Stanton Community Primary School

Science Policy

Science Policy Contents

1. Curriculum Statement

Intent

Our intention when planning and delivering the science curriculum at Stanton Primary School is to foster and develop our pupils' curiosity in the subject, whilst also helping them to fulfil their potential. Moreover, we aim to prepare our pupils for life in an increasingly scientific and technological world. We intend learning in science to be through systematic investigations of the physical, chemical and biological aspects of their lives that rely mainly on first hand experiences, leading to them being equipped to answer scientific questions about the world around them. We also encourage the children to ask questions in their learning in order to be more inquisitive. It is our intention that, through investigating in science, pupils will continue to deepen their respect for the world and all its phenomena, and increase their care and appreciation of it.

We believe science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Throughout the programmes of study, the children will acquire and develop the key knowledge that has been identified within each unit and across each year group, as well as the application of scientific skills. We ensure that the Working Scientifically skills are built-on and developed throughout children's time at the school so that they can apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts confidently and continue to ask questions, gather accurate measurements, present their findings in a variety of ways and be curious about their surroundings. We believe that having key vocabulary for each unit of work will allow the children to have an understanding of what they are learning and help to ingrain specific concepts.

We believe at Stanton Primary School that children should be exposed to a variety of scientists and inventors regardless of gender, race, age and nationality in order to see the vast amount of fields that there are in science and the variety of people who are in this profession. It also very important that as a school we discover and learn about scientists who shape what we know today. This can include scientists extremely famous in their fields, scientists in our local area, scientists that may not be particularly well known as well in order to get balanced views. There are also scientists in the local area that as a school we feel are important to focus on including those at the local sugar beet factory, as well as companies such Treatt, Animacs and Hooks all of whom have a research and development team from the local area.

We feel as a school it is important to relate science to everyday life and give everyday examples in order for the children put what they are learning into real life. We also aim to develop an appreciation of its contribution to all aspects of everyday life. By extending the learning environment for our pupils via environmental areas and the locality this will allow the children to understand scientific concepts they are learning in real life practice. As a school we are lucky enough to have large grounds where the children are able to explore the natural habitat.

Implementation

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all pupils are capable of achieving high standards in science. Our whole school approach to the teaching and learning of science involves the following;

- Science will be taught in planned and arranged topic blocks by the class teacher, to have a project-based approach. This is a strategy to enable the achievement of a greater depth of knowledge.

- Through our planning, we involve problem solving opportunities that allow children to apply their knowledge, and find out answers for themselves. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom. Planning involves teachers creating engaging lessons, often involving high-quality resources to aid understanding of conceptual knowledge. Teachers use precise questioning in class to test conceptual knowledge and skills, and assess pupils regularly to identify those children with gaps in learning, so that all pupils keep up.

- We build upon the knowledge and skill development of the previous years. As the children's knowledge and understanding increases, and they become more proficient in selecting, using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.

- Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics.

- Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding. Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning and workshops with experts.

• Children are offered a wide range of extra-curricular activities, visits, trips and visitors to complement and broaden the curriculum. These are purposeful and link with the knowledge being taught in class.

• Regular events, such as Science Week or project days, allow all pupils to come off-timetable, to provide broader provision and the acquisition and application of knowledge and skills.

Impact

The successful approach at Stanton Community Primary School results in a fun, engaging, high-quality science education, that provides children with the foundations and knowledge for understanding the world. Our engagement with the local environment ensures that children learn through varied and first hand experiences of the world around them. Frequent, continuous and progressive learning outside the classroom is embedded throughout the science curriculum. Through various workshops, trips and interactions with experts, children have the understanding that science has changed our lives and that it is vital to the world's future prosperity. From this exposure to a range of different scientists from various backgrounds, all children feel they are scientists and capable of achieving. Children at Stanton Community Primary School overwhelmingly enjoy science and this results in motivated learners with sound scientific understanding.

2. Teaching and Learning

Science is good when;

- We apply our 'working scientifically skills' to solve problems, explore, observe and investigate.

- We ask questions and work together to discover the answers

- Science has a wow factor and promotes a sense of awe and wonder

- Our learning is enhanced by outdoor learning, specialist visitors and we have access to quality resources

- We are involved in creating and carrying out investigations and can share and explain our ideas and conclusions. These posters are on display on the working wall in science and referred to throughout the coverage of each science topic.

- Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom.

- Teachers ask a range of questions which enable all children to take part, listening carefully to answers and taking learning forward, using open and closed questions and allowing children time to think.

- Planning involves teachers creating engaging lessons, often involving high-quality resources to aid understanding of conceptual knowledge

- Teachers use precise questioning in class to test conceptual knowledge and skills, and assess pupils regularly to identify those children with gaps in learning, so that all pupils keep up.

- New vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics.

- Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career. The key knowledge for each topic and across each year group is mapped across the school and checked at the end of each science topic.

- Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding.
- Teachers find opportunities to develop children's understanding by accessing outdoor learning.

Scientific knowledge and conceptual understanding

The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Children's starting points are identified at the beginning of each science topic and the children are able to convey and record what they know already. At the end of the block, children's knowledge is checked in line with the key knowledge identified prior to the teaching block. Children are provided with Knowledge Organisers for each topic and are regularly asked to apply the knowledge they are given through different activities including quizzes.

Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary and teachers ensure that this is developed within each lesson and throughout each science topic. The science curriculum ensures that children are provided with regular opportunities to apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. The nature, processes and methods of science 'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group and this is embedded within lessons and focuses on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils are given opportunity to seek answers to questions through collecting, analysing and presenting data.

Spoken language

The national curriculum for science reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. At Stanton Community Primary School, science lessons provide a quality and variety of subject specific language to enable the development of children's confident and accurate use of scientific vocabulary and their ability to articulate scientific concepts clearly and precisely. They are encouraged and assisted in making their thinking clear, both to themselves and others, and teachers ensure that pupils build secure foundations by using discussion to probing and remedying their misconceptions.

3. Assessment

Children's progress is continually monitored throughout their time at Stanton Community Primary School and is used to inform future teaching and learning. By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study as set out in the National Curriculum. These are set out as statutory requirements. We also draw on the non-statutory requirements to extend our children and provide an appropriate level of challenge. Children receive effective feedback through teacher assessment, both orally and through written feedback.

Assessment for learning is continuous throughout the planning, teaching and learning cycle. However children are more formally assessed half termly in KS1 and KS2 using a variety of methods:-

- Observing children at work, individually, in pairs, in a group, and in classes.

- Questioning, talking and listening to children

- Considering work/materials / investigations produced by children together with discussion about this with them.

The programme of study is responsive to the children's starting points, as well as their specific interests. It also ensures a focus on the key identified knowledge of each topic, which is mapped within and across year groups to ensure progression. At the end of each blocked science topic, this key knowledge is checked. Outcomes of work also evidence its acquisition.

In EYFS, we assess the children's Understanding of the World according to the Development Matters statements and some aspects of Expressive Arts Design are also science based.

4. Planning and Resources

Planning is a process in which all teachers are involved. We use the PLAN Science documentation to inform teacher's planning as well as Explorify an online resource. The key knowledge and skills of each science topic is also informed by the Associate of Science Education's 'Planning Matrices'. Teachers are able to source further support and resources, in line with national pedagogy, from the National Stem Centre and other online resources.

Further evidence of 'good science' taking place in classrooms includes:

- An active learning environment and relevant support/vocabulary for age phase on the working walls during science topic coverage.

- Children being encouraged to ask and answer questions and discuss their work and ideas.

- Children devising and conducting their own investigations within the context of the relevant curriculum content, as well as being given opportunities to develop their working scientifically skills.

- Children recording their findings in a variety of ways.

- Children showing enjoyment in the activities they are undertaking.

- The cross curricular teaching of science.

We have sufficient, high-quality science resources to aid and support the teaching of all units and topics taught, from EYFS to Y6. We keep these in a central store, where they will be labelled and easily accessible to all staff. EYFS have a range of resources kept in classes, for simple access for children during exploration. The library contains a good supply of science topic books to support children's individual research.

5. Organisation

Science will be taught in planned and arranged into topic blocks by the class teacher. There are 5 topics (4 topics for Year 2) that can be covered at any point throughout the year.

