



Science Policy

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Science Policy

A high-quality science education provides the foundation for understanding the world around us. Science teaches an understanding of, and develops a sense of excitement and curiosity about natural phenomena. It aims to stimulate students to find out why things happen in the way they do and encourages them to understand how science can be used to explain what is occurring, predict how things behave and analyse causes. It teaches our students to work scientifically to stimulate creative thought and understand the nature, processes and methods of science. Students learn to ask scientific questions and begin to appreciate the way in which science will affect the future on personal, national and global terms.

Objectives

The objectives of teaching science are to enable our students to

- Work scientifically to develop an understanding of the nature, processes and methods of science, through different types of scientific enquiry that help them to ask and answer scientific questions about the world around them;
- Develop scientific knowledge and conceptual understanding in the following areas:
 - Biology – including plants, animals, habitats, evolution and inheritance;
 - Chemistry – including every day materials and their uses, rocks, states of matter and their properties and changes of materials;
 - Physics – including seasonal changes, light, forces, magnets, sound, electricity, Earth and space;
- Understand the uses and implications of science, today and for the future.

Teaching of science

Northfield School delivers science by using a variety of teaching and learning styles to meet the needs of all our learners and their specific SEND needs. Medium- and short-term plans demonstrate the range of different approaches, e.g. whole class teaching and enquiry-based research activities. Where students participate in activities outside the classroom, risk assessments are carried out prior to the activity to ensure that the activity is safe and appropriate for all students.

Spoken language

We recognise the need to develop students' language across the whole curriculum – cognitively, socially and linguistically. We recognise that students will need support to build up and extend any specialist scientific vocabulary and be assisted in making their thinking clear both to themselves and to others.

Mathematics

Science contributes to the teaching of mathematics in a number of ways. When working scientifically, the students learn to use and apply number, measurements and statistics. They also develop mathematical skills such as estimating, predicting, spotting and explaining patterns and develop accuracy in their observation and recording of events. Many answers and conclusions include numbers and measurements.

Information and Communication Technology (ICT)

ICT can greatly enhance the delivery of science, particularly in the areas of data logging, data handling, modelling and the use of the internet to research information. There are also opportunities for the use of word processing, spreadsheets and control applications.

Personal, Social, Health and Economic Education (PSHE) and Citizenship

Science makes a significant contribution to the teaching of PSHE and Citizenship:

- citizenship and social welfare, e.g. the way people recycle material and how environments are changed for the better or worse,
- discussions and debates, e.g. issues of local, national and international concern,
- scientific study of animals and understanding humans, e.g. life cycles and healthy living links directly to areas within the personal and health sections of PSHE including Relationship and Sex Education (RSE).

Spiritual, Moral, Social and Cultural Education (SMSC)

The Thematic Approach to Learning (TAL) method of delivering science in Key Stage 3 offers our students many opportunities to consider social and moral questions, for example the effects of smoking, how people care for the planet and how science can contribute to the way we manage the Earth's resources. Science can teach students about the reasons why people are different and, by developing their knowledge and understanding of physical and environmental factors, it promotes respect for other people.

Curriculum Planning

Key Stage 2 and 3

The schemes of learning for science are carefully planned within a within our TAL programme. Northfield School uses the National Curriculum programmes of study for key stages 2 and 3 science as the basis of its curriculum planning. All our science planning ensures that cross-curricular links are made, giving real purpose to learning within the context of a theme. Where links are not valuable, discrete science lessons are planned to ensure key skills and competencies from the National Curriculum programmes of study are covered. Where possible we include a local context (e.g. trips to Oxford National History and Science museums) to ensure a deeper understanding and experience for our students.

Subject	Areas of focus
Biology	<ul style="list-style-type: none">- Cells, genetics, inheritance and modification- Health, disease and the development of medicine
Chemistry	<ul style="list-style-type: none">- Atoms, compounds and states of matter- Separating mixtures, breaking down substances, acids and metals
Physics	<ul style="list-style-type: none">- Forces, movement and energy- Waves and radiation

Key Stage 4

For our older students, science is taught in dedicated lessons. Students work towards accreditation following either a Functional Skills or GCSE programme of study therefore science lessons in Key Stage 4 focus on covering the material specified by the exam boards.

Differentiation

At Northfield School we recognise that all students have a wide range of scientific ability and we ensure that we provide suitable learning opportunities for everyone by matching the challenge of the task to the SEND ability and learning style of the student. This is achieved in the following ways

- setting tasks which are open-ended and can have a variety of responses,
- setting tasks which can be completed in a variety of different ways e.g. verbal, pictorial, written response,
- providing resources of different complexity or presented in different ways to match the ability and learning style of the students,
- grouping students flexibly within the classroom and setting different tasks for each group,
- setting tasks of increasing difficulty and challenge,
- using support staff to support and extend the work of individual students or groups of learners.

Assessment

Assessment is built into lesson planning with a strong focus on assessment for learning that involves students in self and peer assessment, an essential part of formative feedback. The following types of assessment are used:

- Formative: the information gained affects the next learning experience,
- Diagnostic: finding out what attitudes, knowledge, understanding or skills still need to be developed,
- Evaluative: analysing the impact of planning, teaching and the curriculum on students' outcomes,
- Summative: the systematic recording of information which leads towards a summary.

Health and Safety

All practical activities in science must comply with the requirements of the Health and Safety at Work Act 1974. Teachers must now carry out risk assessments of any hazards to meet the demands of Control of Substances Hazardous to Health (COSHH) regulations.

Teachers use risk assessments for science activities normally carried out in schools from the Consortium of Local Education Authorities for the Provision of Science Services (CLEAPS).

Some activities may need additional risk assessment to take account of the individual needs of the students. When working with tools, equipment and materials, in practical activities and in different environments, including those that are unfamiliar, students should be taught about hazards, risks and risk control.