

Policy for Science

1	Rationale	p.2
2	Aims of the policy	p.2
3	Objectives of the subject (incl. Principal focus of teaching for KS1 & KS2)	p.3
4	Organisation and resources	p.3
5	Inclusion	p.4
6	Planning (including assessment)	p.5
7	Role of the subject leader	p.5
8	Links to other school policies	p.6

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1. Rationale:

Science stimulates and excites pupils' curiosity about phenomena and events in the world around them. At Tetherdown School we help children to explore this through both direct practical experience and theoretical knowledge. This assists in engaging learners at many levels both within the subject and on a cross-curricular basis, thus helping to foster critical and creative thought. At our school, we follow the recommendations as set out in The National Curriculum in England: Science Programmes of Study, 11th September 2013, which states:

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

2. Aims:

At Tetherdown School we aim to:

- 1) Develop a positive attitude towards Science as an interesting and engaging subject in which all children gain success and enjoyment and understand its purpose in everyday life, as well as its historical development, cultural significance and impact for the future;
- 2) Stimulate and excite pupils' curiosity about changes and events in the world and help satisfy this through inter-disciplinary knowledge and conceptual understanding;
- 3) Engage pupils as learners at many levels through linking ideas with practical experience and in a cross curricular context;
- 4) Develop an understanding of the processes, methods and different types of scientific enquiries that can take place;
- 5) Provide opportunities for children to become familiar with correct scientific language and vocabulary;
- 6) Help pupils develop, model and evaluate explanations through scientific methods of collecting evidence using critical and creative thought;
- 7) Develop children's responsibility for their own health and safety and that of others when undertaking scientific activities;
- 8) Teach lessons which make effective links in utilising skills acquired in other curriculum areas to help reinforce and embed these, especially in Literacy, Numeracy and ICT.

3. Objectives:

Key stage 1 – Principal focus of teaching:

- Enable pupils to experience and observe different scientific phenomena;
- Encourage curiosity and questioning;
- Help to develop understanding of scientific ideas through use of different types of scientific enquiry;
- To encourage use of simple scientific language and communicate ideas in a variety of ways;
- Learning through the first-hand practical experiences with some use of secondary sources.

Lower key stage 2 – Principal focus of teaching:

- To broaden children's scientific views and ideas of the world around them;
- To encourage pupil's own questioning and decision making about which lines of scientific enquiry to pursue, methodology for doing this and how to make it a fair test;
- Finding things out using secondary sources of information;
- Drawing simple conclusions, using some scientific language, first, to talk about and, later, to write.

Upper key stage 2 – Principal focus of teaching:

- To enable pupils to develop a deeper understanding of a wide range of scientific ideas through a variety of methods;
- To encourage pupils to ask their own questions about scientific phenomena and analyse functions, relationships and interactions more systematically;
- To select the most appropriate ways to answer science questions using different types of scientific enquiry; carrying out comparative and fair tests and using a wide range of secondary sources;
- Drawing conclusions based on data and observations;
- Using evidence to justify ideas and scientific knowledge and understanding to explain findings;
- To introduce more abstract ideas and help children recognise how these help to understand and predict how the world operates.

4. Organisation and resources

Organisation

Tetherdown School usually teaches science through a thematic approach which means the time spent on science may vary from term to term and topic to topic. However, on average, teachers normally allocate two hours a week for Science, either through a topic, as stand-alone lessons or as blocked periods. All teachers are responsible for ensuring that they cover the various different strands of the Science curriculum. At Foundation Level, science is an integral part of topic work. Links are also made to other subjects so that pupils can develop and apply their scientific skills.

Teachers use a variety of teaching styles and methods of delivery in order to cater for the learning styles and differing needs of our pupils, including visual, auditory and kinaesthetic elements. Children are strongly encouraged to participate and contribute to their own learning by sharing prior scientific knowledge and experiences, as well as using skills of questioning and discussion.

In each year group, Science is taught in an imaginative and largely practical and investigative way. The children benefit from whole class or group teaching as well as being encouraged to work individually or in teams; finding out information, practising scientific skills of enquiry and thinking about and discussing scientific phenomenon using the appropriate language of concepts and processes.

A Typical Lesson - Science lessons have no imposed formal structure but may contain the following elements which should be covered over the course of a year:

Directing and instruction: sharing the objectives with the class and ensuring the pupils know what they are learning and giving information.

Discussion: what children already know from experience, what they have learnt so far, what they will be finding out about next.

Teaching and demonstrating: directly to the whole class or through group or individual work through showing, describing, modelling science using appropriate resources and visual aids.

Practical tasks or investigative work: working in groups or individually, practising scientific skills, designing and conducting investigations, finding out answers, being encouraged to think in a scientific manner.

Recording: writing about what they have found out, using the correct scientific vocabulary, applying ideas of concepts and processes learned, drawing charts, tables and diagrams, using ICT and other media to record what they have done or found out about.

