

Lady Bay Primary School

Science Policy

Curriculum Policy

Science Subject Leader: Frank Warren-Oliver

The 'Lady Bay Way' in Science

Science at Lady Bay aims to inspire and facilitate children's curiosity and interest in finding out about the world around them so that they will leave our school with the knowledge and skills to continue developing their understanding of their world, will have a love for the subject and continuing enjoyment of discovery by observation, investigation and education. To achieve this, we follow a series of stages:

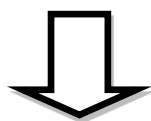
Planning

Each year group is taught specific science topics, in six-week blocks, during the school year, directed by the National Curriculum Science Program. Teachers use the 'Lady Bay Progression in Science' document to ensure that specific science knowledge and skills are taught progressively, through advancing year groups. Medium Term Planning and supporting 'Knowledge Organisers' outline the skills and knowledge to be taught and the 'Sticky Knowledge' that should be retained by all children on completion of the unit.



Teaching

In science lessons, knowledge and skills are taught using Rosenshine principles, where each lesson begins with a 'Big Question' and new knowledge or skills are presented in small steps, using a range of approaches: enquiry, practical investigation, questioning, examples/models, group or guided work, independent learning and scaffolding for those needing support. 'Sticky Knowledge' is revisited at the beginning of lessons and throughout the topic.



Assessment

The assessment of knowledge and skills is on-going in a lesson, revisiting the 'Sticky Knowledge' points to reinforce them and using questioning to ascertain depth of understanding. At the end of the session, teachers assess written work in the science books, highlighting the 'Big Question' using either orange (did not meet the objective), green (met the objective) or blue (exceeded the objective) which will assist overall final assessment. In addition, at the end of a topic, children complete a mini-assessment focused on the 'Sticky Knowledge' taught. Teachers then make a final assessment judgement and record this on Sonar Tracker, the school's assessment monitoring program, which collates results for each child and creates summative reports at the end of each term.

In EYFS, floor books help to provide an ongoing record of work and assessment for each child against the early learning goals.

At Lady Bay Primary School, science stimulates and excites children's curiosity about the natural phenomena and events in the increasingly complex world around them. Pupils understand how major scientific ideas contribute towards technological change, impacting on industry, medicine and business and improving quality of life. They learn to question and discuss science-based issues that may affect their own lives, the wider community and the future of the world, encouraging and supporting the development of science capital.

This knowledge base of science has a practical application to everyday experience and is therefore also important for pupils' social development. By working scientifically, through investigations involving planning, testing, observing, recording and analysing results, children appreciate the structure and nature of the learning process. All teachers design and plan science activities that provide opportunities for children to display, develop and apply their creative and imaginative capacities in science. These activities also enable them to experience an ongoing sense of success in their learning which is transferable to other subjects.

Aims:

The National Curriculum for Science aims to ensure that all pupils:

- Develop scientific knowledge and conceptual understanding through the specific scientific disciplines.
- 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.
- Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

In addition, Lady Bay Primary School aims to:

- Enable pupils to make decisions about the uses and values of scientific work and achievements.
- Enable pupils to develop an understanding and respect for the natural world.
- Enable pupils to question, hypothesise, test and discover for themselves about our world.
- Develop the skills required to investigate the world around them.

Leadership and Management Roles:

The Science Subject Leader is responsible for ensuring that the aims of the Science Policy are met. In addition to this, the Science Subject Leader should:

- Be enthusiastic about Science and demonstrate good practice in their classroom teaching.
- Encourage and support all staff in the successful implementation of the curriculum and school approaches to science teaching.
- Monitor and co-ordinate assessment procedures and record-keeping to ensure consistent progression and development throughout the school.
- Monitor the teaching and learning of science throughout the school.
- Use designated funding to maintain and improve science resources.
- Organise and review all science-based resources, ensuring they are readily available and maintained.
- Support staff by encouraging the sharing of ideas and by researching and organising in-service training as appropriate.

Equal Opportunities and Inclusion:

All children will have equal access to the full science programme of study that satisfies the National Curriculum 2014 requirements. It is important for all children to experience a range of scientific activities in ways that are appropriate to their needs and abilities. Special provision will be made when exceptional cases arise to facilitate curriculum access.

Science in EYFS:

Play underpins EYFS. While playing, children behave in different ways: sometimes within their play, they may describe and discuss what they are doing and sometimes they may be reflective and quiet as they play. In a secure and challenging environment with effective support, children can explore, develop and experiment as they play to help them make sense of the world. The EYFS strand 'Understanding the World' leads directly to scientific elements of the curriculum and leads to more formalised Science learning in both KS1 and KS2.

Planning:

Where possible, science planning is integrated with ongoing topic work to provide more contextual and meaningful learning experiences.

- English – opportunities to write for varied purposes, with the characteristics of different kinds of writing e.g: chronological reports, recounts, balanced arguments and note-taking.
- Mathematics – developing skills in data handling, measurements and mathematical relationships.
- Art / Design and Technology – understanding of materials and their properties, designing and creating own inventions.
- Geography – exploring physical processes.
- History – researching scientists, their discoveries and their impact on today's society.
- Computing – data handling and research.
- RHE – health and safety education.

The areas of study outlined by the National Curriculum have been allocated to year groups across the school, each with specific content to cover. These are outlined on the Long-Term Plans for each year group, allowing an overview of the progression of Science teaching throughout the school. A Progression Ladder for the subject details the increments in knowledge and skills in more detail from EYFS to the end of KS2.

