

Science – Curriculum Intent, Implementation and Impact for Science 2021-2022

Intent

At West Vale Academy we teach a Science Curriculum which is designed to meet the statutory requirements of The Early Years Foundation Stage and National Curriculum. The school utilises the Rising Stars Switched on Science scheme to support the teaching and learning of Science.

Science fosters a curiosity for children to become more conscious of how important science is in the world around them, by broadening what counts as a valued scientific experience both indoors and outside of the classroom. Children will extend their understanding of how science can be related to themselves, as well as demonstrating how it is consistently used throughout their life, focusing on the different types of enquiries and opportunities to work scientifically.

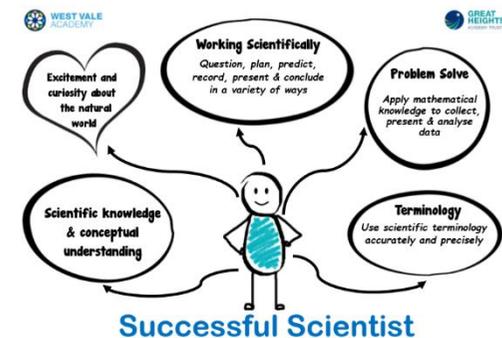
Our Curriculum embeds the working scientifically requirements into each topic so that in addition to the core knowledge and vocabulary, children are developing skills of observation, investigation and fair testing, classification and data handling. These requirements are developed throughout West Vale Academy so children can use equipment, build experiments, and explain concepts confidently and continue to ask questions as well as continuing to be curious about the world around them.

The curriculum ensures that we help to nurture confident and independent scientists and that children are aware of the scientific opportunities that they can experience not only in school, but in the world around them. By making relevant links to Science Capital, children continue to learn how crucial Science is in their everyday lives.

Implementation

Organisation of the Curriculum

The Science Curriculum at West Vale follows the Rising Stars Switched on Science scheme of learning. This ensures that all statutory and non-statutory objectives from the National Curriculum are taught within school and provides teachers with sequential learning within a unit of work. The learning within each unit of teaching builds upon the learning in previous units (See West Vale Academy Progression Document). Teachers adapt, amend and personalise the scheme to suit the needs of their class.



Science is taught in a block every half term in Years 1 to 6. This ensures that children build up their knowledge over the space of consecutive days which may encompass up to 2 weeks depending on the number of and size of objectives to be taught. This is at the discretion of the teacher. Some topics might be taught over several weeks depending on the specific types of enquiry a teacher might be carrying out.

Following the lockdown period caused by the COVID 19 Pandemic, teachers have been made aware of which units (although still taught through remote home learning) may not have been fully accessed by all pupils. This knowledge need assessing before the next unit in the progression so all objectives from the current year group can be taught with children have prior knowledge to their learning.

In Early Years, children access and are taught scientific knowledge and skills which prepare them for the demands of the Year 1 curriculum. Through topic based learning, children meet the objectives in Development Matters "Understanding the World". In addition, the Characteristics of Effective Learning also promote inquisitiveness, resilience when exploring and finding out and independence in preparation, the early steps of working scientifically. The Early Years continuous provision allows children to develop these skills by planning different types of adult and child led enquiry ensuring the provision both indoors and outdoors engages and promotes a love of Science.

What you would expect to see in a typical Science lesson?

- Teachers and children having opportunities to think and work like a scientist
- High expectations of learning through correct use of specific scientific terminology.
- Differentiation so that all pupils including SEN children can access the learning, with scaffolding in place to support learning.
- Up to date display board which supports children's learning in Science, including Scientist focus linked to topic, terminology, and working scientifically/types of enquires as necessary.
- Scientific vocabulary being used accurately and confidently by all adults and children to enquire, predict, plan, conclude and evaluate (conclude and evaluate mainly linked to KS1)
- Children being encouraged to ask questions. For these questions to be listened to and considered, even if this is at a later date. This might be linked to a specific enquiry question which is explored through the specific focus throughout the blocks of teaching.
- Scientific Enquiries which develop children's resilience, independence and confidence through clear modelling and links to prior knowledge.
- Children confidently can use scientific and mathematical equipment.
- A range of planned, targeted questioning techniques.
- Well planned lessons where teachers use AfL to adapt learning within the lesson to support the Scientific understanding of all learners.
- Children able to discuss the relevance of their learning and how it helps them to understand the world around them. Children make links to Science Capital and the future careers linking to Science.

Schemes of work/Supporting Resources

Rising Stars – Switched On Science – unit plans including vocabulary etc.

West Vale Academy National Curriculum Progression Document

West Vale Academy Progression of Working Scientifically Document.

Developing Experts accessed for home learning/in school during the January Lockdown.

Scientific resources can be found in a shared location and are regularly checked and updated by the Science Lead. An audit has been completed by the Science Lead and is available to other teachers.

