's future prosperity. Children at St Gregory's enjoy science and this results in motivated learners with sound scientific understanding.

Outcomes are assessed in relation to the National Curriculum descriptors during and at the end of topics, with summative levels being given at the end of each term. The subject leader analyses this data and feeds back successes and areas for development into the normal school improvement cycle, including feeding back to governors. Children's work is moderated internally, as well as externally through cluster subject leader sessions.

A.Grime
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