

Annie Lennard Primary School

SCIENCE POLICY

RATIONALE

It is very important that this policy reflects the essential part that science plays in the education of the children at Annie Lennard. It is important that a positive attitude towards science is encouraged amongst all our children in order to foster self-confidence and a sense of achievement. Children need to be encouraged to explore and communicate the structure, patterns and relationships within science in order to solve the everyday problems and develop their own scientific thinking.

Intent

The 2014 national curriculum for science aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- 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 skills required to understand the uses and implications of science, today and for the future. We understand that it is important for lessons to have a skills-based focus, and that the knowledge can be taught through this

At Annie Lennard, we encourage children to be inquisitive throughout their time at the school and beyond. The Science Curriculum fosters a healthy curiosity in children about our universe and promotes respect for the living and non-living. We believe science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Throughout the programmes of study, the children will acquire and develop the key knowledge that has been identified within each unit and across each year group, as well as the application of scientific skills.

We ensure that the Working Scientifically skills are built-on and developed throughout children's time at the school so that they can apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts confidently and continue to ask questions and be curious about their surroundings.

Implementation

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all pupils are capable of achieving high standards in science. Our whole school approach to the teaching and learning of science involves the following;

- Science will be taught in planned and arranged unit blocks by the class teacher.

Science Coverage. National Curriculum. Years 1 to 6.

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
1	Animals Inc Humans		Everyday materials	Plants	Seasons	Gaps
2	Use of everyday materials	Animals Inc Humans	Living things and their habitats	Famous Scientists SC1 based	Plants	
3	Rocks and Soils	Light	Forces and Magnets	Animals including humans	Plants	Fill missing WS targets/catch up
4	Living things and their habitats	Animals including humans	States of matter	Electricity	Sound	Gaps and additional fun science investigations
5	Forces	Properties and Changes of Materials	Earth and Space	Living things and life cycles	Animals including humans- reproduction/ puberty	Gaps/ investigations
6	Evolution and Inheritance	Electricity	Living Things and their habitats- Classifying Organisms	Animals including Humans – Healthy Bodies	SATS	Light If we finish the unit early – working scientifically target gap filling

- Through our planning, we involve problem solving opportunities that allow children to apply their knowledge, and find out answers for themselves. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom. Planning involves teachers creating engaging lessons, often involving high-quality resources to aid understanding of conceptual knowledge. Teachers use precise questioning in class to test conceptual knowledge and skills, and assess pupils regularly to identify those children with gaps in learning, so that all pupils keep up.

- We build upon the knowledge and skill development of the previous years. As the children's knowledge and understanding increases, and they become more proficient in selecting, using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.

- Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics.

- Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding. Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning and workshops with experts.
- Children are offered a wide range of extra-curricular activities, visits, trips and visitors to complement and broaden the curriculum. These are purposeful and link with the knowledge being taught in class.
- Regular events, such as Science Week or project days allow all pupils to come off-timetable, to provide broader provision and the acquisition and application of knowledge and skills. These events could involve families and the wider community.

Impact

The successful approach at Annie Lennard results in a fun, engaging, high-quality science education, that provides children with the foundations and knowledge for understanding the world. Our engagement with the local environment ensures that children learn through varied and first hand experiences of the world around them.

Frequent, continuous and progressive learning outside the classroom is embedded throughout the science curriculum. Through various workshops, trips and interactions with experts and local charities, children have the understanding that science has changed our lives and that it is vital to the world's future prosperity.

Children enjoy science and this results in motivated learners with sound scientific understanding.

PURPOSE

- To ensure that teachers meet their statutory obligations with regards to the teaching of science.
- To raise science standards by promoting a high standard of excellence and consistency of approach amongst all staff.
- To ensure procedures for planning and assessment enable a broad and balanced curriculum that has continuity and progression and addresses equal opportunities.
- To foster a positive attitude to science as an interesting and exciting part of the curriculum.
- To foster in children the confidence to apply their knowledge, skills and ideas in real life contexts both within and outside the classroom and become aware of the uses of science in the wider world.
- To provide children with scientific experiences that develop their understanding of themselves and the world in which they live.

- To develop the enquiry skills of predicting, asking questions, making inferences, concluding and evaluating based on evidence and understanding and use these skills in investigative work.
- To introduced and extend children's knowledge and understanding and know that scientific ideas change and are modified.
- To develop the ability of pupils to communicate their ideas using appropriate scientific vocabulary.
- To encourage safe practice in all areas of science.
- To help provide pupils with the competence and confidence to deal with a life in an increasingly scientifically complex society.

GUIDELINES

- There will be a weekly dedicated science lesson (years 1-6).
- A key question may be posed at the beginning of the science sessions to give learning a purpose.
- Science is to be used in other curriculum areas, when appropriate to help consolidate science concepts and skills.
- Children will be introduced to the appropriate and varied scientific vocabulary.
- In Early Years the development of scientific thought is an important area of experience. Learning should be active, bearing in mind the requirements of the EYFS Curriculum Guidance.
- Materials and equipment required for the delivery of the science curriculum will be available in individual classrooms. Each class teacher has a list of resources available around school and which classroom they are stored in.
- Staff will track back and forwards to identify appropriate differentiated objectives using the tracker sheets provided. KNOWLEDGE SHOULD NOT BE TRACKED FORWARDS.
- Teachers need to ensure they teach the process skills for investigations e.g. observing, planning, predicting etc.
- Teaching should make use of direct first-hand experience whenever possible.
- There should be opportunities for cross curricular links.