These topics will be covered for each year group

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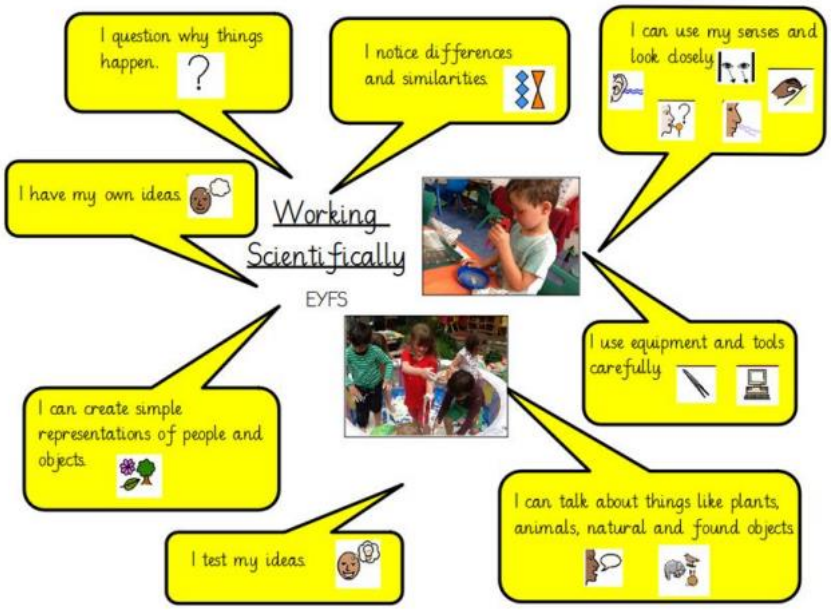
Year 1	Materials Seasons (introduction)	Animals	Humans	Seasonal Change	Plants
Year 2	Living things and their habitat	Animals including humans		Uses of everyday materials	Plants
Year 3	Forces and magnets	Animals including humans	Rocks	Light	Plants
Year 4	Living things and their habitats	Animals including humans	Sound	States of matter	Electricity
Year 5	Living things and their habitats	Animals including humans	Earth and space	Properties and changes of materials	Forces
Year 6	Living things and their habitats	Animals including humans	Evolution and inheritance	Light	Electricity

6. EYFS

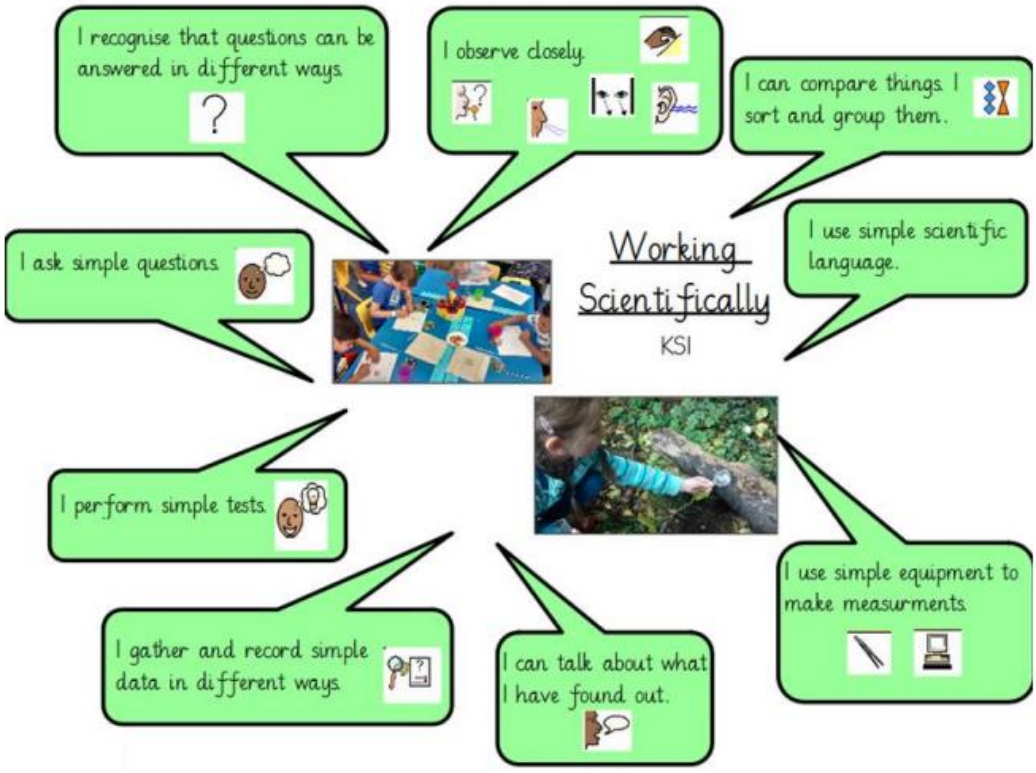
The Foundation Stage deliver science content through the 'Understanding of the World' strand of the EYFS curriculum. This involves guiding children to make sense of their physical world and their community through opportunities to explore, observe and find out about people, places, technology and the environment. They are assessed according to the Development Matters attainment targets.



