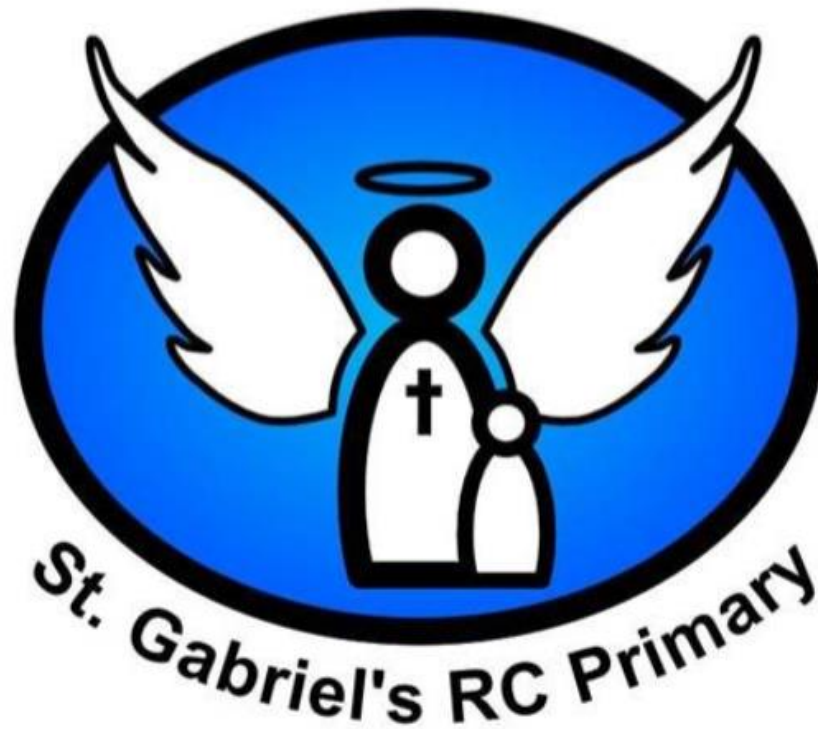




Science

Intent, Implementation and Impact Policy

Intent, Implementation and Impact in Science

INTENT	Subject Statement	In science, we nurture the natural curiosity that children have about the world around them. Through the specific disciplines of biology, chemistry and physics, we harness their curiosity to explore and explain perceptions. This is achieved through an enquiry-based approach, whilst including knowledge and conceptual understanding. Children develop transferable skills and build upon links across the curriculum with a particular focus on maths, computing and writing. In this ever-evolving world, the skills and knowledge gained will prepare children for their future.
	Subject Expectations	-Science should be taught weekly -Units of work can vary on length as some topics require more depth and have more strands to study than others. -All elements of each NC strand of the topic should be covered well and evidence these at least once through written or photographic means. -Working scientifically skills are applied through all 5 types of enquiry. (This should be done over the year as not every enquiry types lends itself to each topic). -Science capital should be at the forefront of teachers minds to create experiences for their pupils and make tweaks to lessons to ensure things are as relevant as possible. -Knowledge organisers are used to support each topic.
	Conditions for learning	<u>Displays / Working Environment</u> Science Walls should be evident in each classroom. Displays should present support for the current unit of work that the children are studying. -Vocabulary must be present -5 enquiry type logos -Visual support/prompts -Use of 3D equipment where appropriate -Topical books available -Teachers may wish to include pupil work <u>Learning Behaviours / Attitudes to Learning</u> -Children are engaged within science lessons -Children enjoy science with some developing future aspirations for careers involved in STEM (Science, Technology, Engineering & Maths).

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	Planning	<u>Progression and Sequencing</u> -The National curriculum creates a well sequenced and progressive programme of study. -Teachers plan using the statutory requirements for each topic for their year group -A variety of resources are used to supplement lessons such as; TAPS, Ogden Trust, STEM, Twinkl -There is specific vocabulary stated for each unit of study, this is progress and build upon what children have learnt. <u>Planning</u> -Long term planning maps the units of study and coverage of enquiry types over the year. -Teachers use the National curriculum statutory requirements to plan from. -The 5 types of enquiry are planned for to ensure a variety and full coverage over the course of the year. -Medium term plans show all objectives specific to a unit of work and include the Working Scientifically objectives. Key vocabulary and a space to plan for science capital opportunities are included to highlight the importance of these. <u>Structure of Lessons</u> -We do not impose a set structure to Science lessons. Lessons may vary from knowledge based to skills based, with a larger emphasis placed on children gaining scientific skills. Lessons may include: -Revisits to previous learning -Planning, investigation work, research work -Investigations -Assessment for learning is a feature of all lessons -'Curiosity chats' Opportunities for children to ask questions or explore different concepts. These have been developed to be included at least once per week. Floor books are used to record a minimum of 2 pieces of work per half term. <u>Resourcing</u> -Children and their families to be viewed as a resource to promote Science Capital where possible and draw from their experiences. -Online tools such as Explorify, Skype a farmer etc to be utilised. -Whole school resources are stored in the Star room. -Science books that link to different units of study are available and should be used. -Teachers are responsible for ensuring they have the resources needed for particular units of study ahead of teaching this. Any breakages or issues need to be reported to the subject leader to be rectified. -3D resources should be used to provide children with hands on experience.
IMPLEMENTATION	Curriculum	<u>Scope</u> Learning has been carefully considered by the teachers in order to ensure that enquiry types are planned in where they fit with certain topics. Skills are embedded so that pupils can build upon them and transfer them. <u>Sequencing</u> Within lessons, success criteria is used to support the children to know how to achieve an objective. Knowledge skills are taught in a progressive manner. Scientific enquiry skills are taught and covered through knowledge and explicitly. <u>Knowledge</u> • Children build upon their scientific knowledge of units of study each year. • Children gain a secure knowledge of the world through their science coverage.

