West Rainton Primary School

Policy for Science

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Pen Profile

At West Rainton Primary School our vision is to ignite pupils' curiosity and encourage them to confidently explore and discover the world around them, so that they develop a deeper understanding of the world we live in.

Being appointed science co-ordinator was an honour and I feel that I am suited for the job due to my personal family background. As a child, I grew up surrounded by medical professionals who would regularly and openly discuss scientific concepts. As I grew older, I became more active in these discussions and would ask my own questions. I was encouraged to question and deepen my own understanding of concepts and was given the means and opportunity to create my own experiments. This continued when I became scout and worked towards achieving badges.

As a teacher and science co-ordinator, I want to inspire the next generation of scientists. I want the children of West Rainton to have the curiosity to investigate their own ideas and scientific concepts. I feel that a child who is given the chance to question a concept will internalise a concept quicker and deepen their understanding. I am passionate about experiments and teaching children how to work scientifically. This is one of the main reasons why I crafted our science curriculum in a way that ensures more experiments are completed in classes.

Sarah Newham

Science co-ordinator

Science Policy

Introduction

There are four main purposes to this policy:

- It establishes an entitlement for all pupils
- It establishes expectations for the standards to be achieved
- It builds on what pupils have learned previously and promotes continuity and coherence across the school
- It states the school's approaches to this subject in order to promote public, and particularly parents' and carers', understanding of the curriculum

The importance of science in the curriculum

Science stimulates and excites and satisfies pupil's curiosity about phenomena and events in the world around them. Since science links direct practical experience with ideas, it can engage learners at many levels. Scientific method is about developing and evaluating explanations through experimental evidence and modelling. This is a spur to critical and creative thought. Through science, pupils understand how major scientific ideas contribute to technological change – impacting on industry, business and medicine and improving the quality of life. They learn to question and discuss science-based issues that may affect their own lives, the direction of society and the future of the world.

In Reception, children are immersed in a secure and challenging environment where there are play opportunities and discrete learning tasks led by adults. With effective support, children can explore, develop and experiment as they play to help them make sense of the world. In Reception, the children follow the Early Years Foundation Stage (EYFS) curriculum enabling the children to learn about themselves and the wider world.

At Key Stage 1, pupils observe, explore and ask questions about living things, materials and physical processes. 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 ICT if it is appropriate.

At Key Stage 2, pupils learn about a wider range of living things, materials and physical processes. 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 as well as 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 gain knowledge of significant scientists and their discoveries and theories. 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.

Expectations

The aims of science and how these contribute to the school's aims
The school aims to:

- Stimulate and excite pupils' curiosity about changes and events in the world
- Satisfy this curiosity with knowledge
- Engage pupils as learners at many levels through linking ideas with practical experience
- Help pupils to learn to question and discuss scientific issues that may affect their own lives
- Help pupils develop, model and evaluate explanations through scientific methods of collecting evidence using critical and creative thought
- Show pupils how major scientific ideas contribute to technological change and how this impacts on improving the quality of our everyday lives
- Help pupils recognise the cultural significance of science and trace its development

Strategy for implementation - entitlement and curriculum provision

Science is a core subject of the National Curriculum and pupils undertake some science activity every week at both key stages. The work covered in Key Stage 1 builds on the Early Years Foundation Stage (EYFS). Pupils in Reception develop their knowledge, understanding and skills through play activities and direct teaching from which the pupils undertake planned tasks.

Science is allocated ten per cent of the taught time at both key stages and this amounts to about 70 hours per year at Key Stage 1 and about 80 hours per year at Key Stage 2. Planning is in-line with the requirements of the National Curriculum 2014. The school places a high emphasis on the development of pupils' skills to work scientifically. In the substantial majority of lessons pupils' skills to work scientifically are taught alongside the knowledge and understanding in life processes and living things materials and their properties and physical processes. In this way there is an equivalent emphasis on scientific skills and subject knowledge and such there will be many opportunities for investigations and experiments for each topic in the year's curriculum. Each half term (where possible dependent on the type of topic) at least two investigations/experiments should be undertaken.

As early adopters of the new relationships and health curriculum (statutory from Sept 2020) we also cover many aspects of science through health and wellbeing lessons including body part names including external genitalia, puberty and human reproduction.

