



Redhill Junior and Infant School

Science Policy

Policy Statement

At Redhill Junior and Infant School we believe that teaching and learning in Science should stimulate and excite children's curiosity about the world around them. It provides first hand experiences and support for children to develop enquiring minds; learning how to question and to discuss Science through collaboration. Starting from the views already held, children are given the opportunity to have their views challenged and ultimately improve their understanding. Practical investigations set in meaningful contexts help to develop investigative skills and allow pupils to take risks and learn from their mistakes, developing them into independent and resilient learners.

The implementation of the policy is the responsibility of all teaching staff and will be monitored by the Science Leader, Senior Leadership Team and Head Teacher.

Aims and Objectives

In teaching Science through the new National Curriculum (updated 2014), we are developing in our pupils:

- a positive attitude towards Science and an awareness of its fascination;
- an understanding of Science through a process of enquiry and investigation;
- confident and competent scientific knowledge and conceptual understanding through the disciplines of Biology, Chemistry and Physics;
- understanding of the nature, processes and methods of Science through different types of enquiry that help them to answer scientific questions about the world around them;
- an ability to reason, predict, think logically and to work systematically and accurately;
- an ability to communicate scientifically;
- the initiative to work both independently and in collaboration with others;
- the ability and meaning to use and apply science across the curriculum and real life;

- an awareness of Science in the real world, including the impact that famous scientists (male and female) have had on our world;
- the scientific knowledge required to understand the uses and implications of Science, today and for the future.

Teaching and Learning Style

EYFS will explore scientific concepts through an integrated topic based approach, delivered through 'Understanding of the World' sessions.

Overall, teachers will base their planning on the programmes of study for their relevant year groups; programmes of study for Science are set out year-by-year for Key Stages 1 and 2. We are required to teach the relevant programme of study by the end of the key stage. Within each key stage, staff have the flexibility to introduce content earlier or later than set out in the programme of study and may introduce key stage content during an earlier key stage if appropriate.

All planning should contain the following:

- a learning objective ('WALT') and success criteria ('Steps to Success') that clearly indicate the aim for the lesson and how children can achieve it;
- activities that are designed to develop solid scientific knowledge and understanding and that are varied and interesting;
- an age appropriate list of scientific vocabulary that is to be explored;
- a bank of key questions to be used for ongoing assessment – these may be based on principles of Bloom's Taxonomy;
- opportunities to develop scientific questioning and enquiry skills as shown through clear Working Scientifically links. Each unit should contain at least one experiment or scientific investigation.

Children record work in specific Science books and classes have a Science display area to show the standard of work to be produced as well as key concepts and facts.

Teachers are encouraged to use a variety of teaching styles and recognise that different learners access the curriculum in different ways. They account for this when planning visual, auditory and kinaesthetic activities. Depending on the nature of the session, children will access different tasks such as practical demonstrations, computing and written methods of recording. Where appropriate, specific science topics will be taught with a greater emphasis on 'Working Scientifically.'

Using the DR ICE model, high standards of teaching and learning in Science are achieved:

- deep thinking is used to 'hook' children into a topic and begin open ended discussion. Questioning deepens understanding (using Bloom's principle of taxonomy – recall, understanding, application, analysis, evaluation and creation).
- role modelling is applied through peer assessment, sharing techniques and using visualisers;
- children are aware of the aim of the lesson. They can talk about their learning and progress and may be aware of their next steps or Science target;
- challenge plays a role in encouraging all pupils to use scientific enquiry and enter their stretch zone, becoming pro-active learners. Work is age appropriate and then deepened and explored through the above;
- children are engaged and switched on through Science. They work in cooperation with others and have the chance to see that Science has real-world applications.

Risk Assessment

The safe use of equipment and consideration of others is promoted at all times.. The school's "Health and Safety Policy" is consulted for details regarding scissors, craft tools, electrical equipment, wet areas, heavy equipment and use of other tools. When planning activities, potential safety issues are identified in detail in lesson plans and acted upon accordingly. Children should be made aware of safety issues and, where appropriate, the reasons behind them. Science activities which take place away from the school's premises (for example, a local walk or trip to a Science museum) will require a risk assessment form to be filled in as per the school's trip policy.

