



Chater Infant School

**An exceptionally high performing professional
and learning culture creating excellent
achievement for all.**

Science Policy

Rights Respecting School Agenda

*We have the right to go to school
We have the right to learn.*

Article 3 - The best interests of the child must be a top priority in all actions concerning children
Article 28 - Every child has the right to an education (from the National Convention on Rights of the
Child)

***This policy will be equality impact assessed with regard to disability, gender and race at
the time of review and issues arising will be carried forward into the equality action plan.***

Date agreed: May 2016

Date of next review: June 2018

Introduction

According to Webster's New Collegiate Dictionary, the definition of science is "knowledge attained through study or practice,"

Science refers to a system of acquiring knowledge. This system uses observation and experimentation to describe and explain natural phenomena. The term science also refers to the organised body of knowledge people have gained using that system.

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.

Rights Respecting School Agenda

As a Rights Respecting School, there are two articles that feed into our Science Policy:

Article 3 - The best interests of the child must be a top priority in all actions concerning children

Article 28 - Every child has the right to an education

These two articles have been simplified for the Charter Infants charter for children to follow;

We have the right to go to school

We have the right to learn.

Our rationale for teaching science

Science is a way of thinking. It is much more than a body of knowledge. Science learning is about learning to operate as scientists, finding answers to the questions children have about the world around them. Science in our school is about developing children's ideas and ways of working that enable them to make sense of, be curious and explore their world.

Science in our school will develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics; develop understanding of the nature, process and methods of science through different types of science enquiries; ensure that children are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Science is a core subject within the national curriculum. There are two strands: working scientifically and subject knowledge. Our role is to teach working scientifically through the contexts of the subject knowledge. Children in foundation stage are taught the science elements through Knowledge and Understanding of the world.

We believe that a broad and balanced science education is the entitlement of all children, regardless of ethnic origin, gender, class aptitude or disability.

Our aims in teaching science are

- Preparing children for life in an increasingly scientific and technological world
- Fostering concern about and active care for our environment
- Helping children to understand how science has changed our lives and is vital to the worlds' future prosperity
- Helping our children acquire a growing understanding of scientific ideas
- Helping develop and extend our children's scientific concept of their world
- Developing our children's' understanding of the international and collaborative nature of science
- Using imaginative and purposeful activities, that are well managed and enjoyable
- Giving clear and accurate teacher explanations and offering skilful questioning
- Making links between science and other subjects

Attitudes

- Encouraging the development of positive attitudes to science building on our children's' natural curiosity and developing a scientific approach to problems
- Encouraging open mindedness, self-assessment, perseverance and responsibility
- Building our children's self-confidence to enable them to work independently
- Developing our children's social skills to work cooperatively with others
- Providing our children with an enjoyable experience of science, so that they will develop a deep and lasting interest and may be motivated to study science further

Skills

- Providing regular opportunities for child-led enquiries
- Giving our children an understanding of scientific processes and different types of scientific enquiry (observing over time, pattern seeking, sorting and grouping, fair testing and research)
- Helping our children to acquire practical scientific skills
- Developing the skills of working scientifically, including: ideas, questions and planning; observing, measuring and presenting evidence; concluding, communicating, explaining and evaluating evidence
- Developing the use of scientific language, recording and techniques
- Developing the use of IT in investigating and recording
- Developing children's literacy in order that they can read and spell scientific terminology consistent with their age as well as articulate scientific concepts clearly and precisely
- Enabling our children to become effective communicators of scientific ideas, facts and data

How science is structured through the school

Planning for science is a process which all teachers are involved to ensure that the school gives the full coverage of the national curriculum. Science teaching in the school is about excellence and enjoyment, and we adapt and extend the curriculum to match the unique circumstances of our school. Science is taught through a cross curricular approach linking to the topics being covered.

Foundation Stage

Science in the Foundation Stage is an integral part of the topic work covered during the year. We relate the Science aspects of the children's work to the objectives set out under the appropriate Development Matters statements taken from the Early Years Foundation Stage document which details curriculum planning for children aged three to five. Science makes a significant contribution to the objectives in developing a child's knowledge and understanding of the world.

Key Stage 1 (KS1)

Year 1: Everyday materials, Different animals, In the garden, Seasons

Year 2: Habitats, Growth and survival, Uses of everyday materials, Growing plants

The short term plans give details for each session which include:

- Learning objectives and success criteria
- Resources
- Attainment
- Vocabulary
- Delivery of lesson (including use of support staff, groupings)
- Differentiation (including SEN support and challenge for gifted children)
- Links with other subjects including computing/ Speaking and Listening

As children move from the Nursery to Year 2 they will progress from structured play to practical experimentation. They will begin to plan investigative work more independently. Ideally at least one investigation will be completed every half term.

We have planned the topics in science so that they build upon prior learning. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge and we also build progression into the science scheme of work, so that the children are increasingly challenged as they move on through the school.

We also have an annual 'Science Day' where children from Reception to Year 2 work in mixed groups and are involved in various science based activities.

Teaching and Learning Strategies

At least 1 hour per week is spent on science work in KS1. There are also opportunities for science skills to be reinforced in other areas of the curriculum and subjects might well be combined when and where appropriate. Science teaching in the school is about excellence and enjoyment. We adapt and extend the curriculum to match the unique circumstances of our school.

The emphasis in our teaching of science is on first-hand experience and we encourage the children increasingly to take control of their own learning. We focus on 'working scientifically' therefore much of the study of science is done through practical investigative work.

