

SCIENCE Policy

2023-24



The Valley Community School

Reviewed: July 2023

Ratified: July 2023 Curriculum Committee

**Reviewed by: Linked Governor and
D. Leonard**

To be reviewed: April 2024

The Valley Community School

OUR VISION

“A world class centre of outstanding learning”

OUR MISSION

“Together we’re better”

Founding principles that underpin our philosophy of being truly inclusive

We aspire in all we do to ensure we create a culture of:

High Equity:

Narrowing the gaps between pupils in different socio-economic groups

High Achievement:

For all through rigorous challenge, adaptation and reflection

High Inclusion and Engagement:

Adapting and supporting narrowing and bridging gaps in achievement

High Expectations:

Of ourselves, our pupils and our families in effective partnerships

Our core values:

Acceptance

Fairness

Trust

Equality

Respect

The school feels strongly that there is a need to develop both global citizenship and, where possible, teach the fundamental principles of British Citizenship.

This encompasses:

- a sense of fair play
- tolerance
- duty and remembrance
- respect
- values
- ethics
- belonging
- contributing to and supporting all our local communities
- perseverance

Science Policy

SCIENCE Intent:

Aims and Objectives

- Science teaches an understanding of natural phenomena.
- It aims to stimulate a child's curiosity in finding out why things happen in the way they do. It teaches methods of enquiry and investigation to stimulate creative thought.
- Children learn to ask scientific questions and begin to appreciate the way science will affect their future on a personal, national, and global level.
- The aims of science are to enable children to:
- ask and answer scientific questions;
- plan and carry out scientific investigations, using equipment, including computers, correctly;
- know and understand the life processes of living things;
- know and understand the physical processes of materials, electricity, light, sound and natural forces;
- know about the nature of the solar system, including the earth;
- evaluate evidence and present their conclusions clearly and accurately.

Science Curriculum Statement of Intent: *Rationale – why this curriculum design?*

- Primarily, we want to be sure the curriculum meets the National Curriculum requirements and from this we have built an enhanced offer that goes beyond the requirements.
- Also, the adaptations we have made mean each year group has a set and specific set of objectives that also encompass linked learning, British Values and SMSC.

At The Valley Primary School, we recognise the importance of Science in every aspect of daily life. We give the teaching and learning of Science the prominence it requires.

The Scientific area of learning is concerned with increasing pupils' knowledge and understanding of our world, and with developing skills associated with Science as a process of enquiry. It will develop the natural curiosity of the child, encourage respect for living organisms and the physical environment and provide opportunities for critical evaluation of evidence.

- 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;
- Be equipped with the scientific knowledge required to understand the uses and implications of Science, today and for the future.
- Develop the essential disciplinary scientific enquiry skills to deepen their scientific knowledge.
- Use a range of methods to communicate their scientific information and present it in a systematic, scientific manner, including Computing diagrams, graphs and charts.
- Develop a respect for the materials and equipment they handle with regard to their own, and other children's safety.
- Develop an enthusiasm and enjoyment of scientific learning and discovery.
- Learning will be direct (discrete) and indirect (linked across the wider curriculum)

The National Curriculum provided a structure and skill development for the science curriculum being taught throughout the school, which is now linked, where possible to the theme topics to provide a creative scheme of work, which reflects a balanced programme of study.

- In Early years, science is taught through the children learning about the world around them in their learning through play.
- Additional opportunities are provided in Science, such Science days for children, Science fairs in school and educational visits linked to the science curriculum, such as visits to local zoos, parks and areas related to science.
- We endeavour to ensure that the Science curriculum we provide will give children the confidence and motivation to continue to further develop their skills into the next stage of their education and life experiences.

Knowledge is classed as:

- **substantive knowledge** this is referred to as scientific knowledge and conceptual understanding in the national curriculum
- **disciplinary knowledge** (knowledge of how scientific knowledge is generated and grows): this is specified in the 'working scientifically' sections of the national curriculum and it includes knowing how to carry out practical procedures

Disciplinary knowledge: knowing how science establishes knowledge through scientific enquiry taught progressively within Working Scientifically

- Knowledge of methods that scientists use to answer question
- Knowledge of apparatus and techniques, including measurement
- Knowledge of data analysis
- Knowledge of how science uses evidence to develop explanations

Adaptations:

- We felt our curriculum adaptations needed to add specific content knowledge that is more progressive and incremental.
- The additions also added requirements to learn about issues of relevance that we feel **are most significant for our children to learn**, here at The Valley Community School, specific to each unit and each year. These incremental programmes set out precise unit and end of phase teaching elements, with key knowledge to learn.