Communicating and consolidating: sharing ideas, knowledge and what they have found out about with each other, the teacher, other classes and adults as appropriate and maximising opportunities to reinforce and develop what has been taught.

Evaluating pupils' responses: identifying mistakes and using them as positive teaching points and discussing misconceptions.

Summarising: reviewing during and towards the end of a lesson the science that has been taught and what pupils have learned.

Organisation and planning will be such that there will be clear differentiation to ensure access for all children. Furthermore, any investigations undertaken will be in line with our **Health and Safety Policy**.

Resources:

All year groups have access to a variety of published materials and schemes of work appropriate to the level of the pupils (including videos and DVDs). In addition, books pertaining to the topics children are studying are also available in the school library and some are available as group readers. Topic specific and skills based, practical equipment is stored within each year group room and in the science resource area. General science resources are also stored in the resources area and electronic resources can be found on the school's network. Children have access to laptops to carry out research and virtual experiments as well as science dictionaries, to help with clarification of language and vocabulary. Key words for the topic under study are displayed in classrooms as well. Smartboards provide a valuable interactive teaching tool and also allow children to see videos and simulations of more complex experiments or phenomenon that may not be easily accessible in the classroom.

5. Inclusion

All pupils are included in the science lessons and have experience of direct, interactive and lively teaching appropriate for their age and stage of development. Quality First Teaching is considered an entitlement for all pupils. Within the science lessons, teachers and teaching assistants will provide opportunities for children of all abilities to access learning and make progress. This may be achieved in a number of ways, including the use of differentiated planning, open ended investigations, support from adults or peers, carefully identified resources, Individual Education Plans for children with Special Educational Needs, or Specialised Teaching Assistant interventions.

All children, regardless of their race, sex, religious belief or ability are given equal opportunities to develop their knowledge, skills and understanding of Science. We will seek to take advantage of the many multi-cultural aspects of Science as we plan activities into a wide range of cross curricular subjects.

6. Planning and Assessment

Planning:

Planning will be in accordance with the New EYFS and the National Curriculum for Science.

At Tetherdown School, Science planning is carried out in the following way:

- Year group objectives based on the National Curriculum for Science are planned into Medium Term plans, with where possible, a cross curricular and topic based approach. These are then translated into weekly planning by staff in each year group.
- Weekly planning shows clear differentiation and at the end of each unit of work, the progress of the child / class will inform the weekly and medium term planning for the next unit of work, either as an individual area for progress / target or as a whole class target.
- The WALT/WILF are challenging and aimed towards higher ability teaching (adjusted according to ability).
- Home learning activities in science are carefully selected in order to consolidate the scientific learning that has taken place in class and to encourage involvement of parents.

Assessment:

Assessment will take place at three levels: short-term, medium-term and long term. These assessments will be used to inform teaching in a continuous cycle of planning, teaching and assessment. The EYFS profile provides the basis of a continual assessment tool in Reception classes. Assessment results are used to determine the level each child is working at and assists teachers in identifying gaps in children's learning.

Children's progress is recorded on Target Tracker in November, March and June for year 6 and at the end of the academic year for the remainder of the school. We use a variety of assessment practices including:

- On-going, formative assessment of pupils' progress through effective use of the plenary and weekly work, both oral and written,
- Use of termly assessments to check progress and inform planning, including assessments based on practical activities and investigations.
- Optional SATs papers in May for all year groups, except year 6, where optional science papers are sat in October, January and May (using the next year group up for the majority).
- Self-assessment, which is most effective when followed by the teacher or teaching support.
- Target setting for all children based on their individual needs and supported by "Target Tracker".

Parents are given the opportunity to discuss their child's progress in Science during the parent consultation meetings in November and February. The end of year report provides parents with further information on their child's progress, including a grade for effort and achievement.

7. Role of the Science subject leader

- Lead by example in the way they teach in their own classroom.
- Write, with the support of the Headteacher, the School Development Plan for Science.
- Monitor and evaluate standards in Science across the school.
- Prepare and effectively use the budget for Science.
- Maintain excellent subject knowledge in Science, including detailed knowledge of the requirements of the National Curriculum.
- Have a clear picture of pupil's abilities across the school through an analysis of data obtained from optional SATs papers, end of unit test papers, practical assessments, book scrutinies and Pupil Voice.
- Prepare, organise and lead Science INSETs where required.
- Ensure teachers and trainee teachers are familiar with current national policy.
- Support staff in making provision for all pupils, considering use of resources and allocation of time.

- Monitor and observe colleagues teaching and plans in relation to issues highlighted through monitoring, tracking, from curriculum working parties or requests from class teachers, with a view to identifying the support they need.
- Promote use of ICT within Science.
- Maintain and update subject leader file.
- Review and update of policy.

8. Links to other policies (available on the system: curriculum\policies)

- Learning and teaching policy
- Health and Safety policy
- SEN policy
- Equal opportunities policy
- Assessment policy
- Monitoring and evaluation policy