Shinewater Primary School

Science

Swale Academies Trust

HOW WE TEACH SCIENCE AT SHINEWATER

Science is a systematic investigation of the physical, chemical and biological aspects of the world which relies on first hand experiences and on other sources of information. The scientific process and pupils' problem-solving activities will be used to deepen their understanding of the concepts involved. The main aspects of science to be studied will be determined by the programmes of study of the National Curriculum 2014.

AT SHINEWATER WE....

1. *Build on pupils' curiosity and sense of awe of the natural world.
* Develop in pupils a general sense of enquiry which encourages pupils to question and make suggestions.
* Encourage pupils to predict the likely outcome of their investigations and practical activities.

2. * Promote pupils' enjoyment and interest in science and an appreciation of its contribution to all aspects of everyday life.
* Develop a knowledge and appreciation of the contribution made by famous scientists to our knowledge of the world including scientists from different cultures.
* Encourage pupils to relate their scientific studies to applications and effects within the real world.

3. Promote open mindedness, self-assessment and perseverance when developing the skills of investigation.

4. *Immerse pupils in a variety of structured activities and open-ended investigative work.
*Progressively develop pupils' ability to plan, carry out and evaluate simple scientific investigations and to appreciate the meaning of a 'fair test' from KS2.

5. Provide:
*Activities to develop good observational skills.
* Practical work using measuring instruments which develop pupils' ability to read scales accurately.
* Structured activities to develop understanding of a scientific concept.
* Opportunities for pupils to carry out the whole investigative process individually or in small groups.

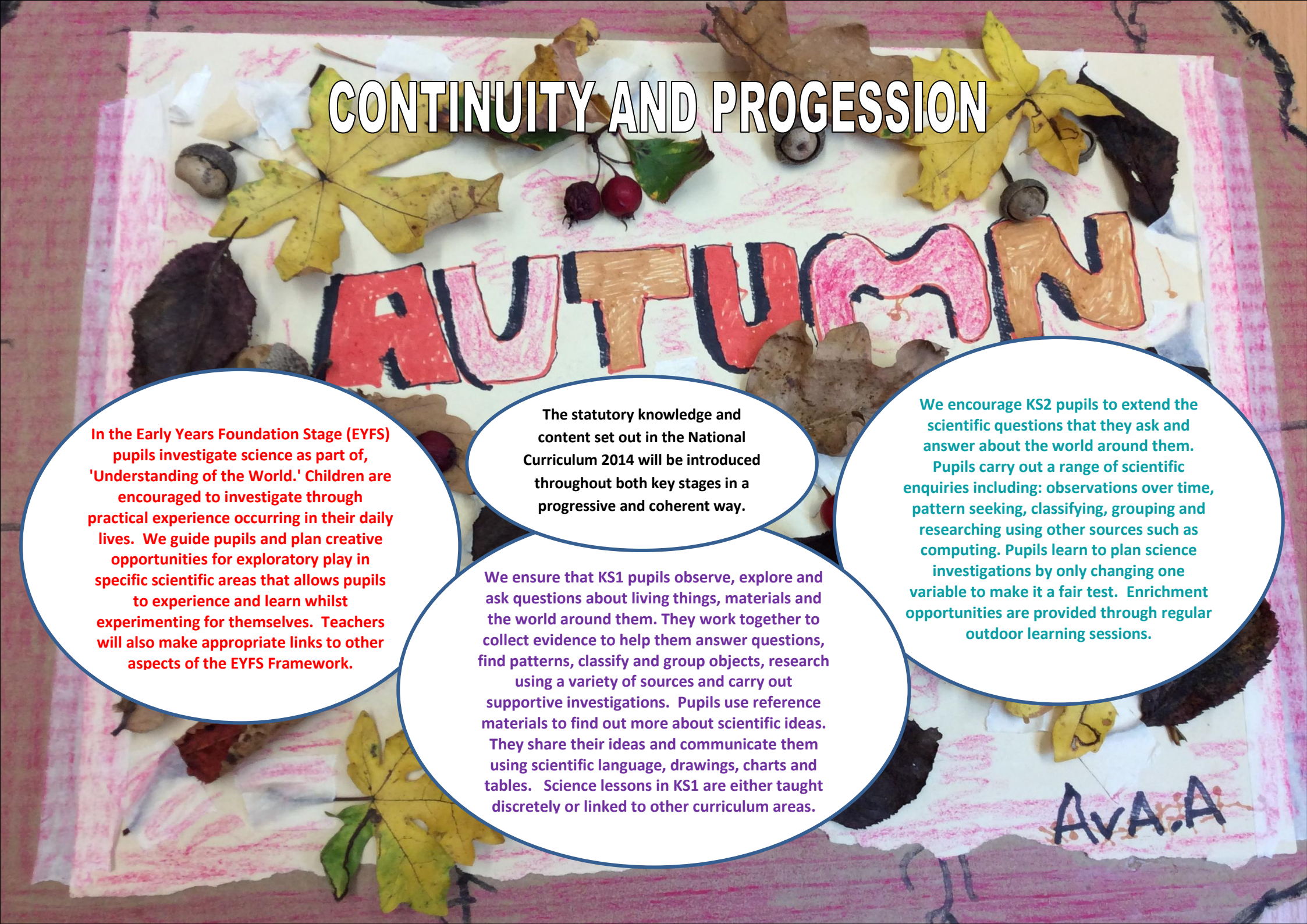
6. * Introduce pupils to the language and vocabulary of science.
* Give pupils regular opportunities to use the scientific terms necessary to communicate ideas about science.

