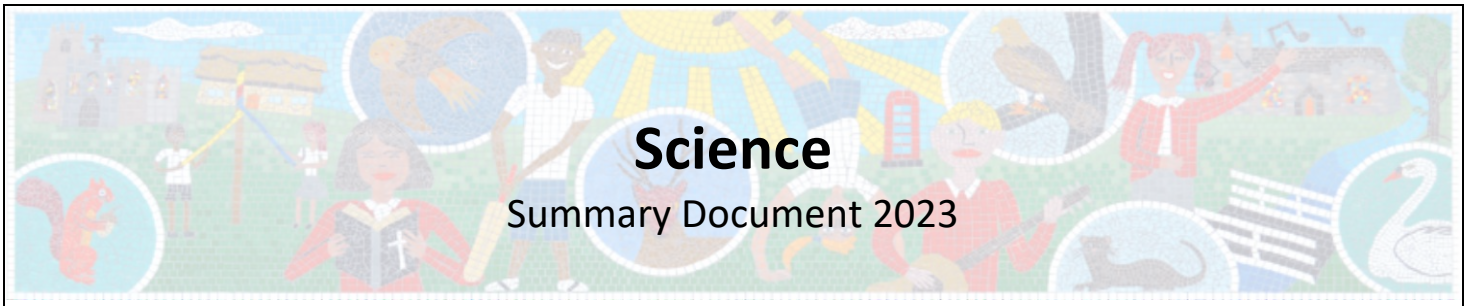

Science

Summary Document 2023

We live and work in harmony with love for one another so we can achieve our potential within a community of life-long learners.

The whole experience of SCIENCE is in line with our vision (above). In particular, this is evident in how the whole school community is involved in Science Teaching and Learning events such as British Science Week, as well as the way our Science 'principles' are put into 'action' through 'continuous', 'engaging' and 'practical' collaborative science activities. Pupils work together to answer scientific questions posed by themselves and others and staff actively seek out opportunities to attend CPD to develop their own teaching and learning.
Pupils achieve well as evidenced in books, displays and results.

The SUBJECT Big Ideas are:

Observing over Time	Pattern Seeking	Identifying and Classifying	Comparative and Fair Testing	Research

Threads and Neurons in the SUBJECT Curriculum

Descriptor	Evidence
An ambitious curriculum that gives **all** learners the knowledge and cultural capital they need	At Shelford School we believe that Science Teaching and Learning should be ***continuous, engaging*** and ***practical.*** Our vision is for Science to be happening everywhere; at home and at school, across all ages, all children and all subjects. We aim to enthuse and inspire pupils, staff and parents alike with activities involved around discovering the world that we live in. We encourage a continuous and practical 'hands on' approach to Science teaching following the children's own interests and ideas, interleaving learning between year groups and other curriculum subjects and continually building upon previous skills, interests and knowledge. We aim to encourage a 'Science for All' ethos through enrichment activities such as Science Ambassador workshops and assemblies as well as involvement in initiatives such as British Science Week, Science Fairs and Science Competitions. All of these support our commitment to increasing the cultural capital of all, raise the profile of 'science' as a subject and highlight the multitude of links we have with 'science' in everyday life. Our intention is that by the end of their primary years, all pupils are able to see their potential as lifelong science learners with a view to pursuing future paths in the field of Science should they desire.
Coherently sequenced planning	We use the EYFS Framework and National Curriculum for Science as the basis for our curriculum planning to ensure the coverage of skills as well as objectives and content. Curriculum planning is in two phases (long-term and detailed medium-term). The long term Science Threads and Neurons plan, maps the Science topics studied in each term / year group. Where relevant, these have been linked in with our half-termly curriculum threads e.g. Evolution and Inheritance (Y6) takes place in the Autumn term to link in with the theme of 'Identity'. Initiatives such as 'Forest School' are also used to enhance Science teaching and learning e.g. Y1 attend a block of Forest School sessions in the Summer term to link in with their Science topic on 'Plants' (following the whole school thread of 'Growth and Change'). All topics begin with a period of 'assessment for learning' in order to revise previous knowledge and build upon skills learnt in order to ensure all content taught is always relevant and progressive, with increasing challenge as they move up the school. Both TAPS and PLAN online planning and assessment resources are used to

