Great Wilbraham C of E Primary School

Policy title: Science
Date created: May 2022 Next Review Date: May 2024
Date ratified: Signed:

1. Introduction

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. (National Curriculum 2014)
"The important thing is to never stop questioning" Albert Einstein

2. Quality of Education

2.1. Intent of the Curriculum

2.1.1. Curriculum design and coverage

Our curriculum intent for Science is:
HEAD: Acquire scientific knowledge and think critically within investigative activities
HEART: Challenge stereotypes and develop learning about how the world works
HANDS: Provide hands on and practical memorable experiences
Science fosters a healthy curiosity in children about our universe and promotes respect for the living and non-living, it allows children to develop original ideas and a questioning attitude. We believe Science encompasses the acquisition of knowledge, concepts, skills and positive attitudes.

2.1.2. Knowledge and skills – National Curriculum

Through our two year rolling programme the national curriculum for science aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- 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
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

2.1.3. Knowledge and skills – EYFS Statutory Framework

The EYFS Framework in relation to science principally but not exclusively lie within the Knowledge and Understanding of the World strand ELG: Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.

2.1.4. SEND

Science lessons should be planned to meet the needs of all learners. It is the teachers' responsibility to ensure that all children are challenged and that lessons are accessible to all. Teachers will differentiate access to the curriculum but through a practical hands on approach we hope that the vast majority of children are going to be able to access the curriculum activities. The contribution all pupils make is acknowledged and valued. Pupils with emotional and/or physical needs who need individualised programmes with personal achievable targets and rewards are catered for and supported.

2.1.5. Cultural capital and diversity

We feel it is important to develop a child's 'science capital' (Prof Louise Archer 2012) which has similar Bourdieu principles to cultural capital. A range of scientists are studied through our science long term plan and careful thought has been made into the diversity. Developing positive attitudes towards science is vital to encourage pupils to want to continue scientific learning at secondary school.

2.2. Implementation of Teaching and Learning

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2.2.1.Subject knowledge and key principles

Our principles of teaching science at GWPS are that lessons involve:

- **Questioning**, being curious and trying new approaches
- **Planning** practical hands-on learning
- **Measuring** and **observing** engaging investigations
- **Using information** and inspiration from the world around us
- **Recording** results in different ways
- **Explaining** and identifying **patterns** about what children see

Science is part of our topic cycle and although taught throughout the year, the whole school bases their topic work around science in the Spring term seeking opportunities to work collaboratively. We believe that Science can and should be taught in a cross curricular approach and has links to mathematical thinking, inspiring writing and clear links to design technology and computing.

2.2.2.Leadership support

We are a PSQM Gilt school and have a dedicated STEM subject lead who ensures training, book scrutiny and leadership of the subject to monitor the subject.

2.2.3.Formative assessment

Assessment for learning is continuous throughout the planning, teaching and learning cycle. However children are more formally assessed using a variety of methods:

- Observing children at work, individually, in pairs, in a group, and in classes
- Next step marking, targets and learning objectives
- Questioning to elicit thoughts, check misconceptions and understanding through mini plenaries
- Talking and listening to children
- In Foundation, Science provides children with opportunities for: playing and exploring, active learning, creating and thinking critically. Purposeful play activities provide a vehicle for formative assessment.

2.2.4.Resources

Science resources are kept centrally and audited on a regular basis. It is staff responsibility to ensure that resources are placed back neatly and in their original place.

2.2.5.Learning environment

Within every classroom, the principles of teaching science and the scientific skills wheel is displayed. For every lesson the classroom may be moved and classroom organisation considered – although risk assessments may need to be made – use of chemicals, ladders, etc.

2.3. Impact

2.3.1.Summative assessment

In KS1 and KS2 summative assessments are made using observations and the Rising Stars summative tests, with the use of Target Tracker to make observations and assessments of scientific enquiry skills

2.3.2.Preparation for next stage of education

At the end of Reception year Knowledge and Understanding of the World is reported as part of the Development Matters curriculum. At the end of KS1 and KS2 it is statutory for the school to report standards in science. Children's progress is continually monitored and tracked throughout their time at Great Wilbraham C of E Primary and reported to parents at the end of every year.

