

# WREN'S NEST PRIMARY SCHOOL

Science Curriculum Policy

"The important thing is to never stop questioning,"  
Albert Einstein.

 ***'We are Scientists'*** 

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# Teaching of Science at Wren's Nest Primary School

## Aim

Science is a body of knowledge built up through questioning and experimental testing of ideas. Science is also methodology; a practical way of finding reliable answers to questions we may ask about the world around us. It is about developing pupils' ideas and ways of working that enable them to make sense of the world in which they live through investigation. Throughout the school, the children will be developing scientific skills that will lead to their work as scientists, planning and undertaking scientific investigations.

Through the teaching of Science, we would like to:

- ❖ Prepare our pupils for life in an increasingly scientific and technological world.
- ❖ Help our pupils to see the relevance of Science to the world around them, using practical experiences as often as possible.
- ❖ Build on our pupils' natural curiosity about the world around them.
- ❖ Develop a scientific approach to answering scientific questions.
- ❖ Provide our pupils with an enjoyable experience of Science, so that they will develop a deep and lasting interest and may be motivated to study Science further.

## Planning

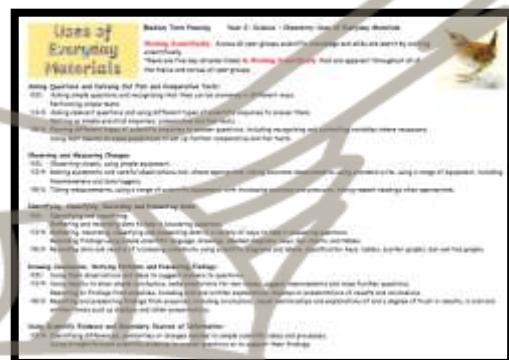
At Wren's Nest we have developed the Medium Term Planning for each topic in Science for every year group (See Appendix A for example).

We continually develop our planning and reflect upon it, editing it according to what works best for our children. Each topic has a selection of tiered vocabulary which will be included in the lessons and displayed on the Science 'Working Wall'. The tiers are:

Tier 1: Simple every day vocabulary the children should be familiar with

Tier 2: Scientific vocabulary the children are less familiar with

Tier 3: More sophisticated scientific vocabulary that is usually associated with a particular topic e.g. thermometer, rain gauge, comparison for Year 1 Seasonal Changes.



## Example

### Year 1: Seasonal Changes

Key Vocabulary		
Tier 1	Tier 2	Tier 3
Day	Observe	Record
Hours	Measure	Data
Night time	Autumn	Scientific/scientifically
Month	Winter	Comparison
Weather	Spring	Patterns
Clothing	Summer	Explanations
Outside	Gather	Monitor
Changes	Equipment	Investigate
	Day length	Thermometer
	Rain gauge	Weather Station/Symbol
	Wind direction	Observe
	Weather vane	Measure
	Temperature	Rain Gauge
	Thermometer	Weather Vane
	Rainfall	
	Weather symbol	

By having a selection of words from each tier added to the displays in the classroom, relevant to each lesson, the children's vocabulary will be continually developed and it also promotes inclusion for children of all abilities.

The Science Co-ordinator has worked closely with a Science Advisor/STEM Ambassador (N. Burfoot) from the University of Worcester in regards to developing the 'Working Scientifically' element of the Medium Term Planning. N.Burfoot has contributed towards science activities within school (e.g. Science Day for KS1 during Science Week 2020) and will be supporting teachers further through CPD.



## Whole School Topic Overview

A Whole School Topic Overview has been created to show the topics each year group will be teaching and during which term (see Appendix B). This shows the progression through the school and allows resources to be available when needed.

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Key Stage 1	Seasonal Changes	Seasonal Changes	Seasonal Changes	Seasonal Changes	Seasonal Changes	Seasonal Changes
	Seasonal Changes/Natural objects and world	Seasonal Changes/Natural objects and world	Seasonal Changes: Freezing and melting, signs of new life, exploring the natural world	Seasonal Changes: Freezing and melting, signs of new life, exploring the natural world	Life Cycles, Seasonal Changes, Freezing and melting, signs of new life, exploring the natural world	Life Cycles, Seasonal Changes, Freezing and melting, signs of new life, exploring the natural world
Key Stage 2	Seasonal Changes/Natural objects and world	Seasonal Changes/Natural objects and world	Seasonal Changes: Freezing and melting, signs of new life, exploring the natural world	Seasonal Changes: Freezing and melting, signs of new life, exploring the natural world	Life Cycles, Seasonal Changes, Freezing and melting, signs of new life, exploring the natural world	Life Cycles, Seasonal Changes, Freezing and melting, signs of new life, exploring the natural world
	Animals including Humans, Seasonal Changes	Animals including Humans, Seasonal Changes	Uses of Everyday Materials, Seasonal Changes	Uses of Everyday Materials, Seasonal Changes	Plants, Seasonal Changes	Plants, Seasonal Changes
Key Stage 3	Materials and their Properties	Materials and their Properties	Living Things and their Habitats	Plants	Animals including Humans	Animals including Humans
	Rocks and Soils	Rocks and Soils	Forces and Magnets	Plants	Animals including Humans	Light
Key Stage 4	Animals including Humans	Animals including Humans	Electricity	Changes of Matter	Sound	Living things and their habitats
	Earth and Space	Impacts and changes of materials	Living Things and their Habitats	Animals including Humans	Forces	Forces
Key Stage 5	Forces and their effects	Insulation and Interference	Living Things and their Habitats	Animals including Humans	Light	Electricity