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	Pedagogy Teaching and Learning Quality 1st teaching based on current research	<u>Learning</u> -Children will be engaged -Children can build upon prior knowledge of a topic -Children articulate their learning using high standards of vocabulary. -Children develop their knowledge and working scientifically through all 5 types on enquiry (KS1 exposed to all 5, LKS2 know the 5 types, UKS2 choose from the 5 types) -Children have opportunities to work independently and collaboratively. -Learning is evidenced through books or electronically on Seesaw <u>Teaching</u> -Teachers to be confident within their delivery of each unit and to address this if they aren't through online CPD Out Reach -Lessons may revisit content from a previous lesson, previous year group for consolidation. -Conversations or resources such as Explorify to be used to promote curiosity and questioning from the children. -Levels of challenge and deeper learning opportunities throughout the lesson -Use of questioning during a lesson, including open questions. -Teachers to model high levels of subject vocabulary and insist on high expectations of pupils using this. -Science Capital to be thought about, planned for and children's backgrounds and experiences used as celebrated. -Children have opportunities to explore, ask questions and self-assess. -First hand experiences are brought to the children where possible. -Use of resources for children to explore -Use of scientists/research shared and explored where possible. -Science can be FUN. -Cross curricular links are made where appropriate -A range of strategies for learning and assessment are used in line with the whole school Rosenshine's principles that have been implemented.
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	Meeting the needs of the learner	<u>Planning</u> • Rigorous planning ensures appropriate knowledge and skills are taught. • Plans are adapted in light of the needs of the class and Assessment for Learning. <u>Provision for SEND / disadvantaged</u> -Support given such as frames are used to support children achieve learning objectives. -Use of an adult to provide support -Children who are not yet working at their current year group attainment will have work adapted and provided so that they can access. -SEND are supported by QFT. <u>Challenge</u> -Challenge needs to be evidenced in lessons. Each lesson should be year group appropriate to that topic, including vocabulary. -Challenge can be shown through working scientifically, children using and securing their own skills as they lead investigations (UKS2) - Open higher order questions are used to stretch children's thinking. Children should be expected to vocalise their learning with explanations and use hypothesis. <u>Catch up / interventions / Cumulative dysfluency / Addressing gaps</u> -Gaps identified from previous topics are addressed. This can be through formal assessments on Sonar or informal quizzing and retrieval reviews. - 'Curiosity chat' time can be used to address a previous misconception or area that needs further support. -Working scientifically skills are covered several times throughout the year and then throughout the Key stage, therefore, pupils who need further support should be supported when working on specific objectives that they have struggled to achieve. -Pre and Post teaching tasks are used where necessary.
IMPACT	Review and Assess	<u>Questioning</u>: Broad range of question types and styles applied. <u>Review of learning</u>: Effective checks for understanding. <u>Feedback to improve</u>: Live feedback is given wherever possible along with written marking in books.
	Assessment for Learning Summative assessment	-Teachers will assess working scientific skills through each topic throughout the year. TAPS can be used for practical ideas. -Quizzes or something more formal may need to be looked at to assess knowledge. Teachers still have access to Assertive Mentoring if they wish to lift questions from that. -Marking of work should follow the school's marking policy. -Marking to improve/challenge may be done by posing questions or done verbally within the lesson. -Children are assessed against each strand using the electronic platform Sonar and then given a best fit judgement.
OTHER	Culture	Love of Science flourishes throughout the school by: -Making lessons relevant and linked to pupils own experiences and lives. -Opportunities to be 'hands on' -Children are encouraged to be curious -Assemblies linked to Science -Whole school science day - Whole school science competitions (Science Selfie) -Trips organised with scientific links -Science explored both indoors and outdoors.

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	Wider curriculum opportunities / Cultural capital	-Trips and visitors linked to science should be thought and planned for where possible. -Exploring the science capital of each child/family should be looked at, in order to draw on this and value the child wholly. -Cross-curricular links to work should be made where possible, especially with writing, reading, maths, PE and computing. -External companies such as, MAD Science, are invited into school and deliver showcase assemblies or workshops.
	Reading within the Curriculum Area	-Reading can link when researching questions/concepts -Books linked to each area of study are available in the library -EYFS has many books linked to early science ideas such as senses, plants, mini-beasts etc.
	Related Policies	-Handwriting and Presentation -Feedback and Marking to improve -Teaching and Learning -Assessment