7. KS1 and KS2

Key stage one:
The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways.

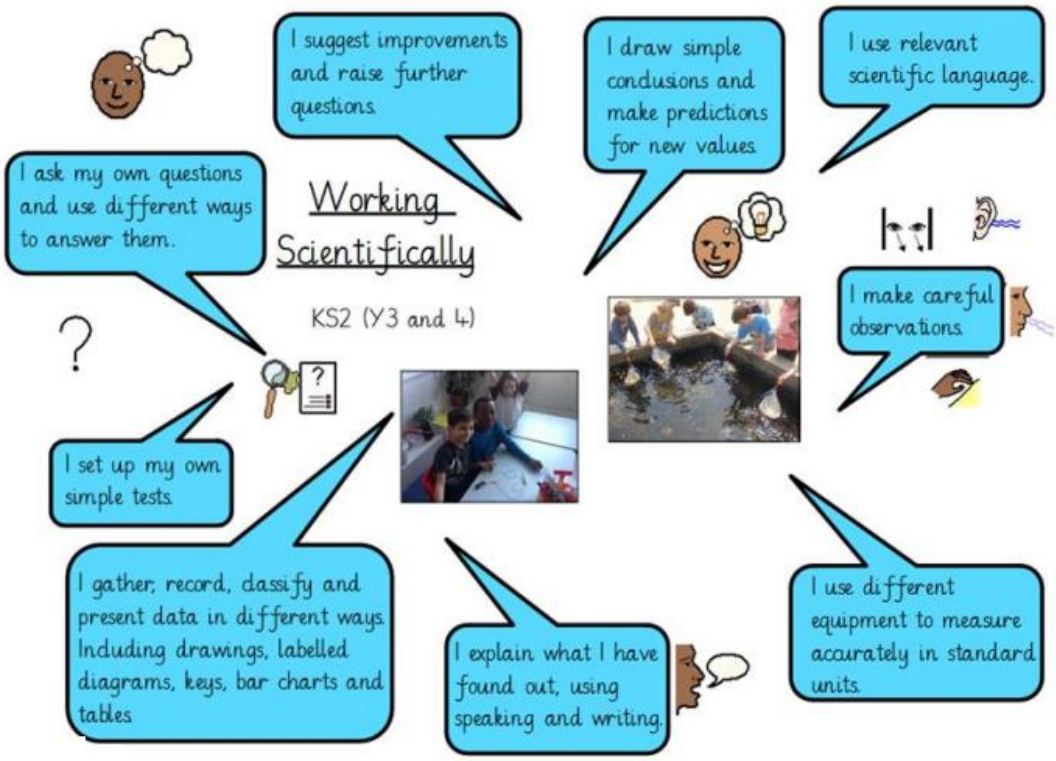
Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos. 'Working scientifically' is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.



