SCIENCE IN THE CURRICULUM OVERVIEW



'The important thing is to not stop questioning. Curiosity has its own reason for existing.' Albert Einstein

INTENT

At WINS we know that children are naturally curious and we strive to extend their curiosity by encouraging them to develop their ideas and ask questions about things they have noticed, to support them in making sense of the world that they live in. This is achieved by using their first hand experiences through practical investigations exploring the five different types of scientific enquiry including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. WINS develops pupil's enthusiasm in Science and builds on their interests, encouraging them to question what they notice and to promote respect for the living and non-living environment.

IMPLEMENTATION

At WINS, Science is delivered following the aims and content of the National Curriculum. We have developed as a staff a clear progression through a structure of knowledge and skills based on the National Curriculum, and we have identified age related specific vocabulary and key skills that will be delivered to children during the specific teaching of a topic appropriate for their age to ensure progression in this subject.

Science is taught as a mainly discrete subject within a topic; however links to other subjects are made. Our Science teaching creates a positive attitude towards science learning and provides children with first hand experiences and opportunities to work scientifically to develop their scientific understanding. The children are encouraged to ask questions and are supported to apply the different types of scientific enquiry to answer their own questions. We model and encourage the children to use simple scientific language to support

them in communicating with their peers and teachers, their ideas about what they have found out. The children are encouraged to record their findings in a variety of ways- photographs, voice recordings, and simple tables.

At WINS in Science we ensure all children have access to exploring different environments both indoors and outdoors and have hands on practical experiences that support investigational skills, collaborative skills and resilience.

Through various organised external activities e.g. visitors in school, engagement with Science activities with the connected junior school, children develop an understanding of the importance of Science and how it has changed our lives and is vital to the ever developing world that they live in.

IMPACT

Through the rich environment that children are offered here at WINS they will become independent learners who can investigate questions to develop their curious and inquisitive minds. The children will have a good understanding of key scientific concepts and skills and be able to communicate their ideas using scientific vocabulary that will continue to develop with them as they grow.






SCIENCE IN THE EYFS CURRICULUM AT WINS



In the EYFS Science is identified as The Natural World which is one of the aspects of the Area of Learning known as Understanding the World in the EYFS curriculum.

Early Learning Goal 15: *Explore the natural world around them, making observations and drawing pictures of animals and plants. Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.*

During their time in the EYFS the children are offered a wide range of opportunities to explore the world around them. Through play activities indoors and out they explore the properties of a variety of different materials such as sand and water. They learn about changing state when drawing in the frost or watching ice melt outside during the winter, when making potions in the mud pie kitchen and when joining in with adult led activities such as baking. They investigate the school site and local area at different times of the year, looking at seasonal changes and searching for the creatures that make their homes there. The children engage in gardening activities, planting a variety of seeds and bulbs and watching them grow.







SCIENCE IN THE KEY STAGE ONE CURRICULUM AT WINS



Aims

The national curriculum for science aims to ensure that all pupils:

- *develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics*
- *develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them*
- *are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.*

Year 1

In Year 1 the children are encouraged to look more closely at the world around them. Topics such as 'Everyday materials', 'Animals including Humans' , 'Plants' and 'Seasonal Change' allow the children to develop their inquisitive nature and evoke curiosity alongside developing their scientific enquiry skills.

In the autumn term they start the year off by looking at different buildings and going on a walk around the local village to gain first hand experiences of what materials are used to construct different buildings. They then build on this by investigating different materials and grouping them accordingly. This then leads on to investigating the different properties of materials and answering lots of questions either set by the teacher or that have arisen from class discussions. Examples of these are 'How can we fix an umbrella?' 'What do we need to build a home?'

As spring approaches the children find out about their bodies and how they work. Arrangements are made for a healthcare professional to come and visit the children to deepen their knowledge and understanding of different concepts connected their bodies. The children are given the opportunity to engage in lots of practical activities to widen their experiences.

In the summer term the children have the opportunity to find out about lots of different animals. They make comparisons between them and group them accordingly. At the end of the topic the children have lots of discussions about what they have found out from their experiences and try and answer the question ‘Are all animals the same’.

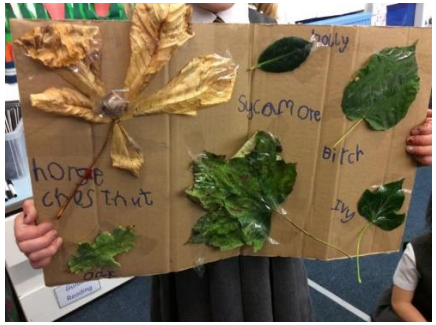
During the summer term the children engage in Forest School sessions in the school grounds to support them in exploring and identifying different plants and trees. These sessions are fun and support the children in gaining first hand experiences of the environment around them.

Throughout the year discussions are held in the classes about seasonal changes that they have observed. Experiments are carried out to look at rainfall and how the day length can vary between seasons.

All the children take part in Science week which is usually held in the spring term. Science week usually has a theme so the children carry out lots of investigations around this and on occasions this carries on for a few weeks as the children lead the learning.

In Year 1 to support the children in their scientific understanding investigation stations are set up to deepen their learning.







Year 2

In Year 2 the children’s existing skills are built upon to help deepen their scientific knowledge through looking at ‘Uses of everyday materials’, ‘Living things and their habitats’, ‘Plants’ and ‘Animals including humans’.

