Exploring together
Succeeding together

Science Policy

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Contents

Intent

At Hill Avenue Academy our aim is to educate all children to the highest levels of academic and personal achievement developing confident, happy and compassionate members of society through our bespoke, high quality Science curriculum which is built upon, Exploring together; Succeeding together, in conjunction with our school values: Happiness, Respect, Teamwork, Achieve.

The Science curriculum is supported and underpinned by our Learning Behaviours: Resilience, Curiosity, Collaboration, Reflection and Metacognition. They are embedded within our Science curriculum delivery to enable and empower the children to become independent learners who are self-motivated and want to continuously learn and grow, now and in the future.

At Hill Avenue Academy, Science is a valued core subject which allows our children to thrive by gaining substantive knowledge alongside investigative experiences. It nurtures and fosters a love of learning through exploring their natural curiosity and promoting independent learners. Our bespoke Science curriculum encapsulates how our children can develop within themselves holistically through working scientifically within practical and hands-on experiences.

We believe in building upon scientific knowledge through awe and wonder. We want the children to access a broad and balanced science curriculum, which allows all our children to understand the wider world through enabling their thinking and powering their curiosity, which echoes and nurtures our learning behaviours.

Scientific knowledge allows the children to develop new technologies, solve practical problems, and make informed decisions along with promoting communication and collaborative learning. Pupils will develop their understanding of the wider world and develop essential skills including enquiry, observation, prediction, analysis, reasoning, and explanation. Critical thinking and the understanding of methods and processes nurtures that natural curiosity within our Hill Avenue Scientists.

The teaching of Science at Hill Avenue will create a pathway to increase fundamental knowledge and provides a voice to the children where problem solving, and analytical thinking comes to life. The children will learn about the diverse and valuable careers enabling them to look ahead to their futures. The aim is for children to feel excitement throughout their explorations and to excel in their achievements.

Our science curriculum is designed to allow each pupil to:

- Achieve the best possible standards and achievements, whatever their starting point.
- Have high levels of engagement, enjoyment and personal development in science.
- Accesses a rich, broad and wondrous science curriculum that allows high levels of personalisation that plays to their strengths and develops specialisms.
- Connect and build on prior knowledge leading to progression and depth.

Through exploration, children will have the opportunities to:

- Propose an hypothesis and follow a line of enquiry.
- Pose and ask questions about different scientific aspects.
- Design investigations, thinking about different variables, that will prove scientific concepts
- conduct investigations to formulate conclusions.

We promote British Values through our key concepts in our History Curriculum. Our children explore and learn…..

- How to respect other children's predictions, results and conclusions.
- Children will respect children with religious beliefs even if science may contradict those beliefs.
- Understand how science has impacted upon Britain and the wider world.
- Understanding why rules are important for safety in science.
- Discovering scientists from different cultures and how they have contributed to the world of science.
- The different roles needed for different responsibilities and how teamwork is essential.

Implementation

At Hill Avenue we teach Science as a discreet subject. We believe this allows children to gain a strong and clear understanding of scientific principles and to make purposeful connections to other subject areas and produce excellent outcomes.

We place emphasis on both substantive and disciplinary knowledge within our Science curriculum so children not only know 'the science' but also know the evidence for it. Substantive knowledge is acquired through the three scientific disciplines: Biology, Chemistry and Physics. Each scientific discipline gives pupils a unique perspective to explain the world around them. This means that as pupils progress through the curriculum, they need to develop knowledge about the similarities and the differences between each scientific discipline.

Acquiring disciplinary knowledge is an important goal of the national curriculum. It is more than doing practical work or collecting data. It includes learning about the concepts and procedures that scientists use to develop scientific explanations and reasoning. Disciplinary knowledge is taught through four disciplinary concepts: methods, apparatus, data analysis and evidence to develop explanations.

Throughout the curriculum, key scientific knowledge is categorised into key concepts that weave throughout the curriculum:

- Similarity and Difference
- Cause and Effect
- Adaptation
- Function
- Growth
- Changes
- Processes

- Structure
- Evolution
- Variation

A high-quality science education will help pupils gain a coherent knowledge and understanding of science in context and how it can be applied in the wider world. It should inspire pupils' curiosity to know more and seek to ask questions.

EYFS

In EYFS, science is included within the Understanding the World area of learning. As with other learning in Reception and Nursery children will mainly learn about science through games and play – which objects float and sink during water play, for example. Activities such as these will help children to develop important skills such as observation, prediction and critical thinking. In this phase, children are often introduced to individuals, concepts and ideas, building firm foundations for progressive learning in Key Stage 1.

