Timothy Hackworth Primary School

‘Respectful and resilient; being the best that we can be.’

Science Policy

CRC Article 28: All children have the right to a good quality education.

Date policy approved/adopted:	**October 2023**
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Approved by:	**Curriculum and Standards Committee**
Head Teacher signature:	*L. Boulton*
Chair of Governors signature:	*P. Crook*

Science Policy

CRC Article 28: All children have the right to a good quality education.

Date of Policy: October 2023

Review Date: October 2024

Subject Lead: Mrs. A. Paramore-Hall

Governors for Science: Curriculum and Standards Committee
Mr. A. Jones
Mrs. N. Nixon

This policy should be read in conjunction with our Respectful Relationships Policy. All policy and practice in Timothy Hackworth Primary School respects children's dignity.

Our Timothy Hackworth School Vision

May our Rights Respecting School be a happy place for us all to learn; where every one of us is valued and safe in our Timothy Hackworth School Family. May we all be the best that we can be by making a positive difference to each other, our community in Shildon and the wider world in which we all live.

Mission Statement (written by children):

We would like our school, which reflects British values, to be at the heart of the community, sharing, supporting and learning together with everyone as equals. Our children have the right to high quality learning experiences to help them to be the best that they can be.

We encourage our children to be creative, unique, open-minded and independent individuals, respectful of themselves and of others in our school, our local community and the wider world.

We aim to nurture our children on their journey through life so that they can grow into safe, caring, democratic, responsible and tolerant adults who make a positive difference to British Society and to the world.

Values

Ours is a happy school with high hopes and ambitions for all our children and we welcome working in partnership with parents and carers to ensure that everything is done in the best interests of the children at all times.

All of our staff take their responsibility towards the children seriously and they strive to help each child reach their full potential as global citizens physically, emotionally, socially and academically. We are fully committed to the UNITED NATIONS CONVENTION ON THE RIGHTS OF THE CHILD.

To us, every child is unique and precious and we endeavour to foster a high level of motivation towards learning and behaviour. We are committed to the basic skills of English and Maths.

At all times, we aim to centre the teaching in an atmosphere of mutual respect and personal respect. A high quality education is the right of every child, and at Timothy Hackworth Primary School, we embrace that responsibility and strive to achieve it for all our pupils.

Equalities Information

This policy should be read in conjunction with our school's 'Equalities Policy Statement', 'Equalities Objectives Summary' and 'Equalities Information and Objectives'.

We welcome our duties under the Equality Act 2010 to eliminate discrimination, advance equality of opportunity and foster good relations in relation to age (as appropriate), disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex and sexual orientation.

Rationale

At Timothy Hackworth Primary School, we aim to inspire all children to reach their full potential, academically, socially and emotionally. In Science, this means providing the foundations for our children, as biologists, chemists and physicists, to understanding the world around them. Science has changed our lives around the world and it is vital to future prosperity. When we teach children Science at Timothy Hackworth Primary School, we teach them as the future scientists they may grow up to be, allowing children to develop their knowledge, methods, processes and uses of Science.

Children are naturally curious and we aim to nurture this curiosity. We enable children to ask questions and develop the skills they need to answer their questions. Science enables pupils to investigate problems and become resilient in the search for

answers. Children will learn to understand that when finding answers in Science it often leads to further questions.

Through Science children learn to collaborate as part of a team, trusting in each other's research and sharing their own thoughts and hypotheses. Science also allows children to recognise the power of rational explanations and to look at life from more than one perspective. We want children at Timothy Hackworth Primary School to understand how Science can be used to explain what is happening, make informed predictions and analyse the results.

Aims of Science at Timothy Hackworth Primary School

- We wish children to develop their scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
- Children have the right to be the best that they can be and to know that they can achieve this through the scientific knowledge we provide for them.
- We wish children to develop their Science capital and to understand that the school setting is one of the many ways they can learn about Science.
- We wish children to develop their 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.
- We encourage children to take their Science knowledge and think on a deeper level to develop a conceptual understanding. This is where children 'think outside of the box'.
- We encourage children to explore Science in a variety of ways using research and investigation skills and also to pull their findings together.
- We encourage children to collaborate in groups.
- We encourage children to find their own way of carrying out tasks, taking into account imagination, initiative and flexibility. All children have the right to have their own talents and abilities developed to their full potential (Article 29).
- We want to empower children and feel one of the ways we can do this is through equipping them with the scientific knowledge required to understand the uses and implications of Science in our world today and in the future.