Teaching and learning

All lessons have clear learning objectives which are shared and reviewed with the pupils effectively.
A variety of strategies, including questioning, discussion, concept mapping and marking, are used to assess progress. The information is used to identify what is taught next. Activities inspire the pupils to experiment and investigate the world around them and to help them raise their own questions such as "Why...?", "How...?" and "What happens if...?". Activities develop the skills of enquiry, observation, locating sources of information, selecting appropriate equipment and using it safely, measuring and checking results, making comparisons and communicating results and findings. Lessons make effective links with other curriculum areas and subjects, especially literacy, numeracy and ICT. Activities are challenging, motivating and extend pupils' learning. Pupils have frequent opportunities to develop their skills in, and take responsibility for, planning investigative work, selecting relevant resources, making decisions about sources of information, carrying out activities safely and deciding on the best form of communicating their findings.

Teachers plan to include at least 2 investigations per unit (unit depending and more if possible). Children in key Stage 1 will write out parts of the investigation and as the children move higher through Key stage 2 they will increase the different elements of an investigation they include in their report.

Assessment and Recording

Teachers' assessment takes place after each piece of work and each unit using the spider's web at the back included in each exercise book and using the online tracking system 'Classroom monitor'. At the end of each term this is used at to input summative tracking without levels on the schools SIMS data system – 'Classroom monitor'. This in turn is used to help complete the annual report to parents. Summative assessment, in the form of mini tests may be used, at the end of a unit, to assess pupil knowledge (Rising stars). We also assess our Year 6 pupils using a science SAT from previous years in order to validate our teacher assessments prior to moving them on to their next phase of learning.

Continuity and Progression

The school ensures curriculum continuity by following the units of work shown in the Twinkl resource bank and by close liaison between staff at the planning stages.

Pupils with Special Needs and/or disabilites

Pupils with diverse learning needs are provided for through:

- ✓ Teachers planning for the pupils full participation.
- ✓ Setting high expectations.
- ✓ Providing opportunities for all pupils to achieve.
- ✓ Creating effective learning environments.
- ✓ Providing equality of opportunity through teaching approaches.
- ✓ Setting learning targets.
- ✓ Liaison with SENCO and the development and delivery of appropriate SEN support plans
- ✓ Liaison with outside agencies, e.g. psychological services.
- ✓ Appropriate intervention (As set out in the Code of Practice)
- ✓ Allowing pupils access to specialist equipment and approaches where necessary.
- ✓ Liaison with the adviser for gifted and talented pupils.
- ✓ More able pupils are planned for appropriately.
- ✓ This is supported by our equal opportunities policy.
- ✓ Continuous consultation with and involvement of parents.

Equal Opportunities

The teaching of science in our school takes consideration of our equal opportunities policy and inclusion. We recognise children as individuals and base our teaching upon our knowledge of their specific needs. A range of teaching methods and resources allow children with a wide range of abilities to achieve their full potential.

Organisation

Science is taught as a discrete subject, only within the framework of cross curricular planning if appropriate.

Curriculum

Long term planning: The Programmes of Study for science are covered in a two year rolling programme of units using the Twinkl website's resource bank and Hamilton-trust as a guide to coverage of the curriculum. Key Stage 1 programme is covered once across Years 1 and 2, The Key Stage 2 curriculum is covered across Years 3 and 4 and Years 5 and 6. Mixed age classes means planning has to be readjusted each year to ensure coverage. This is carried out by the subject leader but it is imperative that class teachers keep a record of units and objectives covered. In Key stage 2 once topics have been covered, teaching and learning of key and specific scientists and their discoveries can be added to the curriculum. **Concepts that have been missed or need revisiting by some or all children due to lockdown and Covid-19 have been highlighted and passed onto next teacher to be revisited this academic year.**

Medium term planning: This identifies within each unit or work; learning objectives, science activities, assessment opportunities, the vocabulary to be taught and used, safety issues, how information and communications technology and resources should be used.
Teachers evaluate each unit of work after completion.

