Science Policy for Alumwell Infant School

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Policy for Science: Introduction

The purpose of this policy is to describe our practice in Science and the principles upon which this is based.

Science teaches an understanding of natural phenomena. It aims to stimulate the child's curiosity in finding out why things happen in the way they do. At Alumwell Infant School we want our pupils to be curious and knowledgeable about the world around them. We encourage children to ask scientific questions about the world and to take part in hands-on learning to find out the answers to these questions. It teaches methods of enquiry and investigation to stimulate creative thought. Children learn to ask scientific questions and begin to appreciate the way science will affect their future on a personal, national and global level.

Aims

Develop knowledge and understanding of important scientific ideas, processes and skills and relate these to everyday experiences.

- Be curious about the things they observe, experience and explore relating to the world around them.
- Use their experiences to develop understanding of key scientific ideas.
- Acquire and refine practical skills necessary to investigate ideas and questions safely.
- Develop skills of sorting, classifying, planning, predicting, questioning, inferring, concluding and evaluating through investigative activities.
- Apply scientific knowledge to new situations.
- Know and understand the life processes of living things.
- Know and understand the physical processes of materials, electricity, light, sound and forces.
- Practise mathematical skills (counting, ordering, measuring, drawing and interpreting graphs and charts) in real contexts.

Develop effective ways of thinking, finding out about and communicating scientific ideas and information.

- Think creatively about Science and enjoy trying to make sense of phenomena.
- Develop their own ideas on how to investigate an idea or phenomena.
- Develop language skills through talking about their work and presenting their ideas using writing of different kinds.
- Use progressively technical scientific and mathematical vocabulary and draw diagrams and charts to communicate ideas.
- Use a range of media and secondary sources, including ICT.

Explore values and attitudes through Science.

- Work with others, listening to their ideas and treating these with respect.
- Develop a respect for the environment and living things.
- Develop responsibility for their own health and safety and that of others when undertaking scientific activities.

This is in accordance with the National Curriculum programme of study for KS1 Science and the Foundation Stage Curriculum guidance.

Planning and Organisation

We want science to be an enjoyable experience. We believe that children learn best when there is a clear structure and purpose for the learning.

Key Stage 1

Children are taught science every week and we teach science as an explicit subject in Year 1 and 2 using the PlanBee scheme. All of our planning covers the objectives set in the National Curriculum but there is clear guidance of how to adapt work where necessary.

Long term planning is based on the programmes of study set out in the KS1 *National Curriculum in England: science programmes of study* curriculum. The long-term plan for each year group is detailed in the whole school curriculum map.

Medium term planning is carried out half-termly by all class teachers in their year groups. It is the science co-ordinators role to ensure that the objectives covered are relevant.

Short term planning is provided by PlanBee and adapted by class teachers to fit the needs of the children in their class.

Early Years Foundation Stage

In the Foundation Stage, science teaching and learning follows the Curriculum guidance for the Foundation Stage and covers the objectives set out in The Early Years Foundation Stage framework.
It sits within the Knowledge and Understanding of the World Early Learning Goal. Activities are based on first hand experience and learning is acquired through asking questions and discussion. Children are encouraged to use their senses to observe and investigate objects, living things and events; either through child initiated play or through teacher directed activities.

Teaching and Learning

Our principle aim is to develop children's knowledge, skills and understanding of science. A variety of teaching and learning styles are used in Science lessons in order to develop children's knowledge, skills and understanding. A balance of individual, group and teacher led methods of teaching are used throughout the year to facilitate learning outcomes. Children are given the opportunity to work scientifically and to experience different types of scientific enquiries, including practical activities. They also begin to recognise ways in which they might answer scientific questions, using their observations. They are given the opportunity to gather data through simple tests, to record this data and to talk about what they have found out as a result of their investigations. Through teacher modelling and high quality talk they begin to use and understand simple scientific vocabulary. Teachers will ensure that children's scientific knowledge is developed and deepened as a part of science lessons.

The teacher's role in the science lesson is to resource, prompt, question, advise, encourage, impart knowledge, support and give structure to the task. Clear objectives and success criteria should be shared for each lesson. Activities should be chosen to engage, motivate and challenge all pupils. Teachers should have high expectations, engage in regular feedback both orally and through marking, foster positive relationships with pupils and enthusiasm for the subject.