7. * Develop pupils' use of computing in investigating and recording.
* Give pupils opportunities to use computing equipment (video, digital camera, data logger) to record their work and to store results for future retrieval.
* Ensure that pupils have access to the Internet to obtain information.

8. * Extend the learning environment for our pupils across the school using our specialist teacher in the outdoor learning area and the locality.

9. * Make meaningful cross curricular links, e.g. the importance of a 'healthy lifestyle' for our pupils.

CONTINUITY AND PROGESSION



In the Early Years Foundation Stage (EYFS) pupils investigate science as part of, 'Understanding of the World.' Children are encouraged to investigate through practical experience occurring in their daily lives. We guide pupils and plan creative opportunities for exploratory play in specific scientific areas that allows pupils to experience and learn whilst experimenting for themselves. Teachers will also make appropriate links to other aspects of the EYFS Framework.

The statutory knowledge and content set out in the National Curriculum 2014 will be introduced throughout both key stages in a progressive and coherent way.

We ensure that KS1 pupils observe, explore and ask questions about living things, materials and the world around them. They work together to collect evidence to help them answer questions, find patterns, classify and group objects, research using a variety of sources and carry out supportive investigations. Pupils use reference materials to find out more about scientific ideas. They share their ideas and communicate them using scientific language, drawings, charts and tables. Science lessons in KS1 are either taught discretely or linked to other curriculum areas.

We encourage KS2 pupils to extend the scientific questions that they ask and answer about the world around them. Pupils carry out a range of scientific enquiries including: observations over time, pattern seeking, classifying, grouping and researching using other sources such as computing. Pupils learn to plan science investigations by only changing one variable to make it a fair test. Enrichment opportunities are provided through regular outdoor learning sessions.

CROSS CURRICULAR LINKS

Science pervades every aspect of our lives and we will create meaningful links with different subjects through learning journey topics. We plan for pupils to practise and apply the skills, knowledge and understanding acquired during science lessons to other areas of the curriculum. We will also ensure that pupils realise the positive contribution of both men and women to science and the contribution from those of other cultures.

We will not only emphasise the positive effects of science on the world but also include environmental issues which some human activities can produce. Wherever possible science work will be related to the real world and everyday examples will be used.

COMMUNITY LINKS

Pupils have the opportunity to attend an interactive science club. We also have positive links with the Herstmonceux Science Centre which provides outreach enrichment activities for our pupils. We plan for pupils to experience science first hand through school visits linked to topics such as the Seven Sisters Country Park or the local science centre. Pupils can participate in a seasonal after school gardening club run by the science team at Shinewater. Parents and carers are invited to attend year group *fabulous finish* science events to celebrate their children's achievements.

Please refer to the whole school inventory. Topic resources are stored in the resources room in labelled containers. Books and artefacts should be present on display and accessible to pupils in their classrooms. Displays in classrooms, base areas or around the school should include key scientific vocabulary and age or topic appropriate questions to challenge and develop pupils' scientific understanding. We use homework to support class activities.