We use a range of teaching and learning styles in science lessons in order to develop the knowledge, skills, and understanding of each child.

These include;

- Providing opportunities for children to work as a whole class, in pairs, individually or in ability or mixed ability groups
- Encouraging children to ask as well as answer scientific questions
- Encouraging children to communicate their findings in a variety of ways, including written and oral
- Providing suitable resources
- Modelling, teaching and reinforcing scientific vocabulary
- Giving children practical 'hands on' experiences
- A multi-sensory approach to include all learning styles
- Elicitation activities to gain an insight as to what children already know, in order to inform planning and assessment
- Providing opportunities for children to observe, measure, classify, predict, plan, investigate, consider evidence, hypothesise, compare and question
- Relate their scientific understanding to everyday life both in school and out
- Use investigations to answer questions

Our approach to science

The essential elements describing how science is taught in our school are described below:

- Topic planning is found on the shared drive
- Children are given plenty of opportunity to practice science skills
- Practical resources are kept within each year group
- The school combines secondary sources with first-hand experience to build children's' science skills
- We actively teach science skills so these are developed progressively across the school
- We encourage children to ask and answer their own questions as far as practicable
- We use cross curricular links to science to support pupils to transfer their skills between subjects
- We use the outdoors when appropriate to explore scientific ideas
- We provide enrichment of the curriculum through clubs, assemblies, visitors and visits

Assessment and recording in science

We use assessment to inform and develop our teaching. We use the school policy on marking and assessment, making sure that targets are set to close gaps in understanding and where misconceptions occur.

We assess children's progress in working scientifically skills and identify which content objectives they have achieved to inform future teaching and so that improvement can be tracked over time.

We assess children's work in science in the short term by: making informal judgements as we observe them during lessons and on completion of a piece of work, marking the work and

commenting as necessary. These short term assessments are closely matched to the teaching objectives.

The science subject leader keeps a track of samples of work/assessments from children of differing abilities from each year group in a portfolio and uses these to look at progression and levelling consistencies. At the end of each term, the teacher makes a judgement about the work of each child in relation to Herts for Learning science assessment criteria..

Parents are kept informed of their child's achievements in science through parent consultation meetings and an end of year report, where next step targets are also outlined.

In the Foundation Stage attainment is recorded and assessed against the Development Matters statements which are appropriate to the child's development.

Organisation for Curriculum Access for All

As many of our children speak English as an additional language it is important we offer them as much visual and 'hands on' experience as possible. All children can 'do' even if they cannot communicate verbally what they are doing. Wherever possible our children will have support in their first language, to support understanding of scientific language and conceptual understanding.

In order to meet the needs of our more able children we allow them the time to continue to question and investigate their explorations, thus developing and satisfying their intellect and curiosity. They will be encouraged to record their experiments in a more independent and sophisticated way, and to offer their own evaluations of their work. More able children are also given the opportunity to structure their own investigations.

Pupils with special needs have Support Plans in which their needs are identified. In science teaching, these needs will be met through differentiation and personalisation. In addition they may receive extra support for science work from the class teacher, the learning support assistant or working alongside their peers in the classroom.

Resources

- Science National Curriculum 2015
- Herts for Learning Science support
- Science boxes are located in each teaching unit. (*Science boxes were introduced as a result of teachers requests that the more accessible the resources, the more frequently they would be used.*)
- Teacher reference books are in units
- Children's books about science topic are located in the non-fiction section of the library
- Espresso
- Purple Mash
- Internet Resources

The Contribution of Science in other Curriculum Areas

English

Science contributes significantly to the teaching of English in our school by actively promoting the skills of;

- Speaking and listening, through discussion and recounting their observations
- Reading as some of the texts that the children study are of a scientific nature
- Writing through writing reports, recounts and recording information

Mathematics

Science contributes to the teaching of maths in a number of ways;

- Using weights and measures
- Using and applying number
- Estimating and predicting
- Accurate observations
- Data handling

Computing

Children use computing in science lessons where it supports the learning. During such times the children might;

- Find and select information
- Record and present information

Personal, Social and Health Education (PSHE) and Citizenship

Science makes a significant contribution to the teaching of PSHE. It covers subject matters like healthy eating, medicine and keeping safe. It also gives opportunities for pupils to work co-operatively within groups and encourages perseverance.

Spiritual, moral, social and cultural development

Science teaching offers children many opportunities to examine some of the fundamental questions in life, for example the evolution of living things and how the world was created. Children develop a sense of awe and wonder regarding the nature of our world through learning about the many processes that affect living things. We give them a chance to reflect on the way people care for the planet. By developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people.

Role and responsibilities of the Subject Leader

- To write and review a subject leader action plan
- To monitor and review teaching and learning in science including planning, observations, work scrutiny, learning environmental walk, pupil and staff questionnaires
- To support staff to colleagues
- To encourage high expectations of all pupils including children with SEND, disadvantaged children and most able children
- To ensure continuity and progression and learning experiences throughout the school
- To monitor and evaluate pupil progress and teaching and learning in science
- To track, monitor, collate assessment data and to raise standards
- To contribute towards staff meetings
- To identify strengths and weakness across the school
- To identify any necessary resources/CPD requirements in your subject
- To keep up to date with developments in Science education and disseminate information to colleagues as appropriate
- To report to Governors when required

This document is a working policy and consequently can be reviewed at any time as necessary.