Activities are planned, adapted and differentiated to meet the needs of all pupils. Differentiation is achieved through careful planning and organisation so that children are supported and challenged to progress within science. Differentiation and adaption during lessons enables all children to engage in the curriculum by providing learning tasks and activities that are tailored to their specific needs and abilities.

Children should be encouraged to predict, hypothesise, collect evidence, analyse and question the results they gather and evaluate what they have learnt. When possible, they are encouraged to work in groups to collaborate on decision making, organisation and experimental method, but they may also work individually where appropriate. Children use a variety of means to communicate and record their work.

Assessment:

Teachers will assess children's science work in a variety of ways to ensure they gain a full understanding of what each child has learnt, and what is needed to progress their understanding. Teachers will observe children during activities and during questioning. Teachers will provide written feedback when marking science work, in line with the School Marking Policy. They will also give oral feedback during sessions or to offer further support on misconceptions or understanding. At the end of each science topic, children will complete a short summative assessment, with questions covering key points from each science session. 'Sticky Knowledge' from each unit will be part of this assessment process. Teacher assessments are recorded termly on Scholar Pack and as part of KS1 and KS2 SATs data, which is reported to parents and the Local Authority.

Recording in Science:

The way in which science is recorded will vary across the school depending on age and ability. Teachers will ensure that a range of appropriate methods are used.

These may include:

- Written accounts, including: instructions, reports and explanations.
- Diagrams, drawings and pictures.
- Annotated diagrams.
- Spreadsheets (data collection).
 - Charts, graphs and tables.
 - Model making.

Achievement in Science:

Achievement in science is celebrated by:

- Displaying work.
- Communicating findings in class to others.
- Presenting of achievement certificates in achievement assembly.
- Celebrating and participating in British Science Week.

Safe Practice:

Children are encouraged to consider their own safety, and the safety of others, at all times, and are reminded of specific safety concerns at the start of any scientific investigation. Teachers will provide a safe and secure environment for children to learn and will have considered specific health and safety issues prior to the lesson. Any experiments or educational trips which are considered a particular risk may require a Risk Assessment Form to be completed after consultation with the Science Subject Leader and SLT.

Appendix 1:

Child-friendly science vision statement:

At Lady Bay School, we are all scientists, demonstrating our school values of curiosity and resilience. Our enjoyment and learning are enhanced when:

- We learn through practical, hands – on investigations and experiments, questioning what we do and working to deepen our knowledge and understanding.
- We encourage questioning, formulating opinions and ideas, learning co-operatively, with and from each other.
- We know that science is not confined to our classrooms and that we can use outdoor spaces as our laboratory, both around school and in the local environment.
- We use a wide range of resources, treating them with respect and following sensible practice to keep ourselves and others safe.

Appendix 2:

Intent, Implementation and Impact Statements.

Intent

At Lady Bay, our intent is for the science curriculum and teaching to equip all our children with the varied skills necessary to make sense of the increasingly complex world around them. We actively encourage our children to be curious (curiosity is one of our core values) and to develop an enquiring, open mind, ready to ask questions, make predictions, investigate and then offer interpretations of results and observations. We encourage our children to show determination and resilience in order to find the solutions to scientific problems and to understand the underlying scientific theories and laws and how these were developed over time.

We want our children to experience science lessons that are interesting, exciting and practical, wherever possible, and that give children time to explore the topic and instigate their own further investigations to prove their conclusions or provide evidence for their own ideas.

Widening their curriculum knowledge, we participate in Science Week every year, a themed week of investigations, visits and talks from science professionals across a broad range, allowing the children an insight into how their science knowledge could lead on to rich, interesting opportunities in the future. To celebrate anniversaries of scientific achievements or of famous (or not so well-known) scientists, we organise Science Days across Year Groups, Key Stages or the whole school.

Around school, science is given a prominent visual focus with displays in classrooms and shared areas as appropriate, exhibiting children's work and highlighting the different strands of the science curriculum.

Implementation

All the work in the long and medium planning for every year group is based on the National Curriculum requirements for science and most of the core topics have a strong practical basis. The Curriculum area of the website shows the development of the science strands through KS1 and

KS2 and across the school, there is a detailed progression ladder showing the incremental expansion of skills and knowledge throughout the subjects. Children are involved in the development of hands-on investigations and studies that harness their innate curiosity and encourages them to explore the world about them in a scientific way, learning scientific methodology and vocabulary. We benefit from experienced staff members who have previously studied or worked in areas of science and who maintain an enthusiastic interest in bringing the excitement of science magic to the children.

Impact

Lady Bay children will have a thirst for scientific knowledge. They will have enquiring, open minds and will ask questions until they are satisfied that they have an answer that they can understand and build on. The children will have a love of science, gained from exciting science activities and from listening to visiting science professionals in their community, such as university research staff and technicians, medical professionals, engineers, animal welfare professionals – the range of career openings from science education has huge potential. Enrichment by expanding science experiences outside of school with residential and educational trips will give further opportunities for our children to understand that they can and will be the scientists of the future. Within school, monitoring of science books, questioning children and scrutiny of planning will ensure that all children are benefitting from a consistent approach with high expectations for all children and differentiation to allow all children to access the subject at their level. This scrutiny will also identify that children are completing the key skills relevant to their age range, using correct and appropriate scientific vocabulary to enhance clarity when articulating scientific concepts and will ensure that Lady Bay are ready, at the end of Year 6, to move up to Key Stage 3 with all the skills necessary to achieve in the sciences.