Belswains Primary School
Science Guidelines

INTENT

Through our high-quality, inspiring curriculum, we aim for all our pupils to develop a secure scientific knowledge and conceptual understanding across all areas of science. We also want our learners to be able to ask and answer scientific questions confidently, using a wide range of scientific skills.

In line with the National Curriculum, we aim to ensure that all pupils:

- develop scientific knowledge and understanding through the specific disciplines of biology, chemistry and physics (taught under the general heading of science).
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.
- are equipped with the scientific knowledge required to understand the uses and implications of science today and for the future.

(National Curriculum, Science Programmes of Study updated 2015)

We aim to inspire a sense of excitement and curiosity in our pupils about the world around them and to encourage them to understand how science can be used to explore and explain what they see.

The Importance of Science in the Curriculum

Belswains Primary School is of the view that the development of Science skills is a crucial core entitlement for all of its pupils. Through science, pupils understand how major scientific ideas contribute to technological change – impacting on industry, business and medicine and improving the quality of life.

.

IMPLEMENTATION

Science is planned and taught as a core subject with a thematic curriculum. This allows pupils to gain scientific knowledge and develop an understanding of scientific concepts in context.

Early Years children engage in active learning experiences to ensure that they develop skills and knowledge that will later be useful in the study of Science.

At Key Stage 1 pupils observe, explore and ask questions about living things, materials and physical phenomena. They begin to work together to collect evidence to help them answer questions and to link this to simple scientific ideas. They begin to evaluate evidence and consider whether tests or comparisons are fair. They use reference materials to find out more about scientific ideas. They share ideas and communicate them using scientific language, drawings, charts and tables with the help of technology if it is appropriate.

At Key Stage 2 pupils learn about a wider range of living things, materials and physical phenomena. They make links between ideas and explain things using simple models and theories. They apply their knowledge and understanding of scientific ideas to familiar phenomena, everyday things and their personal health. They think about the effects of scientific and technological developments on the environment and in other contexts. They carry out more systematic investigations, working on their own and with others. They use a range of reference sources in their work. They talk about their work and its significance, using a wide range of scientific language, conventional diagrams, charts, graphs and ICT to communicate their ideas.

Working scientifically is a key part of our curriculum and is taught throughout.

The school uses the national curriculum objectives in order to inform planning. Science lessons are planned using Curriculum Maestro to ensure continuity and progression.

We carry out our curriculum planning in science in two phases (long-term and medium-term). The long-term plan maps the scientific topics studied in each term during each key stage. The science subject leader works this out in conjunction with teaching colleagues in each year group.

Our medium-term plans, which we have based on the national curriculum in science, give details of each unit of work for each term. Each class teacher is responsible for writing the short term plans for each lesson. These plans list the specific learning objectives and expected outcomes of each lesson.

The Aims of Science

The school aims to:

- develop an awareness and understanding of the role and importance of Science in everyday life,
- appreciate and tolerate the constantly changing nature of scientific knowledge,
- use scientific procedures of investigation,
- introduce, develop and study the application of Science in a broad range of contexts e.g. personal growth and health, the home, the immediate environment and the field of technology,
- understand some of the current major concepts of Science,
- understand that learning in Science contributes to personal development, including problem solving skills and co-operative group work,
- Combine interest and curiosity with a responsible attitude towards health and safety.

Entitlement and Curriculum Provision

Science is a core subject of the National Curriculum and pupils undertake some science activity every week in Early Years, Key Stage One and Two.

Teaching and Learning Styles

We use a variety of teaching and learning styles in Science lessons. Our principal aim is to 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. We encourage the children to ask, as well as answer, scientific questions. They have the opportunity to use a variety of data, such as statistics, graphs, pictures, and photographs. They use computing in Science lessons because it enhances their learning. They take part in role-play and discussions, and they 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, for example, investigating a local environmental problem, or carrying out a practical experiment and analysing the results.

We recognise that in all classes children have a wide range of scientific abilities, and we ensure that we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this in a variety of ways:

- setting tasks which are open-ended and can have a variety of responses;
- setting tasks of increasing difficulty;
- providing resources of different complexity, matched to the ability of the child;
- using Teaching Assistants to support the work of individual children or groups of children.

Inclusion

Planning at all levels ensures that the interests of boys and girls are taken into account.

All pupils, including those with special educational needs, undertake the full range of activities. Teacher assessment determines the depth to which individuals and groups go during each unit of work.

Assessment and Pupil Attainment

Using the planning tool (Curriculum Maestro) teachers plan and deliver appropriately pitch lessons for their classes. Teachers are constantly using formative assessment to assess whether pupils are working below age-related expectations, at age-related expectations or at greater depth.
Teachers scaffold tasks as necessary for their individual children.

Adults give feedback to pupils for every lesson. This may be immediate, verbal feedback in a lesson or by marking books after a lesson. Teachers use the schools marking policy when providing written feedback. In Key Stage 2 children are given time to respond to marking and make corrections to their work if necessary.

Summative assessment is carried out during the second half of the summer term when teachers assess whether their pupils are pre-year group, working towards, meeting age-related expectations or greater depth and record this data on Arbor.

Early Years

We teach science in Early Year classes as an integral part of the topic work covered during the year. As the Early Years class is part of the Early Years Stage of the National Curriculum, we relate the scientific aspects of the children's work to the objectives set out in the Early Learning Goals (ELGs) which underpin the curriculum planning for children aged three to five. Science makes a significant contribution to developing a child's knowledge and understanding of the world, for example through investigating what floats and what sinks when placed in water.

Learning Resources

In the Resources Room, resources are organised in boxes. These resources should be returned in the same condition in which they were found. Teachers need to check in good time if the resources needed are there, if new resources are required teachers need to inform the subject leader with enough time to order them.

Displays

As a core subject, science is on display in every classroom. Displays should be updated to reflect the class' current topic. Displays should include key vocabulary for the topic. Displays may also include examples of the pupil's work, diagrams, picture, photos or other material appropriate to the topic.

Safe Practice

Safe practice as indicated in The Association of Science Education publication, "Be Safe!" must be promoted at all times. A copy is kept in the resources room and must be referred to by teachers at all times. Teachers must also take into account the school's Health and Safety policy. Particular attention must be given to avoiding the use of anything that aggravates individual pupils' allergies. Safety issues have been identified in medium-term planning. Teachers actively encourage children to think "pro-actively" about behaving in a safe way at all times.

The Contribution of Science to other Aspects of the Curriculum

The teaching of English, Maths and Computing is promoted strongly in Science as part of this school's drive to raise standards in English and Mathematics. Science is used to extend and enable the pupils to practise the skills of literacy and numeracy.

IMPACT

Monitoring Teaching and Learning in Science

It is the job of the subject leader, supported by the leadership team, to monitor teaching and learning in science. The subject leader writes an Action Plan each year linked to the school's improvement plan and evidence collected from monitoring.

The subject leader will carry out monitoring tasks such as lesson visits, book scrutiny and pupil voice to gain evidence of the learning taking place within classes.

Staff voice/questionnaires will be used to identify training needs which can then be addressed in an appropriate way.

After staff have recorded their data in the summer term the subject leader will analyse this and use this along with other evidence collected over the year to decide on priorities for the next action plan.