



1. Rationale for the curriculum, including the purpose and the key ideas

At St Merryn we are unashamedly passionate about all scientific matters and believe that this is evident in our day-to-day delivery of scientific content. We understand that our pupils are naturally curious, and we encourage this inquisitive nature by helping them to frame questions within topics so they can test and evaluate ideas. Our curriculum drivers of 'Resilience, Reach and Reflectiveness' are consistently embedded in our weekly science lessons. Pupils are given the opportunities through topics and investigation to progressively deepen their knowledge of scientific concepts and build up the skills to access that knowledge. We believe Science should excite pupils' interests, build on their prior knowledge, and build their confidence, enabling them to take risks, work out problems and raise further questions. It should encourage positive attitudes and shape articulate learners who are able to explain what has been learnt and how. We encourage both disciplinary and substantive knowledge through 'talking and thinking like a scientist'. Because science links direct practical experience with ideas, it can engage learners at many levels. Scientific method is about developing and evaluating explanations through experimental evidence and modelling. This is a spur to critical and creative thought. Through science, pupils understand how major scientific ideas contribute to technological change – impacting on industry, business and medicine and improving the quality of life. Pupils recognise the cultural significance of science and trace its world-wide development. Our links with The Ogden Trust further encourage the links between 'school science' and science in the real world. Children build their cultural capital through visits, workshops, weekly science activities and having two science ambassadors in each class. It develops transferable skills including problem-solving, reasoning and enquiry.

2. Subject planning, delivery and assessment

Planning

- St Merryn Teachers use the scheme 'Developing Experts,' to ensure that the 2015 NC objectives are met and to maximise the learning experience for their class.
- Science lessons are planned so that they build upon the prior learning of the children.
- There is planned progression built into the schemes of work at Foundation Stage, KS1 (Key Stage 1) and KS2 (Key Stage 2), so that the children are increasingly challenged as they move through the school.
- There is also planned skills progression within science, following the 'Working Scientifically' guidance in the National Curriculum.
- A curriculum map is in place to show the progressive stages the children access as they move through the school.

Delivery

- Our organisation of children when teaching Science depends on a wide variety of factors including the lesson objective, situation, differentiation, and additional adults in the room etc.
- Teachers strive for best practice and encouraging high standards in teaching and learning.
- Each lesson is supported by a thorough pedagogy.

- Each lesson will begin with an explanation of the learning objectives or key question which are visible throughout the lesson.
- Key vocabulary will be introduced to children and modelled throughout the lesson by teachers with the expectation that children use this vocabulary also. This is made explicit, using the term 'rocket words'.
- Teachers use a range of methods to communicate their scientific findings and present it in a systematic way, including written explanations, ICT (Information and Communication Technology), diagrams, graphs, and charts.
- All science teaching will involve plenty of hands-on activities: finding out from first-hand experience and testing hypotheses, in line with "working scientifically" from the NC document.
- The use of Scientific terminology and vocabulary is made explicit using knowledge organisers for each topic.
- Full scientific enquiry, involving the concept of fair testing, will occur in each unit of work where appropriate.
- Each lesson will incorporate a plenary to consolidate learning from the lesson.

Assessment

- St Merryn School uses formative and summative assessment within Science.
- We use weekly knowledge quizzes, and end of unit assessments through the Developing Experts Scheme.
- Using the assessment tool Otrack, St Merryn are using curriculum statements in order to complete formative assessments of the children's attainment.
- Teachers also use Otrack as a summative assessment tool to monitor progress for each topic area, at the end of each unit.

3. A clear rationale for the curriculum, including the purpose and the key ideas

- **See Point 1 for curriculum rationale**
- The development of this curriculum has regard to the national curriculum, has assessment opportunities built-in and enables lessons to be taught that cover all NC science.
- Throughout the subject, National Curriculum objectives and Working Scientifically skills are at the core of the pedagogy and curriculum design.

