Science Policy

St Werburgh's C of E Primary School

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Contents

Introduction

This policy has been written so that present and future staff, Governors and other interested parties may have an understanding of our school's approach to science. It has been developed by reference to a wide variety of resources and in discussion with a large number of people. It will be open to continuous review.

Curriculum Statement

What is Science?

Science is a way of working that allows children, through practical first-hand *experiences* and secondary sources, to develop their knowledge and understanding of the world in which they live.
These *experiences* should enable children to observe, question, investigate, make sense of communicate and evaluate their findings.

Intent

- At St. Werburgh's Primary School, the purpose of Science education is to equip pupils with the knowledge and skills they need to make sense of the world around them.
- Through delivering a quality, progressive sequence of knowledge and concepts, pupils will develop a sense of excitement and curiosity about natural phenomena, maximising their motivation to continue to study science and developing their independence.
- Regardless of a child's background, pupils will be given tools to effectively answer relevant scientific questions, using a variety of enquiry skills. All pupils will be encouraged to embrace their own mistakes and challenges, and accept that this is the learning process of Science.
- By increasing each child's Science Capital, we aim to inspire children to become citizens of the world who make positive contributions towards building a sustainable future for all; preparing them for an ever-changing world.

Implementation

Teachers create a positive attitude towards science learning in the classroom by maintaining a high level of subject knowledge. All staff throughout St.Werburgh's ensure that they are actively 'living' science. Demonstrating the importance of being an ECO Green Flag school and being good role models for all pupils. All staff recognise that our curriculum plan must allow for children to gain a progressively deeper level of knowledge, understanding and skill competency as they move throughout the school.

- Science is taught in planned blocks across the year, providing opportunities for children to explore and investigate the world around them and the most effective times of year.
- Each block of teaching is based around 'Big Questions' – allowing children to make deeper connections to their learning. These big ideas have cultural significance in relation to human activity and pupil's lives.

'Just as a house is not a pile of bricks, so science is not a pile of disconnected facts.'

- Science enquiry skills are planned alongside the science knowledge in the national curriculum. These include: pattern seeking, observing over time, comparative and fair testing, identifying and classifying and research. In each key stage area – children experience one of each of the enquiry skills (EYFS, KS1, LKS2, UKS2)
- Regular events take place to instil curiosity, including: trips, visitors, science fairs, ECO challenges

Impact

Children know more and remember more.

Children are confident in exploring their curiosities and develop independence. Pupils understand the purpose of science and thoroughly enjoy it. This results in highly engaged children who have a passion for science, resulting in motivated learners with sound scientific understanding.

Science in the National Curriculum

Science in the National Curriculum is divided into two parts. These are:

Working scientifically

Scientific knowledge

Working scientifically:

- Observing over time
- Pattern seeking
- Identifying
- Classifying and grouping
- Comparative and fair testing
- Researching using secondary sources
- Collecting, analysing & interpreting data.

Scientific knowledge

- Plants, animals & humans (and their habitats)
- Seasonal changes
- Materials and their properties
- Light & sound
- Physical processes
- Earth & Space
- Evolution & Inheritance

Through the science curriculum, children can also learn about aspects of personal, social and health education (PHSE) and citizenship. Science also offers a range of contexts for the development of literacy, mathematics, information and communication technology (ICT) and thinking skills.

Early Years Foundation Stage

Children in the Foundation Stage work towards achieving the Early Learning Goals in the prime and specific areas of Development Matters. Teachers plan topics and build upon and develop children's own interests and curiosity about the world they live in. Children will have experience of all 5 science enquiry throughout the year, through their planned topics.

Personal attributes and qualities

- We also aim to develop the following personal attributes and qualities in children;
- Curiosity – showing interest in new things, using questions to find out about the world
- Originality – producing new ideas using imagination, thinking of their own questions to investigate
- Perseverance – not giving up when extra effort is needed
- Open-mindedness – accepting new ideas, listening to other points of view
- Self-criticism – being prepared to find ways to improve work
- Responsibility – attempting tasks, yet knowing when to ask for help
- Co-operation – being willing to work as a team and negotiate through discussion
- Independence – being able to make decisions
- Communication – being able to explain and present their ideas verbally and in written form
- Problem Solving – the ability to solve problems with resilience, perseverance and positivity

Science Capital

Science capital is built on Bourdieu's concept of cultural capital of which St Werburgh's C of E Primary School is starting to develop and instil within the pupils.

