Lawnside Academy

Science Policy

Aims and objectives:

We believe that all pupils at Lawnside Academy must have regular access to science appropriate to their age and stage of development. Learning opportunities will follow and build upon the National Curriculum guidelines.

Science teaches an understanding of natural phenomena. It aims to stimulate a child's curiosity in finding out why things happen in the way they do. 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.

At Lawnside Academy we believe that science should:

- Allow children to explore their current scientific thinking through questions, discovery and exploration both inside and outside the classroom.
- There should be a balance between children acquiring factual knowledge and investigation, using equipment, including computers, correctly.
- Children should enjoy science and the science curriculum at Lawnside captures children's attention.
- Children are active learners, who find things out for themselves and bring their own knowledge that can be enhanced or challenged
- Be planned to ensure the teacher has the knowledge to elicit and further children's understanding.
- Endeavour to ensure a broad and balanced experience and opportunities are provided to develop skills and gain an understanding of scientific concepts through first-hand experience in a climate which encourages curiosity, perseverance, open-mindedness, critical reflection and co-operation.
- Enable children to evaluate evidence and present their conclusions clearly and accurately, in a variety of ways including drawings, diagrams, tables, charts and in speech and writing.
- Enable children to communicate scientific ideas and observations using appropriate scientific vocabulary.

Teaching and Learning:

We use a variety of teaching and learning styles in science lessons, taking into account children's interests and learning needs, current events in the world, different teaching methods, teacher's own teaching style, the use of any support staff and the resources available. Our principal aim is to develop children's knowledge, skills and understanding. Sometimes we do this in 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. Wherever possible, we involve the children in 'real' scientific activities, for example researching a local environmental problem or carrying out a practical experiment and analysing the results.

We recognise that there are children of widely different scientific abilities in all classes 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 by:

- Setting common 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).
- Providing resources of different complexity, matched to the ability of the child.
- Using classroom assistants to support the work of individual children or groups of children.

Science curriculum planning

The school uses the national scheme of work for science as the basis of the curriculum planning. The national scheme has been adapted to the local circumstances of the school in that we make use of the local environment – our field area, tree area and our pond area.

We carry out our curriculum planning in science in three phases (long term, medium term and short term). The long term plan maps science covered over the year, medium term is coverage of a science area, based on the national scheme of work in science and short term is weekly lesson plans, planned by the class teacher. These plans list the specific learning objective of each lesson.

In some cases, we combine the scientific study with work in other subject areas, especially at Key Stage 1; at other times the children study science as a discrete subject.

Foundation Stage

We teach science in reception classes as an integral part of the topic work covered during the year. As the reception is part of the Foundation 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 the objective in the ELGs of developing a child's knowledge and understanding of the world, e.g. through investigating what floats and what sinks when placed in water.

The contribution of science to teaching in other curriculum areas

English

Science contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. Some texts that the children study in Guided Reading are of a scientific nature. The children develop oral skills in science lessons through discussions and through recounting their observations of scientific experiments. They develop their writing skills through writing reports and projects and by recording information.

Mathematics

Science contributes to the teaching of mathematics in a number of ways. The children use weights and measures and learn to use and apply number. Through working on investigations they learn to estimate and predict. They develop the skills of accurate observation and recording of events. They use numbers in many answers and conclusions.

Science and ICT

Children use ICT in science lessons where appropriate. They might use it to record, present and interpret data.

Personal, social and health education (PSHE) and citizenship

Science makes a significant contribution to the teaching of personal, social and health education. Firstly, the subject matter lends itself to raising matters of citizenship and social welfare. For example, the children study recycling of materials and how environments are changed for the better or worse. Secondly, children benefit from the nature of the subject in that it gives them opportunities to take part in debates and discussions. Science promotes the concept of positive citizenship.

Spiritual, moral, social and cultural development

Science teaching offers children many opportunities to examine some of the fundamental questions in life. Through many of the amazing processes that affect living things, children develop a sense of awe and wonder regarding the nature of our world. Science raises many social and moral questions. Through the teaching of science, children have the opportunities to discuss and debate. We give them the chance to reflect on the way people care for the planet and how science can contribute to the way we manage the earth's resources. Science teaches children about the reasons why people are different and, by developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people.

Science and inclusion

We teach science to all children, whatever their ability. Science forms part of the school curriculum policy to provide a broad and balanced education for all children. We provide learning opportunities that are matched to the needs of children with learning difficulties. Our work in science takes into account the targets set in the children's Individual Education Plan (IEPs).

Assessment

We assess children's work in science by making informal judgements as we observe them during lessons. On completion of a piece of work, the teacher marks the work and comments as necessary. The teacher assesses the

progress of each child and records this on Target Tracker. These records aid the Science co-ordinator to check progress across the year groups, Key Stages and the school.

