Science Policy

Introduction

Science is a core subject within the National Curriculum. This policy outlines the purpose, nature and management of Science taught at Our Lady and St Andrews Academy. It reflects the consensus views of all the teaching staff and they are responsible for its implementation.

This policy should be read in conjunction with the New Curriculum 2014 documentation which sets out in detail what pupils will be taught in different year groups as of September 2014.

Aims

- to develop the natural curiosity of children about the world around them;
- to develop questioning and enquiring minds through a range of enjoyable and interesting experiences;
- to help children develop the skills to make systematic enquiries;
- to provide opportunities for children to apply theoretical ideas to the solving of practical problems;
- to enable children to develop an increasing attention to accuracy;
- to foster a positive attitude to science and increase pupils' understanding of how science is used in the wider world;
- to provide a range of relevant experiences allowing pupils to acquire knowledge, skills and understanding in the key areas of Scientific Enquiry, Life Processes and Living Things, Materials and their Properties, and Physical Processes through a variety of teaching and learning strategies;
- to develop the accurate use of scientific vocabulary;
- to meet the needs of each child so that they will reach their full potential.
- to engender a sense of awe and wonder with Science

Objectives

- To make the children familiar with scientific knowledge and vocabulary.
- To enable the children to see science in the context of a wider body of knowledge and skills.
- To enable pupils to understand and work scientifically whilst carrying out investigations and problem solving.
- To teach children the meaning of comparative and fair testing and to give them experience of its use.
- To develop in the children an awareness of the implications of science, past and present, for the individual, the community and the environment.
- To teach the children how to collect, handle, interpret and represent data and give them practical experience of this, looking for patterns and changes over time.
- To enable the children to use their findings to ask questions, hypothesise, predict and draw conclusions.

- To make children aware of safety issues, relating to scientific experiments and enquiry and to ensure that they adhere to 'rules of safety'.

Method

Science is a core subject. It is taught weekly for 1.5 hours in KS1 and for 2 hours in KS2. The content of teaching programmes is based upon the new 2014 National Curriculum Programmes of Study. Science has been organised into the three specific disciplines of biology, chemistry and physics, with all children **working scientifically** throughout. In the Foundation Stage, Science teaching is based upon 'Early Years Foundation Stage' Knowledge and Understanding of the World.

Year	BIOLOGY	CHEMISTRY	PHYSICS
One	Plants and animals including humans.	Everyday materials.	Seasonal changes.
Two	Living things and their habitats, plants and animals including humans.	Uses of everyday materials	Seasonal changes.
Three	Plants, life cycles and animals including humans.	Rocks and fossils.	Light, forces and magnets.
Four	All living things and their habitats & animals including humans	States of matter including the water cycle.	Sound and electricity.
Five	All living things & animals including humans.	Properties & changes of materials.	Earth & space and forces.
Six	All living things & animals including humans. Evolution & inheritance		Light and electricity

Coverage and progression is ensured through medium and short term planning. Medium term planning contains the broad learning objectives to be covered in each topic, together with the content to be included from the programme of study. Key questions are included and practical investigations are highlighted. Short term plans concentrate on the methods employed to achieve each objective, frequently broken down into smaller steps, showing differentiation with support, extension and challenge.

Children are encouraged to find information, to ask questions, to hypothesise, predict and draw conclusions.
In the study of Science, children are also encouraged to find information using secondary sources such as information books, photographs, videos, the internet and interviewing people.

Children record their work in a variety of ways including labelled diagrams, graphs, charts, writing, pictures, annotated photographs, drawing and ICT.

Teaching and Learning

A range of teaching and learning strategies, appropriate to the learning objectives and age and ability of the children, are employed.

Our principal aim is to help develop children's knowledge, skills and understanding. Sometimes we do this through whole class teaching, while at other times we engage the children in an enquiry based research activity. Other strategies include, group work, talk partners and paired work, individual work, discussions, demonstrations, investigations, observations, research, questioning and experimentation.

Differentiation is used to cater for the range of abilities within the class. This may take the form of differentiation in task/activity, resources, outcome, intervention, support, questioning or level of challenge set. We encourage the children to ask, as well as answer, scientific questions. Children have the opportunity to use a variety of data, such as statistics, graphs, pictures and photographs. Children use ICT in science lessons where it enhances their learning. Children take part in discussions and present reports to the rest of the class. They engage in a wide variety of problem solving activities. Wherever possible we involve the pupils in 'real' scientific activities.