TEACHING AND LEARNING

we do exciting experiments

we do group work

we are doing hands on activities

we do quizzes

we go on trips

we do investigations

We love learning science when ...



we find out new things

we make things to test

we have science days

we make our own experiments

we do fair tests

we learn outside

our work goes on display

we get unexpected results

Science principles informed by staff and pupil voice, to represent our aims for science learning.

activities are hands on and practical

children are interacting together

children share experiences with each other

discussion develops learning

there are unexpected outcomes

Science teaching at our school is good when ...

children apply their skills and knowledge through investigations



we have appropriate resources and good planning

children are excited and having fun

cross-curricular

learning is challenging

children are involved

children ask questions and explore the answers

children extend their learning at home

we swap groups/classes

These posters are on display on the working wall in science and referred to throughout the coverage of each science topic.

- Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom.
- Teachers ask a range of questions which enable all children to take part, listening carefully to answers and taking learning forward, using open and closed questions and allowing children time to think.
- Account is taken of pupils' prior learning.
- Planning involves teachers creating engaging lessons, often involving high-quality resources to aid understanding of conceptual knowledge
- Teachers use precise questioning in class to test conceptual knowledge and skills, and assess pupils regularly to identify those children with gaps in learning, so that all pupils keep up. New vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics.
- Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career. The key knowledge for each topic and across each year group is mapped across the school and checked at the end of each science topic.
- Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding.
- Teachers find opportunities to develop children's understanding by accessing outdoor learning.
- ICT is used to enhance learning and teaching experiences.
- Pupils are aware of the importance of scientific work to everyday life and make relevant links.
- Pupils are regularly given opportunities to plan, predict, investigate and evaluate different types of practical activities.

Science is taught on a weekly basis across two afternoon sessions from Year 1 to Y6 and supported and enhanced through other curriculum areas.

In Foundation Stage, science forms the basis of one of the seven areas of learning within Understanding the World. KS1 and KS2 use the National curriculum 2014 as a basis for planning within the subject.

We have been advised for Science groups to be mixed ability to get the best from all children. However, learning should still come through an outcome of differentiated tasks and support - including independent and partner work. Opportunities will be given at appropriate times for mixed ability pairs and group work. Teachers use a variety of interactive teaching methods to deliver the curriculum and achieve set learning objectives.

RECORDING

Scientific work should be recorded by the children in a variety of ways e.g. drawings, scribed or verbal, recordings on floor, books or on tape, graphs, photo's, diagrams and should suit the requirements of the task set. High standards of presentation are expected.

Observations of children working scientifically are vital. During investigative sessions, teachers should dedicate observation time of their pupils, recording comments children make during their enquiry. This could be recorded on a group list, planning or on post it notes stuck into their books to create part of your marking and feedback.

Teacher's questioning of children will also provide assessment opportunities to show what children know. This can be recorded within children's books to show their achievements, as well as forming part of teacher assessment.

ASSESSMENT

- Children are to complete a pre-assessment quiz at the beginning of a new unit to see what the children already know. From this, teachers should plan lessons around the gaps that appear, and challenge children who initially achieve high scores through working scientifically.
- It is necessary to be constantly evaluating what individuals and groups are learning and what they bring to the learning situation. Through evaluation, any difficulties can be identified and specific help to remedy the problem can be given.
- Evidence of children's work may be kept in the form of teacher's notes, children's drawings, plans, photographs, construction models, writing etc.
- Feedback to pupils about the progress in science is achieved through the marking of work.
- Cold science and hot science to show progress where necessary.

MARKING

Science does not need to be marked the same way as English on the school marking policy.

Early Years

- Green smiley face if their WALT has been achieved. Orange if it hasn't.
- Highlight in green, correct scientific achievements.
- Highlight in orange, incorrect scientific recordings.
- Gap tasks to be set to close science gap or extend science learning. *Letter formation and spelling gaps tasks are suitable, only if there is no science related gap task relevant.*

Key Stage one and two

- WALT to be highlighted in green if it has been achieved. Orange if it hasn't.
- Highlight in green, correct scientific achievements.
- Highlight in orange, incorrect scientific recordings.

- Gap tasks to be set to close science gap or extend science learning. These may be printed onto WALT labels and stuck into books for children to respond to. *Letter formation and English spelling gaps tasks are suitable, only if there is no science related gap task relevant.*

ICT / Computing

The use of the interactive whiteboard based lessons should support the concentration of children during science lessons. Teachers need to exploit opportunities to incorporate ICT into the teaching and learning of science. Teachers should also make use of material available on the internet for planning and delivering science lessons. Use of secondary sources is an objective from the curriculum.

ICT can play an important role in supporting science but it should not be a substitute for practical science.

- Use of CD ROMs and the Internet as a research tool.
- Use of graphing packages
- Using word processing facilities to speed the writing of results through frames
- Data logging software.
- Laptops/iPads for research.

LANGUAGE / VOCAB

Teachers need to be aware and use the correct scientific vocabulary at all times. This can be accessed through the national curriculum or reachoutcpd.co.uk – sign up for free! Click on courses and it has all the associated units for each phase. (Unfortunately not early years).

Children need to be encouraged to understand and use the appropriate terminology when presenting a scientific justification, argument or proof. Key vocabulary is given on medium term planning templates and class teachers will included within weekly planning.

INCLUSION

At Annie Lennard School we plan to provide for all pupils to achieve, including boys and girls, pupils with SEN, pupils with disabilities, Pupil Premium children, higher attainers including Gifted and Talented children, pupils from all social and cultural backgrounds, children who are in care and those subject to safeguarding, pupils from different ethnic groups and those from diverse linguistic backgrounds.

Gifted children should be challenged through working scientifically but should not be exposed to knowledge of the next year group.