



St Alban's C of E Academy  
Science Policy

# St Albans Academy

## SCIENCE POLICY

### RATIONALE

Science in the primary school, as elsewhere, is about developing understanding of the world around us. It is concerned with a particular part of this world, the living and the non-living materials in it, and with understanding, which is developed through testing ideas against available evidence. Learning science is the gradual building of these ideas and of the skills required to test ideas to see if they fit evidence from the world around. It is the job of science education to extend experience, to develop scientific ones. For the child learning science, as for the scientist, the way understanding develops depends both on the existing ideas and on the process by which those ideas are used and tested in new situations.

### AIMS

To provide opportunities for all children to take part in science activities (in early years knowledge and understanding of the world activities), regardless of gender, ethnicity, socio-economic background or special educational needs.

To adopt a constructivist approach to teaching and learning in science.

To provide opportunities for children to develop the process skills associated with science education as well as develop a greater knowledge and understanding of life processes and living things, materials and their properties and physical processes as described in the National Curriculum for science.

To ensure all children's needs are recognised regarding the science curriculum and children are provided with relevant support and appropriate tasks and experiences, whether it be enrichment or consolidation.

To provide a teaching programme that builds upon experiences, skills and concepts as children progress throughout the school.

To foster positive attitudes such as curiosity, perseverance, willingness to use and appraise evidence, willingness to tolerate uncertainty, critical reflection and enthusiasm.

To help all children to experience pleasure, success and enjoyment in their scientific experiences in order to develop a positive attitude towards science education.

### TO ACHIEVE THESE AIMS WE WILL

Plan using Early Years Knowledge and Understanding of the world units of work from the Early Years Scheme of work or Keystage 1 and 2 termly plans that have been developed using QCA scheme, National Curriculum, Early Learning Goals and other published materials experiences for all the children in our class, ensuring that all children are provided with challenging, stimulating, interactive experiences.

Take children's existing ideas on board when planning and teaching science by: eliciting children's ideas prior to teaching a unit of work; considering these ideas when planning scientific experiences; providing opportunities for children to test ideas generated there by possibly changing them at the same time developing process skills so that testing is scientific; assessing how much children's ideas and process skills might have changed during a unit of work to further inform planning and at the end of a unit of work.

Provide children with science activities that are designed to help them develop or change their ideas through exploration and investigation bringing them closer to the more powerful ideas of science, using both primary and secondary data.

Structure our teaching so that it provides both concepts and process skills.

Ensure that all concepts and process skills of Early Learning Goals/Early Excellence and National Curriculum are covered and revisited in a systematic and progressive way.

Provide children who are experiencing difficulties at any time with appropriate reinforcement activities to give them every opportunity to develop appropriate skills and key ideas associated with the unit of work. Also provide children who grasp ideas and skills quickly and easily appropriate enrichment activities.

Teach in mixed ability classes, providing opportunities for all children to work as a whole class, in groups or individually, grouping children in various ways ensuring equality of opportunity.

Assess the achievement of all children using formative and summative assessment procedures in accordance with the school's assessment policy, also by using elicitation evidence prior to and after teaching and after teaching a lesson or sequence of lessons. These procedures will inform future planning and ensure children receive appropriate learning experiences.

Display a variety of scientific work to help to reinforce concepts.

Opportunities for children to apply and develop their computing skills through using appropriate computing to support their learning in science will be given.

Provide a range of sources of information and data including computing – based sources where appropriate, instructing, and supporting them in their appropriate use.

## METHOD OF DELIVERY

Good science teaching builds progressively on pupils existing ideas. In order for effective delivery of science education, teaching methods should allow opportunities for:

- Finding out children's ideas using a variety of elicitation activities.
- Analysing children's ideas.
- Providing opportunities for testing ideas, thereby possibly changing them.
- Providing opportunities for developing process skills so that testing is scientific.

## CONTINUITY AND PROGRESSION

In foundation stage pupils will work from the Knowledge and Understanding of the world planning from the Early Years scheme of work. This planning aims to develop in pupils the crucial knowledge, skills and understanding that help them make sense of the world. It provides opportunities for pupils to carry out activities based on first hand experiences that encourage exploration, observation, problem solving, critical thinking, decision-making and discussion. It provides the foundations for the science KS 1 and then the KS 2 curriculum.

The scheme of work for KS 1 and 2 continues building on concepts and process skills in a spiral way, ensuring that all knowledge and understanding programmes of study are covered at least once in Key Stage 1 and at least

twice at Key Stage 2, and that all the process skills programmes of study are constantly being visited and developed as each science unit of work is taught.