Cross Curricular Links to Core Subjects

- **English:** Science contributes significantly to the teaching of English at Redhill School by actively promoting the skills of reading, writing, and spoken language. Children develop oracy through discussing scientific questions or presenting their findings to the rest of the class. They develop their writing ability by showing evidence in different genres such as a *recount* of an investigation, a non-chronological *report* on nutrition or an *explanation* of how food is digested. English targets are applied to writing and an English objective can be planned into a Science lesson as needed.
- **Mathematics:** The teaching of Science contributes significantly to children's mathematical understanding. Children develop skills in number and place value, measures and statistics through activities such as: measuring quantities, reading scaled increments including thermometers and beakers; creating their own data in pie charts, bar charts, tallies and line graphs and interpreting their results and drawing their own conclusions.

SMSC (Spiritual, Moral, Social and Cultural Development)

Science at Redhill aims to meet requirements for SMSC through teaching and learning. Spiritual development is shown through sense of enjoyment and fascination in learning about themselves, others and the world around them and the use of imagination and creativity in their learning willingness to reflect on their experiences. Social development is shown through working collaboratively with other pupils and respect and tolerance of those with different faiths and beliefs. Cultural development is shown through fostering an interest in exploring, improving understanding of and showing respect for different faiths and cultural diversity for example, when learning about evolution and inheritance in Year 6.

Computing

Planning, teaching and assessing Science at Redhill includes a variety of electronic tools. Staff are encouraged to record evidence with digital cameras and to make use of the school's net books and iPads during Science sessions. Staff have access to software such as 'Espresso', which includes a wide variety of videos, interactive games and printable activities. Apps can also be downloaded where required to support knowledge and skill acquisition. Pic Collage can be used to photograph practical Science in action.

Education City functions both as a teaching and an assessment tool, with learn screens and activities to discuss and a KS2 test option. Staff are also encouraged to set regular homework on here in line with National Curriculum and year group expectations.

Digital microscopes and visualisers are used in class to model careful observation, measurement and analysis of scientific evidence. Data loggers are also available with the Computing resources to record such changes as light, sound and temperature.

Time Allocation and Organisation

Science units are recorded on long term planning and most classes have one unit per half term. Where less than 6 units are available for a year group, revision and extension are included in planning. Year 6 undertake a revision of all primary units. (see appendix 1 Redhill Science Long Term Planning).

All children receive at least one hour of Science a week; where issues occur staff may choose to block Science into a series of consecutive lessons. Though all staff appreciate the need for boosting and tutoring in other subjects, we aim for all children to remain in Science lessons where possible to give them access to this core subject.

Incidental Science activities throughout the year such as World Science Day (10th November) and Mad Science assemblies will also be applied where appropriate.

Assessment

Science assessment in the Foundation Stage takes the form of observations and annotated samples of children's work and explorative play.

In KS1 and KS2, assessment is done through teacher observation and scrutiny of children's written and practical work in science.

- Each topic or unit of work will start with a mind map to assess children's existing knowledge and understating of a scientific concept. This ensures that Science teaching builds on what the children already know and understand. This mind map is then redone or annotated to show progress in knowledge and skill. Some classes also assess key vocabulary to be studied.
- Year 6 complete mini tests based on past 'SAT' style content in preparation for external Science sampling. As of 2016, unit tests from Twinkl are available for Key Stage 2 staff to assess progress and attainment through a unit. This is in lieu of Science end of KS2 sample testing.
- Detailed marking of guided groups is completed by the teacher and TA, with two groups per session being marked in detail. These groups also have a Closing the Gap task which is responded to and marked in line with the school's marking policy.
- Planning is evaluated after each lesson; these evaluations may include named children who have exceeded the learning intentions or needed additional support to meet the success criteria for that session. These are used as formative assessment strategies and inform the planning for following sessions.
- Children can also be given assessment tasks at the end of each unit to provide an opportunity to evaluate both the scientific knowledge they have learned and the skills needed to Work Scientifically. These need not be full investigations but should promote development of questioning and inquiry skills in the children.
- An assessment sheet is completed after each unit of work (see appendix 2). Children are grouped and highlighted according to the statements for each unit. This provides a class overview of attainment across the unit and clearly shows areas for development. In Year 6 this is used to group the children according to Science

attainment. This sheet is handed in to the Science Leader in order to build up a picture of Science attainment at Redhill.