The pupil's role in the science lesson is to participate in decision making, discuss, try out new ideas, record findings, communicate results to others and to make appropriate use of tools and resources (to work as a scientist).

They have the opportunity to use a variety of data, graphs, pictures and photographs. The children use ICT where appropriate during science lessons to enhance their learning.

Working Scientifically

Working scientifically is broken down into seven skills which children develop through scientific investigation. At Alumwell Infant School, we use the enquiry skill icons from the Primary Science Teaching Trust to familiarise children with scientific vocabulary and aid them to develop working scientifically skills throughout our science curriculum.

These skills are:

Asking questions, making predictions, setting up tests, observing and measuring, recording data, interpreting and communicating results and evaluating.

Scaffolding Learning

We recognise that there are children of widely different scientific attainments in all classes and we take into account the needs of all children, including the targets set for the children in their Support Plans and/or Educational Health and Care Plans.

We provide learning opportunities matched to the needs of all children including the more able, those with barriers to learning and participation and those with different cultural or linguistic origins.

We ensure that we provide suitable learning opportunities for all children by:

- Ensuring that all children can access the learning objective through appropriate scaffolds
- Setting tasks which are open ended and can have a variety of responses
- Setting tasks with a higher level of challenge for the more able children
- Providing an aspect of challenge for all children
- Providing resources of different complexity, matched to the needs of the child
- Using Teaching Assistants to support the work of individual children or groups of children.
- Children not fluent in English are given the opportunity to complete their work using mother tongue, aided by bilingual Teaching assistants.
- Children not fluent in English have access to pre-teaching, to introduce them to new vocabulary and concepts.
- The use of visual prompts to support discussion and enabling children to develop independence

Cross-Curricular Links

The teaching of science can contribute to learning across the curriculum and cross-curricular activities are utilised for each topic. Science provides opportunities for pupils to develop the key skills of:

- Communication – finding out about and communicating facts, ideas and opinions in a variety of contexts.
- Application of number – collecting, considering and analysing first hand and secondary data.
- ICT – using ICT as an investigation tool (digital microscope) and also to record and communicate. The Internet also provides a range of secondary information and resources.
- Improving own learning and performance through reflecting upon what they have done and evaluating what they have achieved.
- Problem Solving – through finding ways to answer scientific questions with creative solutions.

PSHE and Citizenship – Links with Science

We are aware that science contributes to the wider aims of the curriculum. Through the science curriculum, children can also learn about aspects of personal, social and health education and citizenship.

Children learn:

- That people and other living things have needs and that they have responsibilities to meet them.
- What improves and harms their local, natural and built environments and some of the ways people look after them.
- How to make simple choices that improve their health and well-being.
- About the process of growing from young to old and how people's needs change.
- The names of the main parts of the body.
- That all household products, including medicines, can be harmful if not used properly.
- To identify and respect the differences and similarities between people.

Assessment and Reporting

At Alumwell Infant School we are continually assessing our pupils and recording their progress. We see assessment as an integral part of the teaching process and endeavour to make our assessment purposeful, allowing us to match the correct level of work to the needs of the pupils, thus benefiting the pupils and ensuring progress.

While recording is an important part of the scientific process it should not be the only judge of a child's progress. The quality of their thought and skills can be assessed orally and as part of practical work. This is particularly true for children who have not developed writing fluency and their learning must not be overlooked because it is not always evident on paper. It is important that children are taught a variety of ways of recording and includes diagrams with labelling where appropriate.

Assessment is carried out on three levels.

1. **Assessment for learning** is part of every lesson and is closely matched to the lesson objectives. It is used to check the children's understanding and to give the teacher information to adjust future lessons. Class teachers and teaching assistants talk to the children about their learning whenever possible and make notes to record their responses. These responses may be recorded in the book or the teacher/teaching assistant may record a VF in their book to signal that verbal feedback was given. The teacher may also record the pupils progress on the School pupil tracker after a lesson and provide supporting evidence if necessary.

2. **Termly assessments** take place on completion of a unit of work; teachers have a clear insight into how children work and their level of development. Teachers update the school tracking system at the end of each half term where they make judgements on each child's attainment. The tracking system has the National Curriculum statements broken down into strands, which the children are assessed on.