Wren's Nest Primary School - 2014-15

**WHY?**

- Our vision is achieved as the knowledge, skills and attitudes that children learn are embedded in their lives.
- Science knowledge and understanding is important as they will use these skills and attitudes in their lives.
- To give children the opportunity to learn about the world around them through their own experiences and observations.
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**WHAT?**

- Build on previous knowledge, understanding and learning to meet needs.
- Develop the children's scientific knowledge and skills to enable them to apply this knowledge to their lives.
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**HOW?**

- Use a variety of resources to engage children and support their learning.
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## Curriculum Overview

The Curriculum Overview (see Appendix C) identifies 'why' we teach Science the way we do at Wren's Nest Primary School, 'how' we teach it and 'what' we do to monitor Science so that staff are supported and children have the experiences they need to become successful learners and scientists.

## Working Scientifically - Science Progression of Skills

Wren's Nest Primary School  
Science Progression of Skills

SCIENCE Progression of Skills	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Classifying and Measuring Change	Classify the objects and materials e.g. On the basis of shape or colour.	Begin to observe objects, using simple equipment e.g. A simple microscope.	Classifying objects using simple equipment e.g. A simple microscope.	Begin to make measurements using simple equipment e.g. A simple microscope.	Classifying objects using simple equipment e.g. A simple microscope.	Begin to make measurements using simple equipment e.g. A simple microscope.	Classifying objects using simple equipment e.g. A simple microscope.

The Science Progression of Skills (see Appendix D) related to Working Scientifically has been created to demonstrate the specific scientific skills which the children will build upon each year. Although some areas of this document are not statutory in the National Curriculum, we have developed the skills and reflected on what elements the children would need to build upon before they can reach them. E.g. Using Scientific Evidence and Secondary Sources of Information is a skill required by the end of Key Stage 2, however, we have started to introduce these skills within EYFS and KS1.

## Topic Progression of Skills

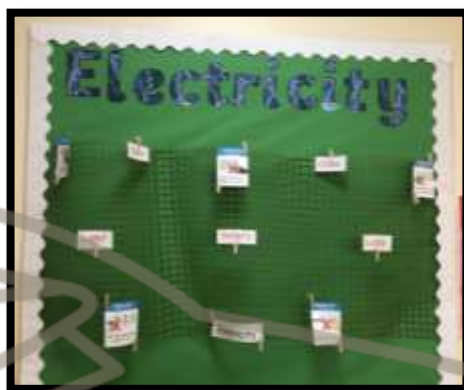
This document has been produced in response to the changes in the 2014 National Curriculum, it shows the progression through each topic throughout the year groups. This document ensures that the teaching and learning in Science is progressive; in line with the National Curriculum and enables teachers to ensure the experiments are not replicated. They are adapted and developed to follow the objectives and are age related.

Electricity - Year 4 and Year 6

Year 4	Year 6
<p><b>Year 4</b></p> <p>Electricity - Year 4 and Year 6</p> <ul style="list-style-type: none"> <li>Identify the objects that are made of metal.</li> <li>Identify the objects that are made of plastic.</li> <li>Identify the objects that are made of wood.</li> <li>Identify the objects that are made of glass.</li> <li>Identify the objects that are made of paper.</li> <li>Identify the objects that are made of fabric.</li> <li>Identify the objects that are made of stone.</li> <li>Identify the objects that are made of brick.</li> <li>Identify the objects that are made of concrete.</li> <li>Identify the objects that are made of metal.</li> <li>Identify the objects that are made of plastic.</li> <li>Identify the objects that are made of wood.</li> <li>Identify the objects that are made of glass.</li> <li>Identify the objects that are made of paper.</li> <li>Identify the objects that are made of fabric.</li> <li>Identify the objects that are made of stone.</li> <li>Identify the objects that are made of brick.</li> <li>Identify the objects that are made of concrete.</li> </ul>	<p><b>Year 6</b></p> <p>Electricity - Year 4 and Year 6</p> <ul style="list-style-type: none"> <li>Identify the objects that are made of metal.</li> <li>Identify the objects that are made of plastic.</li> <li>Identify the objects that are made of wood.</li> <li>Identify the objects that are made of glass.</li> <li>Identify the objects that are made of paper.</li> <li>Identify the objects that are made of fabric.</li> <li>Identify the objects that are made of stone.</li> <li>Identify the objects that are made of brick.</li> <li>Identify the objects that are made of concrete.</li> <li>Identify the objects that are made of metal.</li> <li>Identify the objects that are made of plastic.</li> <li>Identify the objects that are made of wood.</li> <li>Identify the objects that are made of glass.</li> <li>Identify the objects that are made of paper.</li> <li>Identify the objects that are made of fabric.</li> <li>Identify the objects that are made of stone.</li> <li>Identify the objects that are made of brick.</li> <li>Identify the objects that are made of concrete.</li> </ul>