	support medium term planning. These enable teachers to access a wide range of high quality planning and assessment ideas, resources and guidance for the delivery of practical and inspiring Science lessons. Running throughout the school there is also a clear focus on working scientifically and developing Key Scientific Enquiry skills. The 5 key scientific enquiry types of ***observing over time, pattern seeking, research, identifying and classifying, comparative and fair testing***, are the unifying threads that run through all topics and all year groups. Our Science Knowledge Skills and Objectives document details how these skills are developed across a year group and throughout the school.
Skills to support employment	The 5 'Big Ideas' that pupils at Shelford School are taught during their science lessons (the 5 key scientific enquiry types) help pupils to develop skills which are transferable across many subjects and ensure that learning is purposeful and knowledge rich. Our science lessons allow our pupils to become independent and reflective learners, continually aware of their own strengths and areas for improvement, skills which prepare them well as life-long learners. Key transferable skills of report writing / presenting information and communicating ideas and findings effectively are integral to science teaching and learning at Shelford. The focus on practical, exploratory, problem-solving activities also encourages children to develop an ability to make decisions, work collaboratively and develop resilience in attempts to 'try again' when initial attempts don't work e.g. flying a paper spinner. Engagement with Science Ambassadors across a range of fields and links with scientific establishments in the local area e.g. Wellcome Genome Campus enable pupils to see first-hand how Science is continually used across a wide range of daily life. The cultural capital gained by bringing these connections to life also aims to raise awareness of the importance and interest in science learning in further life.
Holding the same high ambitions for all pupils, with the curriculum tailored to support those of high need	A strong emphasis on assessment for learning ensures that staff are continually aware of the strengths and areas of development for all pupils. All children follow the designated curriculum for their year group ensuring that no content area is missed, but common misconceptions / knowledge gaps are identified and addressed *prior* to starting a new topic and *throughout* a series of linked sessions in order to ensure accelerated progress and attainment for all. In order to provide suitable learning opportunities for all pupils, care is also taken to match the challenge of the task to the ability of the pupil. Tasks are commonly differentiated by outcome and pupils are encouraged to select activities of increasing difficulty (challenge, super challenge, extreme challenge) in order to challenge themselves at the appropriate level. Pupils are also encouraged to respond to science experiences and record their findings in a variety of ways e.g. through Art, Poetry or Drama in support of a range of learning styles. Additionally, pupils are supported in selecting resources / assistance from a teaching assistant to help them develop skills and understanding irrespective of their attainment in other subjects. In summary pupils are assessed against their scientific knowledge and understanding rather than their literacy skills which may be used to share their understanding.
Explore the full curriculum, including cross-curricular links	Cross-curricula links can be evidenced in our Shelford Threads and Neurons Curriculum document. Wherever possible science topics have been mapped to enhance learning in other areas of the curriculum e.g. focusing on 'Rocks and Fossils' in a Y3 topic on Stone, Bronze and Iron Age or exploring materials and their properties during a Y2 topic on the Fire of London. There are several enrichment activities such as involvement in British Science Week, workshops led by Science Ambassadors and Forest School, exploiting all opportunities to make cross-curricular links. We are also continually developing opportunities for visitors in and trips out e.g. Shepreth Wildlife Park in YR, so pupils' experiences in class are enriched by a wealth of other opportunities. A focus on developing different ways of recording science learning e.g. through poetry, drama, art, has also enabled all pupils to enhance links between different areas of the curriculum.

Delivering the SUBJECT Curriculum

Descriptor	Evidence
High level of teachers' subject knowledge and quality CPD	Staff at Shelford school are confident teaching science across a range of year groups. Regular CPD has facilitated discussions about ways of developing practice and discussions with staff have highlighted the general confidence staff have when approaching science sessions in school. Science content coverage remains a strength and year on year clearly builds upon knowledge gained in previous years. Science is taught regularly and supplemented by continuous learning / discussions throughout termly topics e.g. exploring 'changing materials' through a focus on 'Chocolate' in Y2. Regular Forest School sessions in EYFS and KS1 continue to provide a solid platform for children to develop scientific knowledge and skills whilst investigating the world around them e.g. seasonal changes. Blocked units in Y1 also enable children to build upon their skills and then apply these in their own learning during child-initiated activity time. Characteristics of Effective Learning skills (CofEL) still remain a priority and are particularly prevalent in younger years, where children are given opportunities to 'play and explore' / 'actively involve themselves in their own learning for sustained periods of time' / 'create and think critically'. A focus on 'Growth Mindset' across the school has really encouraged children in being actively involved in developing their own learning. Staff questionnaires (both formal and informal) demonstrate learning over time and confidence in teaching and learning approaches introduced.
Effective delivery by teaching staff	Regular book scrutinies and learning walks have shown how science content is effectively taught through a range of strategies. Pupils are confident talking about what they have learnt and the progression of skills is clear and effective.
Effective assessment and rapid feedback for pupils that also informs planning	At the beginning of each topic, staff use a variety of strategies e.g. quizzes / investigations / KWL grids to assess pupils' knowledge in order to identify any misconceptions and plan content accordingly. Throughout a topic, informal conversations and continuous 'Explorify' activities are used to assess understanding. PLAN and TAPs assessment activities are used to aid formative assessment of both Scientific Knowledge and Skills and verbal and written feedback is given promptly in order to support knowledge and understanding. Staff are continually adapt their teaching throughout a unit in response to formative and previous summative assessments in order to respond to pupils' needs.
Teaching of the subject is designed to enable pupils to remember learning in the long term and integrate new concepts	Our vision for Science is for it to be taught continuously, throughout the week and across a range of subjects. Teachers plan for at least one Science session each week and supplement this with discussions around the subject through weekly activities e.g. Explorify / morning activities. This enables pupils to make links across the curriculum, apply their learning in a range of real life situations and keep science 'alive'. Subject content builds on skills and knowledge developed from EYFS upwards, enabling pupils to develop their skills progressively over time. Science topics are plotted termly or half termly and revisited across EYFS, KS1 and KS2.
Assessment is informative, useful and smart	Summative assessment procedures are used throughout the school to pass on information from one year group to another using Target Tracker. This forms a useful baseline for teachers on which to develop their teaching. Formative assessment that takes place throughout science teaching and learning sessions is also very useful in informing staff how pupils are getting on; planning and executing a practical investigation is not only enjoyable for pupils, but also invaluable for staff to assess pupils' abilities to apply scientific skills and share knowledge learnt. The use of assessment procedures throughout a topic enables staff to adapt planning accordingly and tailor approaches for individual pupils / classes.
The environment and other resources support learning effectively	Science displays are used in all classrooms and incorporate a copy of the Science vision logo and the 5 scientific enquiry types along with work completed in current / recent topics. Pupils are encouraged to refer to these regularly to reflect upon