4. Monitoring and evaluation of intent, implementation and impact of lessons

Monitoring and evaluation of intent

St Merryn teachers create a positive attitude to Science learning within their classrooms and reinforce the expectation that all pupils are capable of achieving high standards in Science. Therefore, it is important to St Merryn that we seek and utilise the most recent information from:

- Kernow Learning Teaching School
- Kernow Learning Science Leads Teams information area
- Teach Meets
- Ofsted updates
- Publications

- Networks including social media

Monitoring implementation and impact of lessons

Implementation:

Subject leadership time is allocated to allow for the subject leader to carry out learning walks and planning scrutiny to ensure that the above curriculum delivery is followed as per this document and the subject policy. Regular books looks and pupil and staff conferencing take place.

- Science is planned and taught using a progressive approach that enables the achievement of deeper understanding.
 - Through a wide range of formative assessments strategies, the quality of pupil participation is enhanced.
 - Teachers use precise questioning in class to test conceptual knowledge and skills, and assess pupils regularly to identify those pupils with gaps in their learning.
 - Curiosity is celebrated within the classroom. Planning involves teachers creating engaging lessons, often involving high quality resources to aid conceptual understanding.
 - Pupils' knowledge and understanding increases, and they become more proficient in selecting and using scientific equipment.
 - Pupils become increasingly confident in their growing ability to collate and interpret results and come to conclusions based on real evidence.
 - Pupils are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover answers
-

Impact:

Know more, remember more.

Due to our successful approach to teaching Science, our pupils are engaged in a high-quality Science education, that provides them with firm foundations for understanding the world. We use a variety of strategies to evaluate the knowledge, skills and understanding that our children have gained every half term. Impact of lessons will be monitored by teachers formatively throughout a unit of work. Teachers can be supported by the subject leader in order to aid the impact of lessons where required. At the end of units (half-termly) teachers and the subject lead will assess the impact of teaching and make action plans as appropriate. This may include supporting teachers, evaluating lesson plans used or the resources of the school.

- Start of unit – we elicit 'what we already know'
 - We challenge children with 'sticky facts' quizzes
 - Blank knowledge organisers are given at the start of the unit, for children to add their knowledge to
 - Microsoft Forms – at a distance quizzes
 - CPD for Science Coordinator, and then for all teaching staff through inset sessions to ensure that teacher pedagogy and assessment is secure.
 - Regular feedback marking
 - Subject monitoring, including book looks.
-
- O Track statements
 - Regular low stakes knowledge assessments, using a range of creative approaches.
-

5. Action plans related to whole school SIP

See the [Action plan](#)

6. Connectivity: a statement on how the subject works alongside other subjects

Connectivity runs throughout each element of the curriculum at St Merryn. Our engagement with the local environment ensures that pupils learn through varied and first hand experiences of the world around them. Through various workshops, trips and interactions with experts and local charities, pupils have the understanding that Science has changed our lives and that it is vital to the world's future prosperity. Pupils learn the possibilities for careers in science as a result of our community links and connection with national agencies such as the STEM association and learn from, and work with, professionals from a range of different scientific backgrounds. Where possible and appropriate, connections can be made between other subject areas and Science for example:

- English through debate – Is it our job to look after the environment?
- English (and all other subject areas) the tier 3 vocabulary that is encouraged. Refer to point '2. Delivery'
- Jobs that grown up people do and their influence on the world us. Famous scientists with a positive influence on the world – Astronaut Tim Peake, Primatologist Jane Goodall
- Our school rules and virtues (creativity, curiosity, knowledge, perseverance, pride and respect)
- Assembly topics (Environmental matters, International Space station, national and international significance). This may include stories written by authors or anecdotes known by members of staff. Picture news is used to enhance knowledge.
- Films and/or TV programmes
- Places visited (Eden Project, National Marine Aquarium, Gevor Tin Mine)

7. Budget

The Science budget is overseen by St Merryn's Executive Head, Head of School, Subject leader, and School Local Advisory Board (LAB). The spend, is focused on a needs basis ensuring sufficient equipment and consumables, and a focused spend when it is a priority area.

This budget can be accessed via a hyperlink. [School budget](#).