The contribution of science to teaching in other curriculum areas:

#### English

Science contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. Some of the texts that the children study in the Literacy Hour are of a scientific nature. The children develop oral skills in science lessons through discussions (for example of the environment) and through recounting their observations of scientific experiments. They develop their writing skills through writing reports and projects and by recording information.

#### Mathematics

Science contributes to the teaching of mathematics in a number of ways. The children use weights and measures and learn to use and apply number. Through working on investigations, they learn to estimate and precomputing. They develop the skills of accurate observation and recording of events. They use numbers in many of their answers and conclusions.

#### Computing

Children use computing in science lessons where appropriate. They use it to support their work in science by learning how to find, select, and analyse information on the Internet and on CD-ROMs. Children use computing to record, present and interpret data and to review, modify and evaluate their work and improve its presentation. They also use e-mail to communicate their mathematical findings with other children in other schools and countries.

#### Personal, social and health education (PSHE) and citizenship

Science makes a significant contribution to the teaching of personal, social and health education. This is mainly in two areas. Firstly, the subject matter lends itself to raising matters of citizenship and social welfare. For example, children study the way people recycle material and how environments are changed for better or worse. Secondly, children benefit from the nature of the subject in that it gives them opportunities to take part in debates and discussions. They organize campaigns on matters of concern to them, such as helping the poor or homeless. Science promotes the concept of positive citizenship.

#### 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. Through many of the amazing processes that affect living things, children develop a sense of awe and wonder regarding the nature of our world. Science raises many social and moral questions. Through the teaching of science, children have the opportunity to discuss, for example, the effects of smoking and the moral questions involved in this issue. We give them the chance to reflect on the way people care for the planet and how science can contribute to the way we manage the earth's resources. Science teaches children about the reasons why people are different and, by developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people.

## EQUAL OPPORTUNITIES

St Albans Academy is committed to equality of opportunity. All children will be provided with a progressive, stimulating science curriculum irrespective of gender, ethnicity, socio-economic background or special educational needs as in line with the school's equal opportunities policy.

## SEN

At our school we teach science to all children, whatever their ability. Science forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our science teaching, we provide learning opportunities that enable all pupils to make progress. We do this by setting suitable learning challenges and responding to each child's different needs. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels.

When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style and differentiation – so that we can take some additional or different action to enable the child to learn more effectively. This ensures that our teaching is matched to the child's needs.

Intervention through School Action and School Action Plus will lead to the creation of an Individual Education Plan (IEP) for children with special educational needs. The IEP may include, as appropriate, specific targets relating to science.

We enable pupils to have access to the full range of activities involved in learning science. Where children are to participate in activities outside the classroom, for example, a trip to a science museum, we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

## GIFTED & TALENTED

In science, staff will develop differentiated weekly plans to ensure pupils who are identified as gifted in science and achieving exceptionally high levels of achievement are catered for. For these pupils accelerated learning experiences where programmes of study from the next school phase or Keystage are accessed by the pupils through investigative work, or enrichment activities are planned for giving these pupils open ended investigations to complete that link to the science programmes of studies being covered. Support from the school Gifted & Talented co-ordinator/ science co-ordinator can be sought to support this process.

## ASSESSING

Assessment is inextricably linked to planning and all assessments in science are used to inform future planning in order to impact on future teaching and learning.

In science elicitation activities are carried out prior to, during and after teaching in a variety of ways to inform planning or how far ideas have progressed after a period of teaching.

Formative assessment is continually on going in the form of marking pupils work and making notes on weekly planning in order to inform planning for the next lesson. These assessments are linked to the key learning objectives for the lesson.

In early years profiles are kept up to date with summative assessments of pupils achievements.

For each Keystage 1 and Keystage 2 unit of work there is a summative record developed in order for staff to make a judgement about what each pupil has achieved at the end of each taught unit compared to national expectations. These assessments also inform future teaching.

A minimum of 1.5 hours per week will be spent on science at Key Stage 1 and a minimum of 2.5 hours at Key Stage 2.

## RESOURCES

A wide range of equipment is stored in science resource room Early Years, Key Stage 1 and Key Stage 2 science reference books can be found in the library and science cupboards.

## HEALTH AND SAFETY

When working with science equipment and materials during practical activities teachers should ensure that children understand the hazards and learn how to control them, ensuring the safety of themselves and others.

## MONITORING AND REVIEW

It is the responsibility of the science subject leader and Senior Leadership Team to monitor the standards of children's work and the quality of teaching in science. The science subject leader is also responsible for supporting colleagues in the teaching of science, for being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school. The science subject leader has specially allocated time for fulfilling the vital task of reviewing samples of children's work and visiting classes to observe teaching in the subject.

### Review

This policy will be reviewed annually by staff and governors