RESOURCES

INVESTIGATION MENU

1. Title (KS1 & 2)
An experiment to show...
An investigation into...
How to measure...
Try to pose as a question

2. Introduction (KS2)
Give background information from what you know already or have researched

3. Prediction (KS1 & 2)
This is a guess. What do you think will happen? You don't have to be right.

11. Conclusion (KS1 & 2)
What have you found out from your investigation and results.

At Shinewater we have developed an investigation menu that children are introduced to in KS1 and become increasingly familiar with throughout KS2. Teachers can also focus on teaching a specific element of an investigation from the menu. Pupils at KS2 will record one complete investigation for each National Curriculum topic.

4. Hypothesis (KS2)
This is an educated guess. What do you think will happen and why do you think that?

10. Results (KS1 & 2)
Choose how to present your results depending on the data gathered: pattern-seeking, observation/measurement over time

8. Diagram (KS1 & 2)
Draw a neat and labelled diagram and use a ruler when necessary

5. Variables (KS2)
Independent variable
Dependent variable
Control variable

9. Risk Assessment (KS2)
Hazards, Risks, Control Measures

7. Method (KS1 & 2)
Step by step so that another person can completely understand it.

6. Equipment List (KS2)
List all equipment necessary and use the correct vocabulary

HEALTH AND SAFETY

We teach pupils to use scientific equipment safely during practical activities. Class teachers and teaching assistants will check equipment regularly and remove any damaged equipment. A simple risk assessment will be carried out for all practical activities any perceived hazards will be considered by the Co-Headteachers.

Shinewater is a member of CLEAPSS and we will refer to this resource for further information regarding hazards and practical procedures. Specialist pieces of equipment and those posing a potential safety risk will be held centrally and staff access these when required.

EQUALITY OF OPPORTUNITY

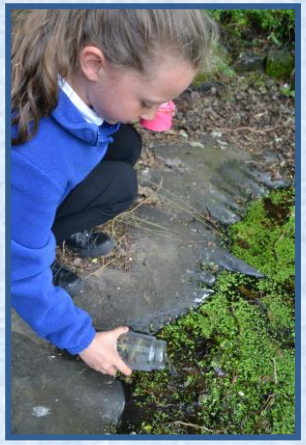
We ensure that all pupils have equal access to the science curriculum and its associated practical activities. Senior/phase leaders, class teachers and teaching assistants at Shinewater are responsible for ensuring that all children, irrespective of gender, learning ability, physical disability, ethnicity and social circumstances, have access to the whole curriculum and make the greatest possible progress.

The first planning layer is the whole school science curriculum overview which determines the topics to be delivered in year groups each term. Layer 2 documents all statutory learning objectives for each science topic according to year group. This information is also included on pacing grids. Planning reflects pupils' interests, current events, teaching styles, the use of support staff and resources available. We provide a suitable range of differentiated science activities appropriate to pupils' ages and abilities, including greater depth learning experiences.

We give more able pupils open-ended tasks and opportunities for further scientific research. For pupils with SEND, the task will be adjusted or pupils may be given extra support. The grouping of pupils for practical activities will take account of their strengths and weaknesses. This will ensure active participation for all and promotes the development of confidence and self-esteem.

RECORDING AND MARKING

Most of the learning for science at KS1 is completed through the use of first-hand practical experiences and, therefore, recording will include photographic or video evidence. Recorded work in books is marked regularly and clearly, as an aid to progression and to celebrate achievement. When appropriate, pupils may be asked to self-assess or peer assess their finished work. Marking for improvement comments in a child's book must be relevant to the WALT and/or success criteria to assist pupils to focus on future targets.



ASSESSMENT AND REPORTING

We assess whether pupils are working at/above or below the expected level for their age based on their understanding and application of the content of the National Curriculum 2014. The assessment lead will support teachers to enter data in O Track for each pupil as the relevant topic is being delivered. The assessment of 'working scientifically' is ongoing throughout each year. Progress and attainment is reported to parents or carers through parents' evenings and end of year reports.

With the support of senior and phase leaders, the science team is responsible for monitoring the quality of teaching and standard of pupils' work. They will offer support for colleagues to develop their practice, be informed about current developments in the subject and provide a strategic direction for the subject in the school. Standards of teaching and learning will be monitored using lesson observations, learning walks, work scrutiny and data analysis at agreed intervals.

MONITORING