8. Governance – Local Advisory Board (LAB)

At St Merryn LAB members work together and share time between subject areas. At reviews points set out across the year, LAB members will be consulted with regards to all aspects of the Science curriculum using this document, and subsequent updated versions, as an agenda to provide focus points for discussion.

During subject area discussions, the subject leader will compile a presentation to update the governors on the position and direction of the subject area. This presentation will have been created by the science subject co-ordinator and will also be informed by learning walks, book looks and pupil conferencing.

9. Risk assessments

Currently, Science in St Merryn is covered by the school risk assessments. Teachers are explicit about health and safety implications, and children are made aware of hazards and how to manage them safely.

Off-site visits and peripatetic staffing

For off-site visits risk assessments will always be sought, reviewed and approved by Exec. Head, Head of School and Subject leader before any trips can go ahead.

Relevant risk assessments will be kept in a folder on the Staff shared drive and also a paper copy will be taken on the relevant trip with the off-site trip leader.

10. Peripatetic staffing and non-teaching staff

All staff who plan to teach lessons in school will have to provide the appropriate lesson planning and risk assessments to the subject leader so that these can be added to the subject profile.

Science Shows

Arts Council funded science show combining storytelling, interactive elements, puppets, and music. Teaching staff are always present during performances.

Secondary School Science Days

Brannel School have supported St Merryn School with inspiring science days for KS2 children. St Merryn staff are present, and work with trained secondary science teachers. Trips are thoroughly risk assessed.

Upper Key Stage 2 children also have the opportunity to work with Year 9 students at Wadebridge Secondary School.

11. Examples of pupils' work: learning walks, book looks and pupil conferencing.

Termly work scrutiny and book looks are done by Science Co-ordinator to monitor:

- consistency in curriculum delivery
- what is taught and learned
- how subject matter is taught and learned (from the perspective of how learning is structured to allow for efficient and meaningful acquisition of new knowledge);
- whether and how pupils consolidate knowledge so that it remains in their long-term memory

12. Extra-curricular activities.

Our engagement with the local environment ensures that pupils learn through varied and first hand experiences of the world around them. Through various workshops, trips and interactions with experts and local charities, pupils have the understanding that Science has changed our lives and that it is vital to the world's future prosperity. Pupils learn the possibilities for careers in science as a result of our community links and connection with national agencies such as the STEM association and learn from, and work with, professionals from a range of different scientific backgrounds.

13. EYFS: how the subject is working to the standards set out in the EYFS framework

In Early Years Foundation Stage (EYFS) children start to gain the science knowledge that they build on throughout their time at St Merryn School, such as developing their skills of observation, prediction, critical thinking, and discussion. Planning is mainly taken from the Developing Experts scheme. This will involve conducting experiments, exploring different methods of discovery, and

presenting their findings. Learning and development will cover some of the 7 key areas of learning within the Early Years Foundation Stage:

- personal, social, and emotional development.
- communication and language.
- physical development.
- literacy.
- mathematics.
- understanding the world.
- expressive arts and design.

14. EYFS – information on outdoor play facilities – Understanding The World

The children at St Merryn are very fortunate to have many resources readily available to them to encourage and enhance their play and discovery through physical activity.

Examples of fine motor skill resources:

Building blocks, trains, pebbles, sand, conkers, stacking blocks, abacus, insect hotels, paints, pencils, pegs, tweezers, magnets, ribbon, marbles run, cars and other toys, magnifying equipment, binoculars

Examples of gross motor skill resources:

Sand pit, spade, rake, brushes, scooters, tyres, balance beams, ride on toys, tuff tray, balls, logs to balance, water pipe/hose, guttering, crates, wheelbarrows, mud kitchen, oversized abacus, and other toys.

Note: these lists are not exhaustive but provide a snapshot of the resources available to the children at St Merryn.

Further to the resources and equipment available, the children also have use of generous sized outdoor spaces that are entirely focussed around moving, playing, and discovering. The children have their decking area under canopy where children can get outside in poor weather as well as the outdoor area where there is space for water play and sand play. The EYFS children do also have the chance to go to the outdoor areas to make use of the garden allotment, outdoor classroom, stage, and woodland areas.

15. See our separate document on adaptations of Science for SEND