

Science Policy

January 2020



Our School Vision for Science:

We believe children should have a rich experience of learning Science through continual investigation and exploration. We encourage children to learn from their everyday surroundings and ask questions about what they experience.

Purpose

Science teaching develops understanding and a sense of excitement and curiosity about our world. This policy sets out to ensure consistency in the teaching and learning of Science across the school.

We follow The National Curriculum 2014 for Science Guidelines and the Early Years Foundation Stage Framework and aim to ensure that all pupils:

- Develop scientific knowledge and conceptual understanding through specific disciplines i.e. Biology: including plants, animals, habitats, evolution and inheritance; Chemistry: including everyday materials and their uses, rocks, states of matter and the properties and changes of materials; Physics: including seasonal changes, light, forces, magnets, sound, electricity and earth and space.
- Understand the uses and implications of science today, and for the future, on a personal, national and global level.
- Develop understanding of the nature, processes and methods of Science through a variety of different scientific enquiries.

Aims

We aim to ensure that children are equipped with the ability to explore, discover and investigate at first hand. We will ensure that such experiences are appropriate, relevant, challenging and satisfy the curiosity. We aim to;

- Work cooperatively to deliver a broad and balanced Science education which incorporates a range of teaching styles to suit individual needs.
- Ensure equal opportunities in Science regardless of background, religion, race, gender, physical or intellectual ability.
- Build on children's natural curiosity to learn about the world around them and the things that they observe, experience and explore.
- Plan for opportunities to develop understanding of the key scientific ideas and make meaningful connections.
- Develop skills of sorting, classifying, planning, predicting, questioning and drawing conclusions.
- Acquire and refine practical skills to investigate ideas and questions safely.
- Use progressively technical scientific vocabulary and draw diagrams and charts to communicate scientific ideas, evaluate findings and suggest explanations to an audience.
- Use a range of media including IT to extract scientific information.
- Work together cooperatively, listening to ideas and treating these with respect.
- Develop respect for the environment and understand how we inter connect with its resources.
- Develop responsibility for personal health and safety and that of others.
- Stimulate children to investigate, question and develop positive attitudes to scientific method.
 - Promote openness, confidence to voice an opinion and to offer reasoned views.

Teaching and learning

We teach discrete science lessons linked, where possible, to cross-curricular themes. Sometimes this is achieved through whole-class teaching, while at other times we engage the children in practical enquiry-based activities. Children are encouraged to reflect on scientific wonders, inventions and scientists who strive to make the world a better place and on the scientific developments that are the product of many different cultures. Children develop an awareness of the ways that science and technology can affect society and the environment and speculate on how science can have positive and sometimes negative outcomes.

Science lessons follow the Active Learn Scheme of Work: Science Bug. Teachers are encouraged to adapt plans to ensure that work is presented in a meaningful context and are invited to draw upon a wide range of accessory resources such as Explorify (Wellcome Trust), Espresso, A.S.E. and so on. Extensive use of worksheets is discouraged; wherever possible and appropriate, children should draw their own tables and diagrams. We have no imposed formal structure but lessons should typically contain some of the following elements:

Discussion: what we know from experience, previous learning, what we will be finding out next.

Direct Instruction: teaching directly to the whole class or through group or individual work.

Practical tasks or investigative work: working within groups or individually, practising scientific skills, finding out answers, being encouraged to think scientifically.

Recording: writing; floor books; photographs; drawing charts, tables and diagrams; using IT and other media to record what they have done or found out about.

Communicating: sharing ideas, predictions, knowledge with each other, the teacher, other classes and adults as appropriate.

Out of class: opportunities to ensure children are gaining first hand experiences to investigate and discover knowledge about their world beyond the classroom.

We aim to provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this by;

- setting tasks which are open-ended and can have a variety of responses;
- setting tasks of increasing difficulty (we do not expect all children to complete all tasks);
- grouping children flexibly within the classroom, and setting different tasks for each group;
- providing resources of different complexity, matched to the ability of the child;
- using teaching assistants to support and extend the work of individual children or groups.