Entitlement

This Science Policy relates to all pupils attending Timothy Hackworth Primary School. All children have the right to access all elements of the National Curriculum, appropriate to their abilities in tandem with the school's relentless focus on high standards and expectations of all pupils.

Our Intent, Implementation and Impact in Science

Intent for Science

Science is a school-long journey at Timothy Hackworth Primary School; each Key Stage builds on the skills and knowledge of the previous Stage. We aim to provide a fully inclusive curriculum where children develop their skills and knowledge as scientists through collaboration, exploration, investigation and research. We rely on children making cross-curricular connections particularly within English and Maths, so that they can work scientifically and move through investigations at a pace which allows follow up questions and further investigation work. We strive to ensure our pupils have the opportunity to demonstrate resilience, resourcefulness, reflectiveness and reciprocity and have the ambition to be successful learners. We see Science as an opportunity for children to share their pupil voice and take pride in their learning and to see themselves as scientists. We celebrate in our successes and discoveries, we talk 'Science' with enthusiasm and wonder, and we never see failure in anything we have put sound scientific thinking into.

Implementation of Science

Following the National Curriculum 2014, sequences of learning are carefully planned and developed so that new skills and knowledge are built upon previous skills and knowledge to enable consolidation and progression. Pupils' learning is supported by topic-based books, online research, investigative equipment and materials, and real life experiences.

Science primarily comes under the area of 'Understanding the World' in Early Years, however, it also has links to areas in Physical Development (Health and Self-Care) and Mathematics.

In Key Stages 1 and 2, we begin all Science lessons with an Explorify activity. This is to help children generate 'I Wonder' questions, to apply previous Science learning to make scientific statements and to excite them for the lesson ahead. These activities can be linked to current Science learning if the teacher wishes to address misconceptions, or they can come from previous units of learning to enable children to think like scientists and revise prior learning.

Science in the Early Years Foundation Stage - 'Playing to Learn'

Early Years is about exploring and investigating, having fun and playing. Science combines these key elements, which are crucial to establishing a lifelong love of

learning. It also connects all other areas of learning, including language (describing what is happening in an experiment and learning new vocabulary) to mathematical skills when building models and testing simple theories (for example, using construction materials).

Science in the EYFS is introduced through activities that encourage the children to discover, explore, problem solve, observe, predict, think, make decisions and talk about the world around them. Within the Early Years, this early scientific work is known as 'Understanding the World'. This is one of the four Specific Areas of Learning in the Early Years Framework.

Children have a natural curiosity about people and the environment. We provide first-hand experiences so that the children can meet people that have different occupations, and we provide many opportunities to explore creatures and plants in their natural habitats.

We are very lucky to have gardening areas around our school and Forest School facilities to enrich our studies when we investigate in the natural world. Children have an abundance of opportunities to observe plant growth, seasonal changes and animals in their local habitats.

The children are taught to observe, investigate and safely manipulate objects and materials to identify differences and similarities. The children also learn to use their senses, for example, when exploring the different textures of materials, listening to sounds in the environment and through baking and other food preparation activities.

The children are encouraged to ask questions about why things happen, how things work and about what they think will happen in a variety of activities.

KS1

At Timothy Hackworth Primary School, Science is taught as a discrete lesson each week and is incorporated into other lessons where it is appropriate.

Science at Timothy Hackworth Primary School is an evolutionary process in which children's knowledge and skills are constantly being built up upon, whilst at the same time developing that deeper understanding. Right from the start of their school journey, children are encouraged to think like scientists because that is what they are. Throughout their Science education they are exposed to STEM careers (Science, Technology, Engineering and Mathematics), because we as duty bearers, want the children at Timothy Hackworth to be the best that they can be.

During their time in KS1, children should be able to describe their knowledge in Science, and as a scientist, collaborate with others. They will seek to answer

questions raised through observing closely, performing simple tests, identifying and classifying, gathering and recording data.