2.3.3.High quality pupil work

High expectations of science should apply as though working in any other subject. In Science, pupils are encouraged to be open-minded and to try and make sense of what they see and find out. The main focus of our approach will be through open-ended activities where we encourage children to recognize the need for fair testing and working scientifically to answer questions.

2.3.4.Applying learning

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Children are encouraged to apply their learning within and from other subjects – for example maths, DT and computing can all be taught within science. Other cross curricular opportunities to use science learning within other subjects are often sought, for example writing explanations in English.

3. Behaviour and Attitudes

3.1. Attitudes to learning

Children are taught to ask questions, work to the principles of science and investigate systematically using a range of resources and implementing fair testing.

3.2. Positive and respectful culture

Staff and children will respect each other's abilities in Science and aim to support each other to be the best they can be in a safe and supportive environment. Collaborative learning and thinking critically are key within this subject and must be managed carefully.

3.3. Supporting colleagues

Colleagues will be supported by the Science coordinator and provided with CPD or key ideas to develop their teaching when appropriate.

4. Personal development

4.1. Extended curriculum and wider outcomes

In the past two years we have had opportunities to work with different Departments and Institutes associated with Cambridge University (the Department of Engineering, the Department of Chemistry and Institute of Astronomy) and participate in science competitions. We hold an annual science week in January, working with a STEM ambassador annually and biennially hosting a stargazing evening.,

4.2. Social, Moral, Spiritual, Cultural

Children will:

- Work in groups and independently to solve problems and investigate questions
- Discuss scientific moral issues about the world around us
- Understand the development of science within our culture

4.3. Christian ethos and British values

British values are celebrated throughout the school including scientific discoveries and development of science contributions around the world and in this country.

5. Leadership and management

5.1. Roles and responsibilities

Leadership

- To ensure the monitoring of science and the principles
- To promote science capital within the school

Staff

- To deliver the curriculum
- To teach according to the science principles

Governing Body

- To be aware of and involved in the monitoring of science

Parents

- To promote positive attitudes towards science

Children:

- To recognize that science is all around us
- To be curious and enthusiastic about science

5.2. Continuing professional development

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Staff needs in CPD in relation to science may come through performance management, recognition of a whole school need or through the needs of individual pupils. Explorify, REACHout, internal and external providers are all examples of sources of excellent CPD.

5.3. Community links

We aim to involve parents, governors and members of the scientific community in our school, actively seeking opportunities to develop the science capital of children in our school and promote science in the word around us.

5.4. Working with governors

The Science coordinator links with a key governor who reports back to the Full Governing Body progress in Science teaching, learning and data. Learning Walks including governors are taken annually.

5.5. Inclusion and equal opportunities

Our whole school philosophy totally encompasses the equality of access and opportunity and we are committed to providing all children with an equal entitlement to scientific activities and opportunities regardless of race, gender, culture or class as stated under the Equality Act October 2010.

5.6. Safeguarding

The safety of children is paramount in all situations. If a child's behaviour endangers the safety or learning of themselves or others the adult in charge will cease the activity. A senior member of staff will be called if the child needs to be removed.

5.7. Health and safety

At all times a safe and healthy environment is maintained. Any hazards and concerns are reported to the Headteacher or the Office. Risk assessments are undertaken to ensure there is a safe working environment. Great Wilbraham CE Primary School is committed to safeguarding and promoting the welfare of all children.

All teachers will be conversant with the' "Be Safe" safety booklet. This should be read in conjunction with Code of Practice L222 July 2007. Where appropriate reminders will be given to children about potential hazards and care of the equipment they are using.

Any educational visits will be planned with due regard to the school and appropriate approval of the governing body. All staff should be conversant with Code of Practice L222 for safe handling of materials in Science. Practical activities, events off site in the local area, out of classroom activities in the school grounds should all be risk assessed by the class teacher.

5.8. Reviewing and monitoring

This policy will be renewed every three years in accordance with updates on science.

6. Links to other policies

6.1. Assessment policy
6.2. Computing policy
6.3. Design and Technology policy
6.4. Health and safety policy
6.5. Marking and feedback policy
6.6. Curriculum Policy
6.7. Special Needs Policy
6.8. Equalities Policy