High quality features of our curriculum

Based on the above, high-quality science education

- The curriculum is planned to build increasingly sophisticated knowledge of the products (substantive knowledge) and practices (disciplinary knowledge) of science.
- Disciplinary knowledge (identified in the 'working scientifically' sections of the national curriculum) comprises knowledge of concepts as well as procedures.
- When pupils develop their disciplinary knowledge, they learn about the diverse ways that science generates and grows knowledge through scientific enquiry. This is not reduced to a single scientific method or taken to mean just data collection.
- The curriculum outlines how disciplinary knowledge advances over time and teaches pupils about the similarities and differences between each science.
- Pupils are not expected to acquire disciplinary knowledge simply as a by-product of taking part in practical activities. Disciplinary knowledge is taught.

- Scientific processes such as observation, classification or identifying variables are always taught in relation to specific substantive knowledge. They are not seen as generalisable skills.
- Vocabulary is the foundation to which all our learning is built upon.

How knowledge is organised in our curriculum:

Principle of “curriculum coherence” knowledge builds on knowledge

- In the early years, pupils are introduced to a wide-ranging vocabulary that categorises and describes the natural world. These words are not too technical but provide the ‘seeds’ for developing scientific concepts that will be built on in later years.
- Attainment targets, specification points and the EYFS educational programmes are broken down into their component knowledge.
- Substantive knowledge is sequenced so that pupils build their knowledge of important concepts such as photosynthesis, magnetism and substance throughout their time at school.
- Knowledge is sequenced to make the deep structure of the scientific disciplines explicit. This allows teachers and pupils to see how knowledge is connected.

Disciplinary knowledge is sequenced to take account of:

- its hierarchical structure
- the best substantive contexts in which to teach it.

Once disciplinary knowledge is introduced, it is used and developed in a range of different substantive contexts.

- Planning for progression takes account of what is taught in other subjects. For example, the science curriculum should be coherent with what is taught in mathematics. Where there are differences, these are made explicit to pupils and teachers.
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Implementation

We know that outstanding Science teaching and learning is happening when:

- Learners are engaging in dialogue and beginning to lead their own investigations.
- Learners are active and engaged in their learning.
- Learners make links between their experiences and other subject areas.
- Learners can investigate, experiment and explain their ideas.

At the Valley Community School we believe that: statement

“A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world’s future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.” (Science NC 2014).

Impact:

- Within science, we create a supportive and collaborative ethos for learning by providing investigative and enquiry based learning opportunities.
- Emphasis is placed on investigative learning opportunities to help children gain a coherent knowledge of understanding of each unit of work covered throughout the school.
- Our science curriculum is high quality, well thought out and is planned to demonstrate progression.

- We focus on progression within knowledge and skills and discreet vocabulary progression, also form part of the units of work.

We assess the impact of our curriculum through the following methods:

- Assessing children's understanding of topic linked vocabulary before and after the unit is taught.
- Summative assessment of pupil discussions about their learning.
- Formative ongoing assessment
- Images and videos of the children's practical learning.
- Interviewing the pupils about their learning
- Moderation staff meetings where pupil's books are scrutinised and there is the opportunity for a dialogue between teachers to understand their class's work.
- Half-termly reporting of standards across the curriculum.
- Marking of written work in books

Adaptations and reasonable adjustments as generic practices:

How we make suitable adaptations to support the learning of disadvantaged and pupils with special educational needs

- Pupils with SEND generally study the same curriculum scope as other pupils.
- Our teachers have the same level of ambition for all pupils. They use specialist advice to adapt their teaching approaches where necessary.
- Our teaching assistants are well briefed in the subject knowledge aspects to be studied and learnt and the approaches taken.
- Teachers and specialists, including the SENCO support pupils in their role.
- Classroom resources and learning outside the classroom are adjusted, and where necessary risk assessed, as required, to ensure that all pupils are active learners.

Our Inclusion practices may also include:

- Schemes of work in the short, mid and long-term, with clearly defined milestones and practical objectives exemplified clearly
- Pre-teaching key concepts and language
- Post-teaching to consolidate
- Supporting accessibility by understanding by focussing on key vocabulary
- Using hands on drama, making and the arts, rather than defaulting to reading/written content only
- Using ICT technology, apps, video and computer based technologies where appropriate
- Waves of intervention that focus on Basic Skills and language proficiency that supports wider curriculum accessibility

Assessment adaptations-examples

- These may include a focus on discussion and observation

- Small incremental assessments
- Increased time for pupils to respond and recall information
- The need for some pupils to reactivate knowledge with visual prompts