Parents are informed of topics to be covered at beginning of each half term via the school website. There is an opportunity for parents to see work and discuss progress at the mid-year meeting and class teachers are always willing to show and discuss Science at other times. Progress in Science is formally reported in the end of year school report and parents' meetings.

Role of the Science Subject Leader

The Science Leader will:

- ensure that all children have access to the Science curriculum and are making progress;
- be enthusiastic about Science and promote good practice;
- write an Action Plan at the start of the academic year in line with the School Development Plan and review this regularly;
- identify their own personal strengths and areas for development and identify personal action points;
- audit staff Science subject knowledge and confidence as well as planning and teaching;
- scrutinise Science planning every year, ensuring coverage, pitch and progress of the curriculum across the school;
- undertake learning walks/lesson visits including themselves;
- carry out annual pupil voice interviews;
- monitor work books annually with the Head or Deputy Head as appropriate;
- complete a Subject Evaluation Report in the Spring term;
- manage the Science budget and reorder any resources including 'replenishables' such as batteries and soil;
- make sure that resources are kept tidy and up to date, including their own leadership file;
- book any Science whole school sessions such as Mad Science workshops;
- meet with Science Link Governor to review impact, report Science findings and next steps in the subject;
- continue to support staff with issues relating to the teaching and assessing of Science in school and ask for feedback;
- review the Science policy and update it on an annual basis;
- report to the Senior Leadership Team any issues or concerns arising from the above.

F Hilton
September 2016

	Autumn		Spring		Summer (Joining the Learning Summer 2)	
Year 1	Animals including Humans		Everyday Materials		Plants	
	Seasonal Changes (ongoing across the year)					
	Winter		Autumn		Spring	
	Summer					
Year 2 TBC	Animals inc. Humans	Electricity	Forces and Motion	Everyday Materials Food chains (farm)	Living Things and Habitats	Plants
Year 3	Plants	Forces and Magnets	Rocks	Animals inc Humans (Teeth/Nutrition)	Light and Shadows	
Year 4	Living Things and Habitats	Animals inc Humans (digestion/food chains)	Sounds	Electricity	States of Matter	
Year 5 TBC	Living Things and Habitats	Earth and Space	Forces	Animals inc. Humans (aging/puberty)	Properties & Changes of Materials	Revision
Year 6 this year	Living Things and Habitats	Animals and Humans (Circulation)	Electricity	Light	Evolution and Inheritance	

APPENDIX 1 – Redhill Science Long Term Planning

Science Assessment- Animals including Humans

Year Group: Y2 Term: Assessed by: _



Statutory Requirements:

- notice that animals, including humans, have offspring which grow into adults
- find out about and describe the basic needs of animals, including humans, for survival (water, food and air)
- describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

Name	Assessment Statements
1.	These children are commencing:
2.	I know some young animals change as they get older. e.g egg, chick chicken; tadpole, frog.
3.	I know some foods I need to eat to stay healthy and grow well.
4.	
5.	These children are developing:
6.	All of the above AND:
7.	I can observe and record how young animals change as they get older. e.g egg, chick chicken; tadpole, frog.
8.	
9.	I can explain why it is important to keep clean, exercise and eat well to stay healthy.
10.	These children are secure:
11.	All of the above AND:
12.	I can find out what other animals need to have to stay alive and healthy.
13.	(contact with local vets RSPCA,)
14.	<u>Working Scientifically (whole class):</u>
15.	<ul style="list-style-type: none"> • asking simple questions and recognising that they can be answered in different ways
16.	<ul style="list-style-type: none"> • observing closely, using simple equipment
17.	<ul style="list-style-type: none"> • performing simple tests
18.	<ul style="list-style-type: none"> • identifying and classifying
19.	<ul style="list-style-type: none"> • using their observations and ideas to suggest answers to questions
20.	<ul style="list-style-type: none"> • gathering and recording data to help in answering questions.
21.	
22.	
23.	
24.	
25.	
26.	
27.	
28.	<div style="display: flex; justify-content: space-around; align-items: center;"> = Pupil Premium = SEND pupil </div>