Science capital is a concept that can imagined like a 'holdall', or bag, containing all the science-related knowledge, attitudes, experiences and resources that you acquire through life. It includes what science you know, how you think about science, who you know and what sort of everyday engagement you have with science.

The Science Capital Teaching Approach helps students find more meaning and relevance in science and, as a result, engage more with the subject.
At St. Werburgh's, we aim to develop and promote the dimensions of science capital throughout our lessons and daily lives:

- Scientific literacy

- Science-related attitudes, values and dispositions
- Knowledge about the transferability of science
- Science media consumption
- Participation in out-of-school science learning contexts
- Family science skills, knowledge and qualifications
- Knowing people in science-related roles
- Talking about science in everyday life

For more information about the Science Capital Teaching Approach, please visit: https://discovery.ucl.ac.uk/id/eprint/10080166/1/the-science-capital-teaching-approach-pack-for-teachers.pdf

Teaching methods

We believe that the best way to learn science is through first-hand experience and emphasis is placed upon scientific enquiry. Science is also taught through topic work and cross-curricular links are made wherever appropriate. We reinforce our teaching of science through growth mindset in order to encourage children to persevere and enhance their resilience and their ability to problem solve with determination and positivity. We use a fish/dog/elephant to ensure children are learning more and remembering more. This allows teachers to evidence any gaps in learning.

Continuity and progression

The content of the curriculum is based on the programmes of study for Key stages 1 and 2. Each class is assigned parts of each attainment target to ensure a balance. All the statements will be visited at least twice in each Key stage. The work in each year builds upon skills and knowledge gained in previous years. The subject coordinator has a Year A and Year B curriculum overview for each year group to ensure that the curriculum is fully covered.

Equal opportunities and differentiation

All children at St Werburgh's are given equal access to the science curriculum irrespective of gender, race or disability. As part of our school's policy on inclusion, we ensure that we respond to pupils' diverse needs and overcome potential barriers to learning.

Resources

Resources fall into two categories:

- The environment in which pupils live and work. This includes the school, homes and the pupils themselves
- Apparatus and equipment which is stored in the science cupboard in the group room.

Safety in science

The practical nature of science, and the encouragement given to children to experiment, means that science represents special problems with regard to safety. These problems are overcome in the following ways:

- Science is taught in a structured way
- Teachers make themselves aware of potential hazards
- The attention of pupils drawn to potential hazards
- Pupils are instructed in ways of working safely
- Pupils are taught to act in a responsible manner

Assessment and record keeping

Continual assessment is used to monitor work and plan appropriately. Working Scientifically and Science Knowledge are separately teacher assessed each term.
Big Questions give teachers evidence of what pupils have learned in each unit of work. The Science Coordinator can revisit this.

Science Knowledge – Children should be assessed on:

- Working towards the expected standard
- Working at the expected standard

Working scientifically – Children should be assessed on:

- Working towards the expected standard
- Working at the expected standard
- Working at Greater Depth

Comments on progress and performance are included in the annual report to parents. All work is marked in accordance with the school's marking policy.

The role of the Head teacher

The Head Teacher's role is to encourage colleagues to teach science effectively. She has a responsibility to ensure that the policy and schemes are implemented and for bringing the policy to the staff for periodic updating.

The role of the science co-ordinator

The co-ordinator, working with the Head, has the responsibility for progressions and co-ordination of teaching the Science curriculum. She has the responsibility for the day to day maintenance of the science equipment and, alongside the Head, for the purchase of new equipment and materials. The co-ordinator will try to support colleagues who are planning science activities by talking to staff on an informal basis and by raising matters relating to science in staff meetings and sign-posting staff to online CPD where necessary.

Topics taught and timescale

The topics taught will be in line with the EYFS learning goals and the national curriculum. 'Working Scientifically' skills will be built upon throughout the year and will not be taught as a separate strand, but through the science curriculum topics.