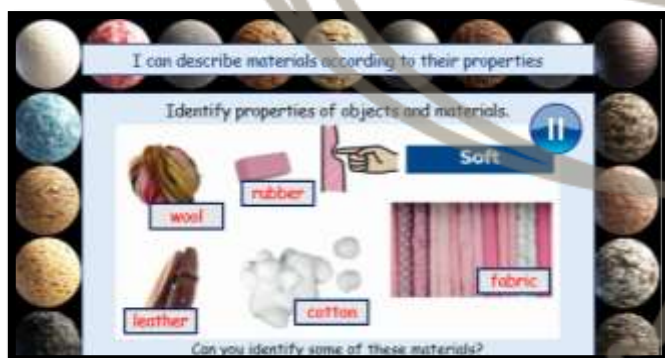
## Cross-Curricular Skills and Links

Science pervades every aspect of our lives and where relevant, we have related it to other areas of the curriculum. We will also ensure that pupils realise the positive contribution of various scientists. We will not only emphasise the positive effects of science on the world but also include problems, which some human activities can produce, e.g. global warming. Links are made to other curriculum areas including Literacy, Numeracy, Music et al. The school's Schemas of: Fashion, Food and Technology are also integrated into the children's lessons where applicable.



## Online Learning Opportunities

Science lessons, activities and experiments have, and will continue to be provided for the children on our school website. This includes lessons which are part of the Online Learning offer and videos showcasing the experiments the children have undertaken in school.



## Resources

We are continually developing our resources for science teaching. Resources are kept in a central store where there are clearly labelled boxes of equipment for each topic. Situated in the same store are collections of materials and objects of scientific interest, e.g. springs, gears, stones, shells etc. Topic related books are also available to support teaching. The school site is used as an educational resource offering a Nature Area and Planting Section with a greenhouse. Children are encouraged to choose from a range of equipment and are trained in the safe and considerate use of plants and consumable materials. Expensive and less frequently used items are also kept within the central store. Objects which are specific to a single year group may be kept within those class rooms (e.g. Space Resources are stored in Year 5). The Science coordinator is responsible for maintaining this area and ordering any necessary items that have been identified as a need (see Appendix G). All staff members have a shared responsibility for collecting and returning necessary items to the correct place to ensure that resources are easy for all staff to access. Perishable resources need to be ordered prior to teaching from the Science Leader. A small number of "vulnerable" resources are kept by the Science Coordinator. Educational visits and visitors are often linked to Science and include opportunities to study: the

local environment, both urban and rural/animal and plant life in different habitats/exhibitions of scientific interest. Appropriate health and safety risk assessments are carried out.

## **Displays and Vocabulary**

At Wren's Nest every classroom has a Science Display showing the current topic being taught. On the display Tier 1, 2 and 3 vocabulary from the Medium term Planning is added throughout the topic to support the children's learning. This display is a 'Working Wall' and should include examples of the children's work and supportive information. It should be inviting and include physical objects so children develop their scientific enquiry. On each display throughout EYFS to Year 6 the mantra, 'We are Scientists' along with a visual representation of an actual magnifying glass promotes the children's understanding that they are 'Scientists'.



## **Marking and Assessment**

At Wren's Nest Primary School, because one of our school priorities is to raise standards in reading and writing across the curriculum, the detailed marking in History, Geography, Science and other curricular areas that involve the children writing, will be the same as for Literacy, unless it is inappropriate. For example, categorising activities in Science, where this would more likely require a tick and TA/TAP/TNA. In science, comments will be made against the subject related targets. However, comments should also refer to the children's writing skills when applicable (refer to the Whole School Marking Policy for further information). Assessment should be formative and used to inform the teacher of future planning, promote continuity and progression and be based on observation, participation and written/verbal outcomes.