Learning Resources

Learning resources are kept in the school resource area next to the staff room. Relevant equipment is taken to the class by teachers. Consumables are replaced by the subject leader as appropriate. The scheme of work covers training the pupils in the safe and considerate use of equipment and materials. They are taught not to be careless and to use consumables efficiently. Older pupils may be taught how to locate and replace resources properly. Teachers make informed decisions, based on the age and stage of pupils, in relation to whether the teacher, the pupils under the guidance of an adult, or the pupils independently, should collect and replace resources. In the resource area, resources are organised in boxes and trays which are linked to themes. These resources should be returned in this way.

The Learning Environment

Classrooms will often have displays of current science, including relevant vocabulary, in hand. The profile of science should reflect its place as a core subject. Resources for the unit of work being covered should be appropriately accessible. Other sources of information should be available.

Safe practice

Safe practice must be promoted at all times. Teachers must also take into account all relevant Health and Safety issues. Please refer to schools' health and safety policy and specific risk assessments. Particular attention must be given to avoiding the use of anything that aggravates individual pupils' allergies. School has relevant COSHH documents and risk assessments for anything hazardous in science.

Extra-curricular opportunities

From time to time teachers plan to undertake fieldwork, visits to places of scientific interest and invite visitors to the school in order to support the learning objectives for units of work where relevant. Ideas for visits can be sources from science leader. Including trips to the Centre for life, The Sage, The Botanical Gardens and others.

Homework

No specific homework is set at either key stage for science.

Parents and Carers

Parents and carers have an important role to play in helping their pupils learn about science. Their role is enhanced by the use of science displays around the school to raise their interest and the interest of their children in the subject. The importance of science relative to other subjects will be explained to parents when their children join the school and teachers should take the opportunity of reinforcing this appropriately during interviews with parents.

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 the school's drive to raise standards in core basic skill areas.

Literacy

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. In Key Stage 1, children will be introduced to writing up different elements of a scientific investigation. 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. In relation to science, they should be applying their literacy skills at levels similar to those which they are using in their English work.

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 numeracy skills at levels similar to those which they are using in their mathematics' lessons.

Computing

At both key stages this involves the pupils using ICT to: locate and research information (CD ROM, internet); record findings (using text, data and tables); log changes to the environment over time (sensing equipment); gain confidence in using calculators, cameras, and tape-recorder, as well as computers and other devices.

Relationships and Health Curriculum (statutory from September 2020)

The new RHE curriculum covers three core strands of: living in the wider world, relationships and health and wellbeing. The curriculum we have carefully designed after significant consultation with all stakeholders has many elements that crossover into science including, hygiene, substance abuse, mental health, physical activity, the body, growth, puberty and how we can take good care of ourselves. Pupils may not be withdrawn from elements of the curriculum that are statutory science curriculum including puberty and understanding of human reproduction. Please see our separate policy on RHE in school for more details.

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.

SMSC (Spiritual, Moral, Social and Cultural)

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. SMSC skills are also promoted through the organisation of groups for working together, having different roles, understanding individual strengths etc.

Leadership and management - Staff development and training opportunities

The Headteacher discusses development needs so that the needs of individual members of staff are identified within the school's performance management programme. Staff attending training are expected to share the useful points with other relevant staff. EYFS, KS1 & KS2 teachers discuss needs with the Headteacher and science co-ordinator to ensure that planned units of work are adequately resourced.

How the subject is monitored and evaluated

All teachers are responsible for monitoring standards using the assessment procedures described in this policy. This is overseen by the Science co-ordinator termly. The science co-ordinator is also responsible for the production and implementation of the action plan.

Covid - 19

In the event of a full or partial school closure, the curriculum will be delivered through the use of Class dojo. Due to lockdown in March 2020, gaps in learning have been identified and passed on to next teacher to teach or revisit. Shared Equipment used in a class bubble will be cleaned before returning to the cupboard or labelled with the date it was last used ensuring that 72 hours (3days) is given before a new bubble uses the equipment. If equipment is needed before that time, staff will ensure that they have used cleaning products and procedures before it is used.

Policy Review

This policy will be reviewed every two years in line with the school's policy review programme. The Headteacher is responsible for reporting to the Governors' about the quality of its implementation and its impact on standards. In the light of this, policy amendments may be made.