Resources

We have sufficient resources for all science teaching units in the school. We keep these in a central store where there is a box of equipment for each unit of work. There is also a collection of science equipment for bug hunting and sample taking. There are science topic books in the classrooms and in the school library.

Monitoring and review

It is the responsibility of the science subject leader to monitor the standards of children's work and the quality of teaching in science. This will be done through book sampling, lesson observations and analysis of data. The science subject leader is also responsible for supporting colleagues in the teaching of science, for being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school.

Lawnside Coverage 2019-20

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Identifying and classifying animals		Seasonal changes Working scientifically	Plants Working scientifically	Identifying and classifying animals cont.	Everyday materials
Year 2	Living things and their habitats	Animals including humans Working scientifically	Everyday materials weather Working scientifically	Everyday materials weather Working scientifically	Plants (Living things and their habitats)	Plants Working scientifically
Year 3	Rocks and soils Working scientifically		Forces and magnets Working scientifically	Light and shadow Working scientifically	Plants Working scientifically	Animals including humans Working scientifically
Year 4	Sound Working scientifically	States of matter Working scientifically	Electricity Working scientifically	Habitats Working scientifically	Digestion Working scientifically	Revisit misconceptions

New Science Curriculum – Year 1

Plants

- I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.
- I can identify and describe the basic structure of a variety of common flowering plants, including trees.

Animals including humans

- I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
- I can identify and name a variety of common animals that are carnivores, herbivores and omnivores
- I can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)
- I can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense

Everyday Materials

- I can distinguish between an object and the material from which it is made
- I can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
- I can describe the simple physical properties of a variety of everyday materials
- I can compare and group together a variety of everyday materials on the basis of their simple physical properties.

Seasonal Changes

- I can observe changes across the four seasons
- I can observe and describe weather associated with the seasons and how day length varies.

New Science Curriculum – Year 2

All living things and their habitats

- I can explore and compare the differences between things that are living, dead, and things that have never been alive
- I can identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other
- I can identify and name a variety of plants and animals in their habitats, including micro-habitats
- I can describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

Plants

- I can observe and describe how seeds and bulbs grow into mature plants
- I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

Animals, including humans

- I can notice that animals, including humans, have offspring which grow into adults
- I can find out about and describe the basic needs of animals, including humans, for survival (water, food and air)
- I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

Uses of everyday materials

- I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
- I can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

New Science Curriculum – Year 3

Plants

- I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
- I can explore the requirements of plants for life and growth (air, light, water, nutrients from so and room to grow) and how they vary from plant to plant
- I can investigate the way in which water is transported within plants
- I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

Animals, including humans

- I can identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat
- I can identify that humans and some other animals have skeletons and muscles for support, protection and movement.

Rocks

- I can compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
- I can describe in simple terms how fossils are formed when things that have lived are trapped within rock
- I can recognise that soils are made from rocks and organic matter.

Light

- I can recognise that they need light in order to see things and that dark is the absence of light
- I can notice that light is reflected from surfaces
- I can recognise that light from the sun can be dangerous and that there are ways to protect their eyes
- I can recognise that shadows are formed when the light from a light source is blocked by a solid object
- I can find patterns in the way that the size of shadows change.

Forces and magnets

- I can compare how things move on different surfaces
- I can notice that some forces need contact between two objects, but magnetic forces can act at a distance
- I can observe how magnets attract or repel each other and attract some materials and not others describe magnets as having two poles
- I can predict whether two magnets will attract or repel each other, depending on which poles are facing.
- I can compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.

New Science Curriculum – Year 4

Living things and their habitats

- I can recognise that living things can be grouped in a variety of ways
- I can explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
- I can recognise that environments can change and that this can sometimes pose dangers to living things.

Animals, including humans

- I can describe the simple functions of the basic parts of the digestive system in humans
- I can identify the different types of teeth in humans and their simple functions
- I can construct and interpret a variety of food chains, identifying producers, predators and prey.

States of matter

- I can compare and group materials together, according to whether they are solids, liquids or gases
- I can observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)
- I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

Sound

- I can identify how sounds are made, associating some of them with something vibrating
- I can recognise that vibrations from sounds travel through a medium to the ear
- I can find patterns between the pitch of a sound and features of the object that produced it
- I can find patterns between the volume of a sound and the strength of the vibrations that produced it
- I can recognise that sounds get fainter as the distance from the sound source increases.

Electricity

- I can identify common appliances that run on electricity
- I can construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- I can identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery
- I can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- I can recognise some common conductors and insulators, and associate metals with being good conductors.

Version	Date	Author	Notes on revision(s)
1	February 2019	L. Barnes	New policy written for adoption.
2	September 2019	L. Barnes	Policy amended to reflect new academic year.

Signed: _____ _____

Principal Chair of Governors