In the autumn term the children spend the majority of their time building on their existing knowledge that they have on materials and apply these to different investigations to deepen their understanding of this topic. They carry out investigations about waterproofing materials, investigate different properties of materials for example which materials they can squash, bend, twist and stretch. These practical experiences also support the ever extending scientific vocabulary for our children.

As the year progresses the children are given lots of opportunities to go outside and explore the forest school area. There they are able to find out about living things and their habitats through first hand experiences. The children are able to deepen their knowledge about life processes, food chains and animal habitats and adaptations. Alongside this they participate in lots of activities where they join in with planting different seeds and compare different parts of plants. As a class they investigate 'Do bigger seeds grow into bigger plants.'

In the summer term the children build upon our pre-existing knowledge of living things and explore animal life cycles-'How does a tadpole change over time?' They research where bugs like to live and the children work in small groups to build their own bug hotels. It is great fun to see over time which bugs/ insects arrive at their hotels.

As the year finishes and the children are growing up and moving on to the junior school the focus is on our bodies and how they can keep themselves healthy. They explore all of the different food groups and design a healthy lunchbox. A visit to a local allotment takes places to gain first hand experiences of how some types of fruit and vegetables are grown.

All the children take part in Science week which is usually held in the spring term. Science week usually has a theme so the children carry out lots of investigations around this and on occasions this carries on for a few weeks as the children lead the learning.









Working Scientifically

All topics and objectives are covered during lessons with a key focus on Working Scientifically. The National Curriculum provides the objectives and 'bare bones' of the subject, then the children are given opportunities to use these facts and apply new knowledge with a wide variety of enquiry based learning activities. Children are encouraged to explain, predict, ask questions and carry out research, whilst developing a sense of excitement and curiosity about all areas of Science.

SEERIH

We are fortunate to be part of the Science and Engineering Education Research and Innovation Hub (SEERIH), linked through the TTSA (Trafford Teaching Schools Alliance) and The University of Manchester. Our science curriculum leader attends meetings every term that enable current research and activities to be implemented in school through staff CPD.

From Nursery to Year 2 the children are encouraged to explore, investigate and ask questions by applying the 5 types of scientific enquiry. They are encouraged to think about the lines of enquiry they have undertaken and match them to the 5 types of scientific enquiry to support them in gaining a deeper understanding of these.











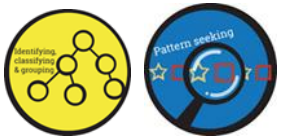
Classes all display the 5 areas of working scientifically posters so that children recognise these as they progress through the school and build on their skills.



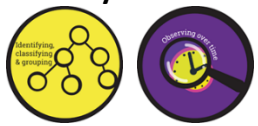
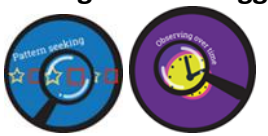



WINS SCIENCE KEY STAGE ONE CURRICULUM OVERVIEW



YEAR ONE	Autumn	Spring	Summer
First Half Term	**TOPIC- Buildings ,Houses and Homes** **Object or material** **Properties of materials** **Grouping materials** **Waterproof experiment- How can we fix this umbrella?**  **What do we need to build a home?**	**TOPIC- Ourselves** **Complete senses scientific tests** **Crisp taste test investigation** **Answering questions and recording data.**  **Label senses** **Labelling body basic parts** **How does our body work?**	**TOPIC- Amazing animals** **Describe and compare animals** **Animal classification (Reptiles, Amphibians, Fish, Insects, Mammals, Birds)** **Herbivores, Omnivores, Carnivores**  **Are all animals the same?**
Second Half Term	**TOPIC- Celebrations** **Seasonal changes** **Day length** **Weather changes across the seasons**	**TOPIC= How and Why?** **(Scientific investigations based on the children's learning)** **Asking simple questions and recognising that they can be answered in different ways**	**TOPIC- Perfect Plants** **Parts of a plant** **Wild and garden plants** **Deciduous and evergreen trees** **Seasonal changes**

	 **Exploring and manipulating materials to make Diva lamps and candles** **How do we know its Autumn?**	**Observing closely, using simple equipment** **Performing simple tests** **Using their observations and ideas to suggest answers to questions** **SCIENCE WEEK**  	

YEAR TWO	Autumn	Spring	Summer
First Half Term	TOPIC-LIVING THINGS AND THEIR HABITATS Life Processes-inc. Basic Survival needs Dead or Alive Adaptations and Animal Habitats Food chains for animals FOREST SCHOOL 	MATERIALS CONT. Squash, Bend, Twist and Stretch experiment Would a paper boat float forever? Paper bridges 	ANIMAL LIFE CYCLES-Healthy animals Animals growing-life cycles of frogs-How does a tadpole change over time Food Groups and Healthy Eating Exercise and Heart Hygiene and germs Healthy Lunchbox 
Second Half Term	EVERYDAY MATERIALS: Mopping Up-experiment Are Bricks Absorbent? Experiment Waterproofing materials- experiment Printing-experiment Resist the Wax-experiment Plastics in the-environment 	PLANTS-READY, STEADY, GROW! Hydroponics-Beans in a Bag with diary Comparing parts of different types of plants Seeds-seed dispersal Do bigger seeds grow into bigger plants?  SCIENCE WEEK 	HABITATS-GARDENS AND ALLOTMENTS Microhabitats-Bug Hotel, study of tree in school grounds Which habitats do worms prefer? Where can we find the most worms? Food chains for plants 