In KS1, each Science lesson begins with identifying what Science means and the type of learning we expect to take place. Science 'Knowledge Organisers' have been developed for each unit of learning. Teachers will develop children's understanding that a Knowledge Organiser is a learning tool and not all aspects of it will make sense at the start of the unit, but as the children's knowledge and understanding grows, so will their understanding. Children are encouraged to make additional notes within the Knowledge Organisers to develop their growth mindset skills, ensuring that we constantly build upon what we know and understand. Children in KS1 are encouraged to make connections between what they are learning in Science and the world beyond that lesson. KS1 use a class floor book, which gives the class opportunities to regularly revise previous learning.

In Science it is imperative that children are able to confidently apply their mathematical knowledge in number and data collection. We also strongly encourage the use of technical and scientific language from the moment they enter Year 1. Our Science floor books allow for stronger collaboration between children and gives them the valuable time needed to investigate and explore scientific concepts.

We want children to go on to KS2 knowing what the subject of Science is, believing that they are working as scientists and having an enthusiasm to consider and try many different forms of investigation to find answers to their questions.

KS2

In KS2, the journey continues and Science is taught each week as a discrete lesson. Opportunities to teach Science alongside other curriculum subjects are taken.

Our teaching is sequenced following the Science Overview. As children progress through our school, prior learning is built upon. In each lesson, children revise prior learning using their Knowledge Organiser. These present children with the key information and vocabulary that they will need for the unit of learning. Children are encouraged to use these as a working document and add additional learning, including learning that they are finding a challenge to retain, in order to help them in future lessons. We also challenge children at the start of the unit, and at regular intervals, to go even deeper and make connections with learning from previous year groups, or units from other strands of Science. They must also know which strand of Science they are currently working in and what future STEM careers this could be associated with.

Working scientifically is a focus in our school and in Lower KS2 we will be encouraging children to transfer their Maths and English skills. This ensures that, as children move through KS2, we expect their ability in working scientifically to become

more refined and to show a greater level of confidence. In Upper KS2 we continue to make links with prior learning and challenge the children to think more independently. Upper KS2 children should now have enough background knowledge and exposure to work scientifically so that they can extend their investigations with confidence. We would then expect the children to be able to feed back the answers to their questions, whether this be as a scientific report that shows a depth of knowledge and vocabulary, or a report that shows a child is able to take their data and make sense of it through the knowledge that they have gained.

In KS2, children will use more advanced equipment and measurements to enhance their data collection and observation skills. This will also prepare them for the technology they will be exposed to as they move into KS3.

Impact of Science

Impact is measured by the child's progress against their expected outcomes and their ability to meet the key aims of the National Curriculum for Science.

The impact of learning will be assessed using:

- Science Trackers throughout the year.
- Subject Leader monitoring through data analysis, tracking, pupil progress meetings, learning walks, book scrutiny and pupil interviews.

The impact of our school approach will enable our pupils to:

- have scientific knowledge and conceptual understanding through biology, chemistry and physics;
- understand the nature, processes and methods of Science through different types of Science enquiries;
- have enhanced their Science capital;
- have lively, enquiring minds that lead children to wonder and question;
- have a range of scientific knowledge and skills;
- build on their natural curiosity and realise science is beyond the classroom enabling them join their global community in caring for our planet;
- plan, communicate and run investigations in a variety of ways;
- respect their right to be safe in using equipment safely and sensibly;
- be global citizens who are equipped with the scientific knowledge required to understand the uses and implications of Science today and in the future.

Science and Cross-Curricular Links

We encourage children to think about STEM learning. This ensures children make the connections between Science, Mathematics, Design and Technology and Computing. We make links to Science across the curriculum where appropriate.

Science and PSHE become intertwined in many of their areas and this ensures many of the learning requirements in Relationships Education, Relationships and Sex Education and Health Education are learnt in context and with meaning.

When children are learning through non-fiction texts, opportunities to link with Science are taken. Science can often enable children to show their written and verbal ability in technical language using subject-related vocabulary.