3. **Long- term assessments** take place towards the end of the school year. Teachers draw upon previous assessments and supplementary notes about their class against the key objectives laid down in the National Curriculum. They ensure that the school tracker is completed for each child and use this information to inform their final judgement.

At the end of Year 2 the teacher decides if a child is working at the expected level in the science subject. They will record and report a child's attainment as one of the following:

- Emerging (Working well below the expected level for their age group)
- Developing (Working below the expected level for their age-group)
- Secure (Working at the expected level of their age group)
- Greater Depth (Working above the expected level of their age group

In the Foundation Stage the staff carry out regular observations on all of the children. These are done in the form of 'wow moments' and planned longer observations. These observations are presented in a learning journey which the teacher uses to support the judgements they make relating to a child's progress. Every half term the reception teachers update the school tracking system, looking at each of the statements in the Development Matters Framework. At the end of reception the teacher completes the Foundation Stage Profile where they make their judgement on whether at children is working at, above or below the Early Learning Goal.

Equal Opportunities

At Alumwell Infant School we believe that a broad, balanced science education is the entitlement of all children regardless of ethnic origin, gender, aptitude or disability. It is our policy that all our children take part in science lessons.

Science tasks are planned in such a way as to encourage full participation and enjoyment by all children and are adapted to meet the needs of individual children and cohorts.

All children are provided with opportunities that are relevant to their everyday experience. It is important to value, build upon and benefit from the cultural and linguistical experiences that children bring with them into the classroom. Positive images are promoted at all times in relation to race, gender, age, language and ability.

Special Educational Needs

At Alumwell Infant School we are committed to equality and inclusion of all children, regardless of ability. In accordance with the Special Educational Needs and Disabilities Policy, children with special educational needs or disabilities are included in all lessons. Class Teachers ensure that appropriate support or adjustments are in place where needed. This could include the use of visual prompts using the PSTT enquiry icons, In Print symbols, colourful semantics, and the use of alternative recording methods or additional adult support. Children with special educational needs or disabilities are given every chance to demonstrate their knowledge in order to reach their full potential in Science, therefore careful consideration of recording methods are given to these children.. Science is a wonderfully liberating subject for children with Special Educational Needs where learning difficulties in literacy and numeracy will not necessarily hamper their progress. The practical "hands on" nature of the subject makes it very accessible for these children. Children with physical or co-ordination difficulties may need additional support during practical investigations. Teachers plan to include these children by adapting activities to suit the children's needs and direct additional classroom support towards these children.

For more information of how we ensure the science curriculum is accessible for all, please see our 'Meeting the needs of children with SEND in Science' document.

Health and Safety

In their planning of activities, teachers will anticipate likely safety issues. They will also explain the reasons for safety measures and discuss any implications with the children. Children will be taught to use equipment and apparatus in a safe appropriate manner with regard to their own and others' safety.
For specific guidance about safety in science teachers will refer to the ASE publication "Be Safe".

Resources

The science co-ordinator has overall responsibility for ordering of resources. Resources are centrally stored in labelled boxes within the Science area. Teachers should select the resources needed and return them to the central store informing the co-ordinator of any loss or damage or the need for updating.

Monitoring and review

Our teaching of science is monitored and evaluated in the following ways:

- Lesson observations
- Data
- Work trawls
- Scrutiny of displays

Following this self-evaluation the science co-ordinator draws up an action plan to address any areas requiring further development.

The role of the science co-ordinator

- Keep the written policy document and scheme of work up to date and evaluate the content and method.
- Encourage and support staff in the implementation of the agreed procedures and closely monitor the progression of activities and consistency of approach.
- Arrange Inset as appropriate to meet the needs of individuals and the school.
- Purchase and organise all science resources, ensuring they are readily available and well maintained.
- Monitor pupil's progress as part of on going subject monitoring and evaluation of practice.
- Monitor the delivery of the curriculum as part of on going subject monitoring and evaluation of practice.
- To be aware of national and local developments through reading relevant materials and attending courses as appropriate.
- Submit an annual written report each Summer term to inform the Head Teacher of progress in this area and of issues raised as a result of co-ordinator monitoring visits.