

SCIENCE CURRICULUM POLICY

INTRODUCTION

Science is a core subject area for Key Stages 1 to 4. This policy was developed by the Curriculum Team for Science, following the National Curriculum (2013) guidelines. This policy is adapted from the existing school policy for the Science Curriculum and guidance from the CLEAPSS advisory service (Consortium of Local Education Authorities for the Provision of Science Services).

DEFINITION

We believe science is a valuable means of systematically finding out about ourselves and the environment we live in. Scientific understanding will allow pupils to use key concepts in a range of contexts, both familiar and unfamiliar, and build up confidence in their application.

AIMS AND OBJECTIVES

- To extend children's natural curiosity and wonder about the world in which they are growing.
- To use schemes of work to give pupils a progressively deeper understanding of the central concepts of science, suited to their individual learning needs, including:
 - careful observation
 - measurement
 - communication
 - planning and carrying out experiments
 - problem solving in everyday contexts
 - predicting
 - making inferences
 - fair testing
- To offer a range of learning experiences which match the needs of the pupils at all stages.
- To provide opportunities for pupils to explore ideas and concepts in a range of environments.
- To show the various applications of science in everyday life.
- To provide opportunities for pupils to communicate.
- To initiate a lifelong interest in the natural world.

RATIONALE

Science is a body of knowledge built up through the experimental testing of ideas. Science is also methodology, a practical way of finding reliable answers to questions we may ask about the world around us. Science in our school is about developing children's ideas and ways of working that enable them to make sense of the world in which they live through investigation, as well as using and applying skills.

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 include the following:

- Preparing our children for life in an increasingly scientific and technological world
- Fostering concern about, and active care for, our environment
- Helping our children to 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

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

- Giving our children an understanding of scientific processes
- Helping our children to acquire practical scientific skills
- Developing the skills of investigation - including observing, measuring, predicting, hypothesising, experimenting, communicating, interpreting, explaining and evaluating
- Developing the use of scientific language, recording and techniques
- Developing the use of ICT in investigating and recording
- Enabling our children to become effective communicators of scientific ideas, facts and data

AIMS

- Teaching a creative science curriculum
- Teaching in a personalised and adapted form of the National Curriculum Science Orders
- Giving clear and accurate teacher explanations and offering skilful questioning
- Making links between science and other subjects
- Our role is to teach scientific enquiry through the contexts of the three main content areas. The breadth of study statement in the National Curriculum is concerned with issues such as the use of ICT, scientific language and health & safety

POLICY INTO PRACTICE

NATIONAL CURRICULUM ORDERS

St. Nicholas School uses the new National Curriculum (DfE, 2014) and also refers to “Planning, Teaching and assessing the curriculum for pupils with learning difficulties Science” (QCA), The KASS Science and Curriculum Progression Pathway (2014) and Equals schemes of work, in order to deliver a broad, balanced and differentiated curriculum. The units within science cover the broad headings of:

- Scientific Enquiry / “Working Scientifically”.
- Life Processes and Living Things
- Materials and their Properties
- Physical Processes

STYLES OF LEARNING

For pupils with Severe Learning Difficulties (SLD), access to the National Curriculum Science can be provided from KS1 and KS2.

- The role of ICT in supporting pupils learning in science is recognised
- The emphasis of this being placed on enabling each pupil to progress and demonstrate achievements in contexts appropriate to their age
- Pupils learn in a variety of styles e.g. individually, in pairs, small groups or as classes
- Pupils participate in a variety of practical activities using a range of equipment appropriate to their individual needs
- The units are delivered to the high need learners using a wide range of sensory experiences via the SHINE curriculum.

CURRICULUM PLANNING AND TEACHING

Planning for science is a process in which all teachers are involved to ensure that the school gives full coverage of (*National Curriculum Science and science in the Foundation stage*). Science teaching in the school is about excellence and enjoyment. We adapt and extend the curriculum to match the unique circumstances of our school.

KS1 and Foundation stage teachers should be teaching science for a minimum of one hour each week. KS2-4 teachers should be teaching science for a minimum of two hours per week.

In KS 1/ Foundation stage, a minimum of one third of lessons overall should include practical scientific enquiry. In KS 2 - 4, a minimum of 50% of lessons overall should include practical scientific enquiry.

FOUNDATION STAGE AND KS1

Teaching in the Foundation Stage and KS1 will be in line with the EYFS (Understanding of the World). The learning will be play and sensory based, involving a range of resources and learning opportunities based on the children's individual interests. Teaching will also utilise opportunities for learning in all specialist areas throughout the school, such as the sensory room, sensory garden, playground, pond area, the wider school environment etc. The learning within these key stages is topic based.

KS2

For all pupils within Key Stage 2, Science is delivered with reference to the National Curriculum, KSENT progression pathways, STRATA Scheme (Science To Raise And Track Achievement Project developed by Cambridgeshire SEN Science Team) and Equals schemes of work. This is planned on a spiral curriculum which is detailed on each department's topic webs; the children therefore recap and build on knowledge gained in the previous academic year.

For High-Needs Learners in KS2 the planning is differentiated through the SHINE. These pupils are taught through a range of sensory experiences in-line with the SHINE curriculum and programmes set by the shared goals programme and individual therapists.

KS3 AND KS4

Science will be delivered as a discrete subject, in modular form, and will continue to accommodate pupils working at a sensory level.