Special Educational Needs and Disabilities

The SENDCO will support identified SEND pupils, their parents and staff, to ensure information on individual children with Special Educational Needs supports their teaching and learning.

Our school meets the needs of children with Special Educational Needs and Disabilities with a curriculum that allows for appropriate adaptations. This may be by outcome, task, resources, support, interest or ability groupings as appropriate.

Expectations of all pupils, including those of SEND pupils, are high. SEND pupils are expected to be the best that they can be.

Assessment

We consider that assessment is part of the whole school curriculum. It is the responsibility of all staff and should provide a supportive framework for teachers and children.

Assessment is not just about the National Curriculum, but needs to take into consideration all scientific learning which is an outcome of the school curriculum.

Ongoing assessment for learning ensures that the development of concepts, skills and attitudes is measured through everyday teaching.

Teachers will make judgements about children's ability. These must be judgements supported by evidence which can be understood by other teachers, by parents and by the children themselves.

Teacher assessments will contribute to the overall picture of the child's progress and achievement. Attainment in Science is measured by the child's progress against their expected outcomes.

Monitoring and Evaluation

The monitoring of Science teaching and learning in our school will take place through the:

- monitoring of short-term planning by the Science Lead;
- observations and Learning Walks by the Science Lead and SLT;
- observation in classrooms as part of the Performance Management system;
- discussion during curriculum development staff meetings in order to further develop provision and practice, respond to queries, check progress, review resources etc.;
- informal discussions between staff and the Science Lead;
- the completion of any whole school Science project where work/evidence is gathered, across the whole range of ages in the school;
- pupil interviews conducted by the Science Lead;
- scrutiny of books, displays and any other evidence of achievement, by the Science Lead and SLT;
- pupil interviews conducted by the Science Lead;
- checking of children's standards of work against agreed criteria, e.g. teacher assessment.

Pupil Progress Meetings are held with staff to identify pupils who may require further intervention and support. Pupil Progress Meetings provide opportunities for Senior Leaders and class teachers to work together to identify individuals or groups of pupils who are at risk of not making expected or better progress and supporting those pupils, by implementing strategies and interventions that reflect their individual needs.

Pupils will have their development and performance monitored through a range of assessment techniques to ensure that they make progress to their full potential.

Continuing Professional Development

The Science Lead has attended STEM based training sessions and has implemented appropriate aspects.

The Science Lead continues to attend Local Authority Subject Leader Network Meetings in order to ensure that the Science Lead and wider staff are aware of the latest information and curriculum developments in Science.

Staff are also provided with regular, planned, internal and external CPD opportunities where relevant and as appropriate.

Display and Resources

Our school 'Climate for Learning in Classrooms' document, outlines the resources and display requirements for each classroom, which includes reference to specific scientific resources and displays to support pupils' learning. Scientific vocabulary is displayed so that children use this in the communication of their understanding. There is current and relevant children's Science work on display in classrooms and in other areas of the school in order to encourage a positive attitude and enthusiasm towards Science for all groups of children.

Parents and Carers

We recognise that parents make a significant difference to children's progress in Science and encourage this partnership. At the start of each academic year, Coffee and Cake Meetings are held to inform parents of the children's learning journey, which includes Science. Celebration assemblies are also held throughout the year and part of this includes celebrating the children as scientists.

Homework

We encourage our children to build on their Science capital and take an active role in seeking an interest in Science beyond the classroom.

Our Governing Body

The Curriculum and Standards Committee liaise with the Science Lead.

The Governing Body will provide support and challenge and are kept up to date with developments in Science through meetings with the Science Lead, through the Head Teacher's Report to Governors, subsequent discussions during Full Governing Body Meetings and Curriculum and Standards Committee Meetings.

The Governing Body will be provided with regular updates re: the implementation and monitoring of this policy.

The Curriculum and Standards Committee will ratify and review the policy.

Conclusion

At Timothy Hackworth Primary School, a whole range of experiences and opportunities will be provided for all pupils as part of a broad and balanced curriculum which reflects school, local, national and global perspectives.

The curriculum offer is routinely reviewed to monitor its Intent, Implementation and Impact.

All children have the right to a high quality education; our Science Policy is designed to ensure that all pupils have access to this right.