	their learning. Science resources are stored centrally and replenished when required. They are used effectively to enhance practical investigations and demonstrations by staff e.g. a selection of magnetic resources encourage pupils to test and discuss their knowledge and understanding / model skeletons help develop an understanding of bone structure and use.
Reading is integrated within this subject	Scientific texts / stories form part of each class book corner and pupils are encouraged to select a range of reading material to read at home. 'Research' (one of our 5 Big Science Ideas) naturally involves children reading science material both in books and online. Staff are also encouraged to take a cross-curricula approach to learning, and as a result, science texts may be used as a basis for a class text / class reading.

Pupils achieve their potential in SUBJECT

Descriptor	Evidence
Learners develop detailed knowledge and skills, which is evident in their attainment and progress	The Science curriculum has been designed to support skills and knowledge progression as children move from EYFS to Y6. This is manifested in children developing their understanding of a range of scientific concepts throughout their primary years, as well as broadening their experiences in applying skills and knowledge to real life situations. This progress can be seen in evidence on target tracker both within a year and across year groups. Development of skills and knowledge can also be seen in Science books and displays in all classrooms. As pupils move up the school they become increasingly confident and competent in using previous knowledge learnt to understand new concepts and developing independence in selecting which enquiry type may be most suitable for a particular investigation.
Learners are ready for the next stage of their education	Throughout the school, there is a clear progression and development of scientific skills from those developed through exploratory play in EYFS (closely linked to CofEL) to those used by Y6 to design and carry out investigations independently. Pupils are able to transfer previous skills and knowledge learnt to the next year group and key stage. By the end of KS2 pupils have experienced a range of skills across a range of topics in preparation for further combined science teaching in secondary education.
Learners apply good reading skills in this subject	Pupils demonstrate good reading skills when reading research material both online and in books. Learners also apply good reading skills when developing and recording practical investigations.

Specific Links to our Specialisms, Awards and Accreditations	
Specialism, Award or Accreditation	**Links with this Subject**
THE CHURCH OF ENGLAND EDUCATION OFFICE RE graded '**Excellent**' by SIAMS, Church School Status	Pupils are encouraged to discuss their understanding of the connections between Science and Faith throughout the school. A focused topic in Y6 called 'Evolution and Inheritance' provides pupils with time for in depth discussions on this topic.
BRITISH COUNCIL INTERNATIONAL SCHOOL AWARD 2018–21 International School Award for outstanding development of the international dimension of the curriculum	Pupils and staff are encouraged to investigate and talk about scientific discoveries across the globe. A focus on sustainability is incorporated into termly teaching units where relevant.
PSQM Primary Science Quality Mark Valid 2020-2023 PSQM	Involvement in the PSQM process continues to guide Science teaching and learning at Shelford School.

Primary Science Quality Mark Award	
School Games Silver Award	Regular ‘Animals including Humans’ units taught throughout the school focus on the impact of healthy / unhealthy lifestyles on our bodies.
Commitment to professional development, research, mentoring and coaching.	Children actively take part in their own research throughout scientific investigations. Visits to local scientific establishments / science ambassadors visiting us, support children in understanding the importance and power of research, especially with regards to scientific developments over time.
Commitment to prioritising music throughout and beyond the curriculum.	A focus on ‘Sound’ in Y3 encourages pupils to reflect on how sound is produced from different sources / instruments. Pupils are encouraged to use a range of means to communicate their scientific findings and knowledge including poetry, drama and music e.g. songs.