The school broadly follows National Curriculum Science (2014). The units of the Scheme of Work are taught as described below, agreed after whole-staff discussion. This ensures progression between year groups and guarantees topics are revisited. Teachers are expected to adapt and modify the model plans to suit their children's interests, current events, their own teaching style, the use of any support staff and the resources available. We must ensure that any modification does not overlook any areas of the National Curriculum. In KS3, the topic and extension class planning is adapted from the Nelson Thornes 'Fusion' scheme of work which is compatible with the National Curriculum. Additional accreditation in KS3 can be sought by completing the Science Today unit of the WJEC Entry Pathways. In KS4, the accreditation group planning is adapted from the OCR Entry Level in Science Scheme of Work. Class activity ideas can be gained from the STRATA scheme of work.

Our Science Curriculum develops the 'Key Concepts' (DFE, 2012) in order to deepen and broaden our students' scientific knowledge, skills, and understanding:

- 1.1 – Scientific Thinking: ideas and models are used to help explain phenomena in the natural world and promote the generation and testing of creative theories. The students make observations and take part in experiments to prompt them to begin critically analysing and evaluating evidence.
- 1.2 – Applications and Implications of science: students are prompted to understand how scientific ideas can be applied to bring about developments in technology and changes in how people think and behave. We discuss the ethical and moral implications of using and applying science.
- 1.3 – Cultural Understanding: students learn that modern science has its roots in many different societies and cultures; it draws on a variety of valid approaches to scientific practices

- 1.4 – Collaboration: students learn that scientific developments and common understanding are shared across different disciplines and boundaries.

KS5

At 16-19 Science will not be taught as a discreet subject but will be integrated into PSHE Independence Skills and the College Link programmes as part of the OCR Foundation Learning programmes (in areas such as Community, Environment and Work-Related Learning etc). At the request of the pupils in the 6th Form a science option will be taught, as and when required, using the pupils' own chosen topics and the STRATA scheme of work.

OUR APPROACH TO SCIENCE

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

- We have adopted parts of a commercial primary science scheme, which are adapted to our circumstances
- Teachers' notes and pupil task sheets are networked and are available on disk
- Teachers' notes and pupil task sheets have been adapted to the needs of our children
- Task sheets have been translated for first-language use as appropriate
- We use the school's intranet to share science resources
- Other resources include selected video and wallchart resources; short video sequences and other teaching resources have been networked for interactive-whiteboard use
- The school combines these secondary sources with first-hand scientific enquiries, building children's science skills
- We actively teach science skills, and reinforce learning with selected enquiry simulations.
- We encourage children to ask and answer their own questions as far as practicable
- Children complete at least two full enquiries each term, taking increasing responsibility for their planning, carrying them out and recording/interpreting the results
- We use homework to support school and class activities. This relates to the school's overall homework policy
- We use cross-curricula links to science with, for example, design and technology units.
- We develop science informally through local Wildlife Trust membership, school visits, parent meetings and other out-of-school activities

STAFFING AND RESOURCES

All class teachers deliver their science lessons. Those students not included in these groups are taught by the class teacher. In the 16-19 group the class teacher's Science skills are used in the students cross-curricular studies for the foundation learning pathways e.g. in studies of the local environment, for example. There are two central resource areas for Science, one in the Primary and one in the Secondary Department. Areas for environmental Science include a sensory garden and gardening areas at the rear of the school.

HEALTH AND SAFETY

All activities will be carried out with the pupils and adults health and safety taken into consideration. See Health and Safety policy.

INFORMATION AND COMMUNICATION TECHNOLOGY

We use ICT widely in Science. Children are given the opportunity to practice science skills and enhance their presentation using carefully-chosen software. There is a portable computer system, available to all classes is set up and includes an INTEL computer microscope which can be used, together with the projector and printer. Interactive whiteboard and overhead projector are set up in the senior science classroom. Use is made of Internet facilities in class, in the ICT room and via the wireless laptop trolley and there are also a variety of CD-ROMs available for use to support the delivery of science. We use ICT for enquiry work, including microscopes with digital cameras, video capture of images and activities, and data logging.

RECORDING AND ASSESSMENT IN SCIENCE

The formal assessing and recording of pupils achievements in science is carried out by continual teacher assessment, through observations and marking. These are then used to produce end of term evaluations and the EHC report targets. Students within the Foundation Stage are assessed using the EYFS profile and this summarises each child's development and learning attainment at the end of the EYFS. Students within KS1-5 are assessed using Pupil Asset. External assessment is introduced in KS3.

MONITORING AND REVIEW

This policy will be monitored on a yearly basis by the Curriculum Team to keep up to date with any adjustments to statutory legislation or curriculum and any changes will go via the Governing Body when necessary.

EQUALITY, SAFEGUARDING AND EQUAL OPPORTUNITIES STATEMENT

St Nicholas School, in all policies and procedures, will promote equality of opportunity for students and staff from all social, cultural and economic backgrounds and ensure freedom from discrimination on the basis of membership of any group, including gender, sexual orientation, family circumstances, ethnic or national origin, disability (physical or mental), religious or political beliefs.

St Nicholas School aims to:

- Provide equal opportunity for all
- To foster good relations, and create effective partnership with all sections of the community
- To take no action which discriminates unlawfully in service delivery, commissioning and employment
- To provide an environment free from fear and discrimination, where diversity, respect and dignity are valued.

All aspects of Safeguarding will be embedded into the life of the school and be adhered to and be the responsibility of all staff.

LINKS TO OTHER POLICIES

Safeguarding Health and Safety SRE PSHEEC D&T Shine Curriculum

SCIENCE CURRICULUM TEAM REVIEWED TERM 1 2017 RATIFIED BY THE LCS COMMITTEE – JANUARY 2018