Inclusion

Teachers use clear modelling and use an 'I do, We do, You do' approach to teaching which supports all learners and supports ongoing assessment for learning. Children who need further support will receive immediate intervention in that lesson to ensure that their learning progresses well and they do not fall behind.

Whole school strategies for Inclusion are deployed in all lessons in school. Staff are aware of the specific needs of the children in their class and make adaptations which may be specific to science or may be a constant adaptation for that child.

Recording of Pupil's Learning

All children in school have a Science book. Learning is recorded in these books alongside photographic evidence of hands on activities on Seesaw.

In Early Years, children also record their learning formally at times but this is balanced with adult led learning within the continuous provision. In addition, the continuous provision within Reception promotes many key aspects of Science. Staff are adept at supporting children's thinking and reasoning by using statements such as "I wonder why..." or "I wonder what would happen if..." as well as asking how and why questions. Adults have specific questions which they can ask a child in provision to develop their scientific enquiry.

Cross Curricular links

Opportunities to promote Scientific knowledge can be found in many other curriculum areas when considering how the world works. Links are particularly strong in other STEM subjects such as Mathematics and Design and Technology.

There are particularly strong links with the Maths and Science Curriculum, where measurement of time, mass, length or volume for example may be used when working scientifically. The progression of presenting data in the Science Curriculum matches up to the skills and knowledge which children will have already been taught through data handling in maths. Children have the opportunity to confidently apply what they have already learnt in Maths to Science and beyond.

Children will have opportunities to develop their writing throughout science, however this will not be the main focus. All of the children will be able to complete experiments throughout their Science lessons and will write up their results. Children in their English lessons will be taught how to write sentences and reports which will then be applied to their learning.

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Enrichment

In order to enhance our curriculum, teachers will ensure that all pupils have the opportunity to explore and develop their interests outside of the classroom. It is important for teachers to use the ideas of Science Capital to change how they approach the teaching of science and use the children's interests to support this. Teachers will make all children aware of how important science is, and how it is constantly used in the world around them by broadening what counts as a valued scientific experience both indoors and outside of the classroom by making the science relatable to everyday life through personalised lessons using places, objects or ideas that children will know about or encounter regularly. Children will be able to relate science to themselves better, as they will be made aware of the scientific experiences around them and what potential career opportunities there are in Science. A Science company has completed an assembly in school to promote a love of science and show how it can be applied to the world around us, as well as completed a Science club, accessible for all ages from Reception to Year 6.

Assessment – how is it carried out?

As in all lessons, assessment for learning opportunities are planned throughout a Science lesson. Through careful questioning and an I do, We do, You do gradual release of responsibility, teachers have opportunities to identify which children need further support and which are ready for the next episode of learning. At the end of a topic, all children will complete an 'end of unit' test, reflecting on what they have been taught during their Science lessons. This will help teachers complete their assessments,

Teachers will then update their assessment spreadsheets and make a judgement as to whether a child has met or hasn't met a specific statement, taking into account all evidence available to them – written and oral – and making their own professional judgement. Assessment spreadsheets will be passed to the next year group so the teacher can identify areas that may need recapping before children the curriculum for the specific year group.

Monitoring

Science is monitored in a variety of ways. The co-ordinator will carry out:

- Learning walks
- Book scrutinise
- Formal observations
- Conversations with staff

Teacher judgements are moderated at intervals throughout the year by the subject lead to ensure fidelity to the curriculum and the plans, quality of work and consistency and accuracy in judgements.

CPD

Teachers have received training from the Science lead around their understanding of the Working Scientifically aspect of the Curriculum. This will ensure that there is a progression in the way in which children carry out their enquiries and build on previous skills on their journey through school.

Teachers have been directed to CPD opportunities online in order to ensure that they understand the Age Related Expectations for Science for their Year groups and the bigger picture.

If the Science Lead receives any CPD training which would be useful for all teachers to access, this will be delivered during a staff meeting so all teachers can continue to develop their knowledge across the Science Curriculum.

Throughout 2021-2022, the Science Leader and the Deputy Head will be attending the Primary Science Quality Mark to improve Science teaching across the school. All teachers are kept informed of their expectations to receive the quality mark and improve Science in the school.

Impact

The successful approach to the teaching at West Vale Academy will result in a fun, engaging and high quality Science Education, that provides children with the foundations relating to Science Capital and understanding how Science is relevant consistently in the world around them.

In order to apply a successful approach, the pupil's voices will be heard to further develop the Science curriculum by questioning the pupils' views and attitudes towards Science, to assess the children's enjoyment of Science, and to motivate learners to recognise the present of Science in children's lives every day.

At West Vale Academy, the children will retain knowledge that is relevant to Science with a real life context as well as be able to questions ideas and reflect on knowledge. Children will develop a wider variety of skills linked to both scientific knowledge and understanding, and scientific enquiry and investigation skills.

From this exposure to a range of different science professions from a multitude of backgrounds, all children in our school feel they are scientists and capable of achieving anything they set their mind to. Children at West Vale Academy overwhelmingly enjoy science and this results in motivated learners with sound scientific understanding.