Key Stage One

The content of science teaching and learning is set out in the 2014 National Curriculum for primary schools in England. Within this, certain topics and areas are repeated across year groups, meaning that children may revisit a particular topic in each year of primary school but with increasing difficulty and with a different focus each time. For example, the area of animals, including humans is examined in every single year group, with a very clear progression of knowledge and understanding over the six years: In Year 1 this involves: looking at the human body, recognising animal groups and sorting these animals. By Year 6, this will have developed into knowing the internal structure of the human body in relation to circulation, classifying living things based on more complex characteristics and exploring scientific research into this classification.

In Key Stage One, children will look more closely at the natural and humanly constructed world around them. They will 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.

Key Stage Two

Throughout Key Stage Two, children will continue to broaden their knowledge and view of the world around them and develop a deeper understating of a wide range of scientific ideas. Children will 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. Children will 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.

The school's long-term plan, medium term planning and coverage of key scientific skills will be used by teachers to plan, this will drive the journey of science for every year group, building on from prior learning and develop progressively key skills and developing depth

Planning will:

- Provide opportunities for children to develop the process skills associated with science education as well as develop a greater knowledge and understanding of life processes and living things, materials and their properties and physical processes as described in the National Curriculum for science.
- Promote enjoyment and enthusiasm for learning through real, first –hand and rich science experiences so that all children explore, question, predict, plan, carry out and make observations and conclusions about their scientific tests.
- Allow children to discuss and present their work using scientific language, observations, diagrams, jottings and charts.
- To foster positive attitudes such as curiosity, perseverance, willingness to use and appraise evidence, willingness to tolerate uncertainty, critical reflection and enthusiasm.
- Developing an understanding of the importance of science in everyday life.
- Each class in both Key Stage 1 and Key Stage 2 will provide children a weekly science lesson, which will be 2 hours in duration.
- Good science teaching builds progressively on pupils existing ideas. In order for effective delivery of science education, across weekly lessons there should develop opportunities for finding out children's ideas using a variety of elicitation opportunities.
- Analyse children's ideas.
- Providing opportunities for testing ideas, thereby possibly changing them.
- Providing opportunities for developing process skills so that testing is scientific.

Learning opportunities for all children will be matched to ability, this will be achieved through a range of reasonable adjustments throughout all lessons, matched to the children's relative starting points, working interdependently to support each other through peer learning and challenging children with open-ended investigative opportunities. In addition, other subjects will play a part across lessons in lesson where children will be able to develop and apply their mathematical, English and computing skills. For example, using mathematical skills for repeated testing of results to calculate averages in science.

The science subject leader reviews planning and teaching regularly to ensure the coverage of objectives and skills is consistent across the school.

Monitoring & Assessment

Monitoring of the standards of work and the quality of teaching in science is the responsibility of the subject leader. The work of the subject leader also includes supporting colleagues in the teaching of science, updating staff on current developments in the subject and providing lead and direction for the subject in the school. Observations of teaching, planning and work scrutiny take place over the course of the year in order to maintain and continue to raise standards.

The subject leader will:

- Monitor standards in science to ensure the outcomes are at expected level.
- Provide ongoing CPD support based on the outcomes of subject monitoring to ensure that the impact of the curriculum is wide reaching and positive.

Teaching staff will monitor assessment for learning within the classroom whilst teaching science lessons, following the guidance of the assessment steps.

Curriculum Impact

Our Science curriculum is designed to excite and to develop keen scientist who are passionate when exploring scientific phenomena, gaining strong scientific knowledge and children who want to share their expertise and have a true interest and real love of learning within this subject. We believe our rich Science curriculum will lead to quality outcomes, great learning and rapid rates of progress.

The Science subject leader will regularly monitor and review the teaching and learning of Science as well as reviews and feedback from SLT and Pupil voice. The learning journey of Scienceand outcomes will be monitored, identifying strengths and ways to grow to improve through feedback.

Our schemes of work reflect the content and challenge of the curriculum. Our aim is to offer a broad, balanced, rich and vibrant curriculum that provides challenging pathways to achievement for all learners and leads to excellent Science provision.

Our bespoke curriculum will be exciting and will inspire children to nurture a passion for Science. The quality of education will be evaluated to ensure that it enables children to achieve the highest standards with high quality learning outcomes and supports children in being confident, resilient, self-motivated independent learners with the skills to be a lifelong learner.

This policy also needs to be in line with other school polices and therefore should be read in conjunction with the following:

Teaching and Learning Policy

Marking and Feedback Policy

Curriculum Policy

Assessment Policy

Maths policy

SEND Policy

Equal Opportunities Policy

Health and Safety Policy

Review

This policy will be reviewed annually by staff and Trust Directors/CEO.