Children should be encouraged to:

1. Show curiosity and interest by exploring surroundings.
2. Observe, select and manipulate objects and materials over time.
3. Identify simple features and significant personal events.
4. Identify obvious similarities and differences when exploring and observing.
5. Construct in a purposeful way, using simple tools and techniques.
6. Investigate places, objects, materials and living things by using all the senses as appropriate.
7. Ask questions about why things happen and how things work.
8. Research using secondary sources.
9. Build and construct with a wide range of objects, selecting appropriate resources, tools and techniques and adapting his/her work where necessary.
10. Communicate planning for activities and make records and evaluations of their work.
11. Use a variety of approaches to answer relevant scientific questions.
12. Understand comparative and fair testing (controlled investigations).

Every class will display and follow the Valence Science Principles (see end of this document).

Organisation

Science is taught in the Foundation Stage within topics under the area of 'Understanding of the World'.

In Y1-Y6 Science is taught as part of the weekly timetable. Lessons make effective links with other curriculum areas and subjects where possible. 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.

Safety: The safe use of equipment and consideration of others is promoted at all times. The Association for Science Education publication, "Be Safe!", should be used by staff as a point of reference for issues regarding health and safety. The school's "Health and Safety Policy" should be consulted. When planning activities, safety issues should be identified in detail in the weekly plans and acted upon accordingly. Children should be made aware of safety issues and, where appropriate, the reasons behind them. Activities which take place away from the school's premises follow the 'Trip Protocol.'

Assessment: Teachers are encouraged to use the Association for Science Education (A.S.E.) PLAN materials to make judgements regarding attainment. A variety of strategies, including questioning, discussion, quizzes and recorded presentation, are used to assess progress and plan for next steps. Each unit is expected to begin with work that establishes previous learning and current knowledge and understanding. Each unit is also expected to end with an activity to assess progress and can take many forms e.g. a diagram revisited, a poster, a leaflet and so on. The Active Learn Scheme, Science Bug, provides suitable assessment materials linked to each unit. Each class also has a 'Floor Book' to present evidence and examples. Science displays around the school raise interest in the subject and celebrate learning.

Parent Partnership

Parents and carers have an important role to play in helping our pupils learn about Science. Themed homework includes Science activities and we participate in National Science Week. In addition, children are encouraged to enter a Scientist of the Month research task and a practical monthly Science Challenge.

Monitoring and Evaluation

The Science Team follow a Science Action Plan; linked to the School Development Plan and reviewed termly. They support colleagues in the teaching of science by sharing information about current developments in the subject, and by providing a strategic lead and direction for the subject in the school. They are also responsible for evaluating strengths and weaknesses in the subject, and indicating areas for further improvement.

The Science Team provide an overview of the subject across the school to support the delivery of an effective and engaging science curriculum. They are also responsible for the planning and implementation of any subject specific events. Individual teachers are responsible for the day to day planning, delivery and assessment of the Science curriculum. The governor for Science is responsible for ensuring there is a good professional dialogue throughout the school year. The Science Team has a Senior Leader link who is responsible for coordinating monitoring of the quality of science teaching and learning. The Science Team will:

- Be enthusiastic about Science and demonstrate good practice.
- Work alongside colleagues in planning and delivery where needed (progress and activities).
- Coordinate and arrange staff in-service training as required.
- Audit resources, identify needs and order equipment after consultation with colleagues.
- Moderate the work of children across the age range (curriculum monitoring).
- Review and evaluate the effectiveness of teaching and learning of Science.
- Suggest appropriate assessment activities where needed.
- Lead, manage and monitor planning and delivery of lessons in relation to the Science Overview.
- Keep the governing body informed about the progress of the subject and the scheme of work.
- Ensure that Science remains a high-profile subject in the school's development work.
 - Maintain an up to date knowledge of Science related developments in Education.

Valence Primary Science Principles



Science can be found everywhere!

Children ask and answer questions

Investigations happen all the time

Experimenting and exploring is fun!

New Scientific words to learn

Children find things out themselves

Everyone is involved