## Health and Safety

All teaching staff are conversant with the school's 'Health and Safety' Policy and relevant regulations and plan accordingly. Teachers follow guidelines and take appropriate precautions. The safe use of equipment and consideration of others is promoted at all times. The "Be Safe!" publication by the Association for Science Education should be used by staff as a point of reference for issues regarding health and safety. A copy of this is held in the Science Co-ordinator's Room in the cupboard labelled, 'Whole School Science'.

Teachers are encouraged to use this as an aid. Further details can be found in the 'Health & Safety' School Policy. Children should be made aware of safety issues and, where appropriate, the reasons behind them. Activities which take place away from the school's premises will require a separate risk assessment to be completed. Any activities that require hazardous materials will be handled only by the Science Advisor who is a trained Scientist from University of Worcester.

## Leadership and Management

The Science Co-ordinator and STEM Ambassador (M.Wyer) together with the Headteacher, Assistant Headteacher and the wider Senior Leadership Team are responsible for ensuring that the aims of the Science Policy are met. In addition to this, the science co-ordinator should:

- Be enthusiastic about science and demonstrate good practice.
- Encourage and support staff in the implementation of the curriculum and school approaches to Science teaching.
- Ensure progression and development throughout the school.
- Monitor the teaching and learning of Science throughout the school.
- Organise and review all science-based resources, ensuring they are readily available and maintained.
- Support staff by encouraging the sharing of ideas and organising CPD training as appropriate.
- Promote Science within school through the Association of Science, 'British Science Week' each academic year.
- Work with the school's Science Advisor and STEM Ambassador (N. Burfoot) from the University of Worcester to continue to develop our science curriculum.

## COVID Recovery

As the children have missed areas of their Science learning due to COVID - 19, we have identified the areas missed and when they will be taught in their new academic year group. The COVID - 19 Recovery for Science 2020-2021 document (see Appendix H) shows which topics need to be taught for each year group and when, so the children 'Keep up not catch up'. This ensures continual progression through the topics.

Year Group (2019-2020)	Areas of Science missed due to COVID-19	When areas will be addressed in 2020-2021 year groups	How areas will be addressed in 2020-2021 year groups
EYF5	Understanding of the World - Seasons (Spring & Summer) - Life Cycle.	Year 1: Seasons (Spring & Summer) - Spring and Summer Term 2021 Life Cycle - w/6 T12 20	Seasons - incorporated into Year 1, Seasonal Science planning Life Cycle - this topic often comes up in the topic of Enrichment Day.
Year 1	Animals including Humans (animals eating), Plants, Seasonal Changes (Summer).	Year 2: Animals including Humans (animal husbandry) - 3/9/20 - 20/9/20 Plants and Seasonal Changes (Summer) - Summer Term Enrichment Day - date TBC	Animals including Humans (animal husbandry) - afternoon topic for transition week Plants and Seasonal Changes (Summer) - Enrichment Day.
Year 2	Animals including Humans, Plants	Year 3: Animals including Humans - 7/12/20 - 14/11/20 Plants - Summer Term - date TBC	Animals including Humans - this topic often comes up in the topic of Enrichment Day. Plants - Summer Term Enrichment Day.
Year 3	Animals including Humans (humans part), Plants	Year 4: Animals including Humans (humans part) - Spring Term Part 1 - dates TBC Plants - Summer Term Enrichment day - date TBC	Animals including Humans (humans part) - w/2 Mini topic afternoon Plants - Enrichment Day.
Year 4	Living Things and their Habitats, Sound	Year 5: Living Things and their Habitats - related objectives incorporated into Year 5 Science planning Sound - Spring Term 2	Living Things and their Habitats - Spring 1 Science lesson Sound - Mini-Topic afternoon
Year 5	Forces, Properties and changes of materials	Year 6: Forces - Summer Term Properties and changes of materials - 3/2/20 - 11/6/20	Properties and changes of materials - afternoon topic for transition week. Forces - this topic is a mini-lesson.

Year 6 have not been included as they have moved on to Secondary School.



## Science Vision and Principles Document

There is a clear vision for science that is well established and consistently implemented through principles for teaching and learning which are regularly reviewed by the whole school community. The Science Vision and Principles document has been created to make the purpose of Science at our school, explicit for all stakeholders. It reminds the staff and children what each Science lesson should be like.



## Primary Science Quality Mark GILT Award

During the Summer Term 2022 we have been awarded the Primary Science Quality Mark GILT award. This is valid for three years, 2022-2025. This is a nationally recognised award for schools leading in the teaching and learning of Primary Science.



## Appendices

Appendix A	Medium term Planning Year 1 Seasons
Appendix B	Whole School Science Topic Overview
Appendix C	Science Curriculum Overview
Appendix D	Working Scientifically - Progression of Skills
Appendix E	Science Topic Progression of Skills
Appendix F	Displays and Vocabulary
Appendix G	Resources Order Form
Appendix H	Science COVID Recovery Document