Lower Key Stage two:

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

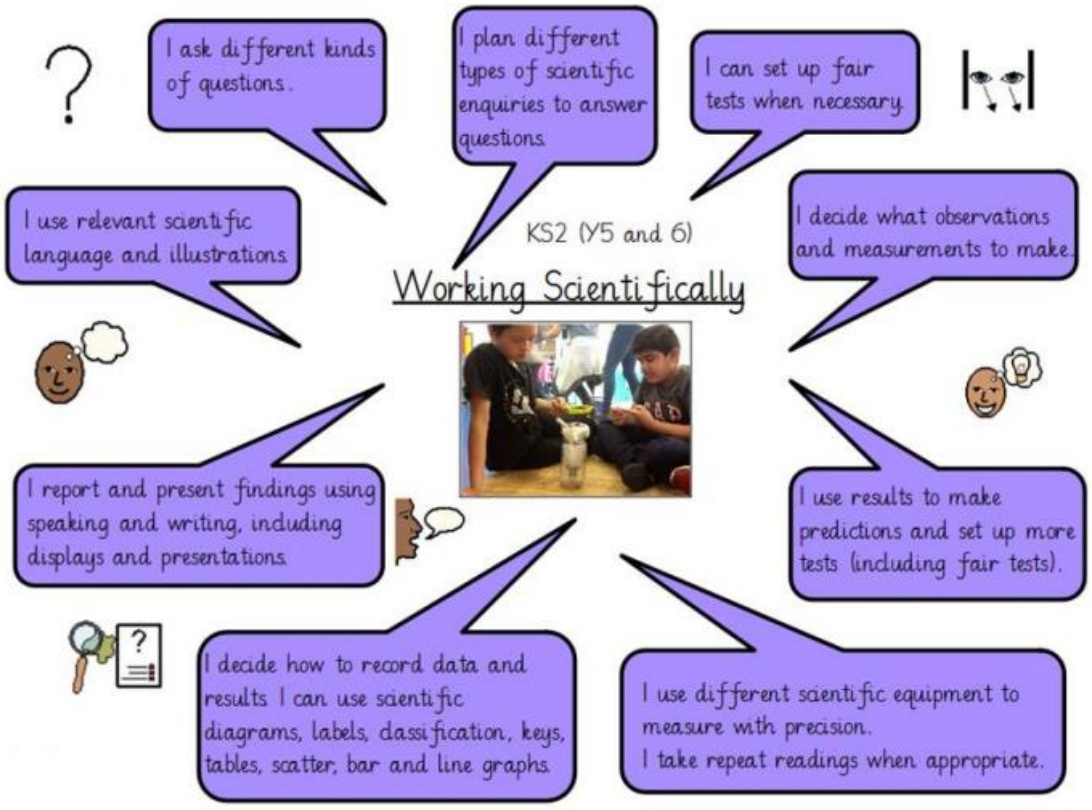
'Working scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.



Upper Key Stage two:

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

'Working and thinking scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read, spell and pronounce scientific vocabulary correctly.



8. Equal Opportunities (eg Gender, race)

At Stanton Community Primary School we are committed to providing all children with an equal entitlement to scientific activities and opportunities regardless of race, gender, culture or class.

9. Inclusion (eg EAL/SEN/PPG/Provision for HA)

In school we aim to meet the needs of all our children by differentiation in our science planning and in providing a variety of approaches and tasks appropriate to ability levels. This involves providing opportunities for SEND children to complete their own projects, with support, to develop speech and language skills, as well as scientific skills and knowledge. This will enable children with learning and/or physical difficulties to take an active part in scientific learning and practical activities and investigations and to achieve the goals they have been set. Some children will require closer supervision and more adult support to allow them to progress whilst more able children will be extended through differentiated activities. By being given enhancing and enriching activities, more able children will be able to progress to a greater depth of knowledge and understanding appropriate to their abilities. Teachers will use the school's inclusion planning to ensure that a range of strategies are used which include and motivate all learners, ensuring that optimum progress is made throughout each part of the lesson.

10. Role of the Subject Leader

It is the responsibility of the subject leader to monitor the standards of children's work. The subject leader is also responsible for supporting colleagues in their teaching, for being informed about current developments in the subject, and for providing a strategic lead and direction for science in the school. The subject leader monitors the budget, resources science topics and books trips and workshops to support learning. The subject has specially-allocated time for fulfilling the task of reviewing samples of children's work, training, liaising with other subject leaders from other schools and organising science week.

11. Parents (Including Homework)

Parental input is highly valued and parents are regularly invited and welcomed into school to share their own expertise with the children. Children may receive science homework based on their current topic.

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