Pupils will be encouraged to develop the skills of:

- Exploring and observing at first hand using all their senses
- Communicating scientific ideas orally, in writing and diagrammatically
- Raising questions
- Collecting data
- Planning investigations
- Interpreting scientific data
- Predicting
- Fair testing
- Formulating hypotheses
- Explain using scientific knowledge
- Problem solving
- Explaining and using scientific terminology
- Evaluating
- Sorting and ordering
- Estimating
- Drawing conclusions
- Accurate measuring

The Approach to Investigations

Each child will plan, take part in and report on an investigation at least once every half term, during each unit of work. The format for these investigations will be progressively systematic. By the end of Key Stage 2, children should be more independent in planning and carrying out these investigations, dependent on ability.

Assessment and Reporting

Assessment is an important part of Science teaching and in line with the schools assessment policy.

- Teacher Assessment – this is ongoing and is based on pupil interaction and questioning, observation of processes/investigations undertaken and the outcome of set tasks/work.
- After every half term science is assessed whether pupils are working at, above or below age related expectations, and record on a class record.
- Reports to parents are sent out at the end of each year.

Monitoring

Science is monitored in the following ways:

- The co-ordinator monitors planning, checking for coverage, progression and differentiation.
- The co-ordinator, Head teacher and SLT sample work using work trawls and provide feedback to teachers.
- Each term the whole school completes a science investigation. The co-ordinator collects LA, MA & HA from each year group to monitor for progression, differentiation, marking and presentation. Feedback is provided to teachers.
- The coordinator is allocated non-contact time across the term to carry out their responsibilities.
- Pupil voice is carried out for opinions on science in each age group.
- Learning works are completed half termly to insure work and learning is display in the classroom.

Cross-Curricular Links

As far as possible, the Science curriculum will provide opportunities to establish links with other curriculum areas:

English

In particular, at Key Stage 1, the pupils are encouraged to use their speaking and listening skills to describe what they see and explain what they are going to do next. At key stage 2 the pupils are encouraged to develop their skills of writing to record their planning, what they observe and what they found out. The children develop their written skills by writing reports in science. Science based texts are sometimes used in English lessons and in guided reading sessions.

Maths

At both Key Stages the pupils are expected to use their knowledge and understanding of measurement and data handling at appropriate levels. In science, they should be applying their maths skills at levels similar to those, which they are using in their maths work. Mathematical skills such as weighing and measuring are an important part of a Science lesson. Where appropriate, children record their findings using charts, tables and graphs.

Information and communications technology

At both Key Stages the pupils will use ICT to:
 Locate and research information (CD ROM, internet)
 Record findings (using text, data and tables)
 Gain confidence in using calculators, VCR and tape recorder as well as the computer.

Spiritual development

Spiritual development is encouraged through reminding pupils of the wonder of science and the effect of scientific discoveries on the modern world. Topical scientific issues are also discussed as appropriate.

Personal, social and health education

Health education is taught as part of the units on ourselves, health and growing, teeth and eating, moving and growing, keeping healthy and life cycles. It is also linked to becoming a global citizen.

Sustainability

Sustainability forms an integral and vital part of the science curriculum. Within the scheme of work, individual units naturally lend themselves to developing the children's knowledge, understanding, concern and care for the environment. Children are encouraged to use the outdoor area in their science lessons.

As a result of teaching about the environment, every encouragement is given to the children to apply the principles of energy efficiency, water conservation, waste reduction and recycling and litter control. Recycling is actively encouraged throughout the school. Additionally, there are many opportunities within science and other areas for children to learn about the choices they have and the impact that they can make on their environment.

Equipment and Resources

The science coordinator carries out a half termly audit of the resources and reorders any consumables when necessary. New resources can be purchased through negotiation between class teacher and co-ordinator, within the amount allocated in the annual budget.

Health and Safety

The school's Health & Safety Policy outlines the safe codes of practice for our school and provides the necessary guidance on the response and the reporting of all incidents.

Children are encouraged to assess hazards and discuss the appropriate precautions. Children are taught the appropriate safe practice when using equipment. This will include:
 how to use equipment correctly and in accordance with health and safety guidelines
 to behave in a considerate and responsible manner, showing respect for other people and the environment whilst on trips outside the classroom.

A Risk Assessment will be completed for any educational visit.

ICT

Children use ICT in Science lessons where appropriate. The children have access to the internet to research information about their Science topics. They have access to word processing, spreadsheet and database packages enabling them to present results and findings in a variety of ways. Each classroom is fitted with an interactive whiteboard enabling the teacher to use video clips and demonstration programmes to enrich lessons. All classes in school have timetabled sessions for computing and I-pad times.

E-Safety

When ICT is used in Science lessons, before every lesson the class teacher will remind children about how to use the internet safely and refer to the poster on display. They will monitor and report e-safety incidents.

Evaluation

This policy will be reviewed in line with the school policy review cycle.

This policy was reviewed in November 2016 by the coordinator- A. Johnson

This policy was reviewed in December 2016 by the school governors.

Signed: Date: