

Newport CE Junior School

Science Policy

Date Policy Written and Agreed by Governors:	Date of last review:	Date of next review:
Autumn 2023	Autumn 2023	

'We aspire to ensure that our inclusive, welcoming and loving church school gives children and adults the opportunity to reach their full potential, so that through God's love they can make a difference to the world around them.'

Intent:

Our science curriculum provides a broad and balanced offering following the National Curriculum guidelines. It picks up on topics taught in key stage one and dovetails into the work the children will complete in secondary school. The children follow a scheme of work that revisits topics, building on previous knowledge. Learning should be balanced with a weighting on experimenting and finding out but also giving the children an opportunity to transfer skills learnt in other curriculum areas to science. The Aim of science is to develop interests which can enhance and make a difference in terms of career aspirations and hobbies to the children's future.

Implementation:

The children will be provided with the opportunity to access science on a weekly basis. Children will be taught science which is sometimes cross-curricular linked to the specific topics the children are focusing on. Newport Junior School also offers the children opportunities to enjoy science when taking part in whole school events, such as Science week. Children will be encouraged to explore their own ideas with the aim of fostering a love of the topic and also giving them opportunity to deciding to further study science once they have moved on from the Junior School.

Impact:

Studying Science will allow the children to make sense of the world around them. It will give them the opportunity to think about and explain how our world has developed. Different forms of knowledge learnt will improve life opportunities opening up a wide range of careers for all learners. Hands on

opportunities teach a range of skills such as perseverance, teamwork and resilience; all skills to apply to future learning and opportunities in life.

The Curriculum:

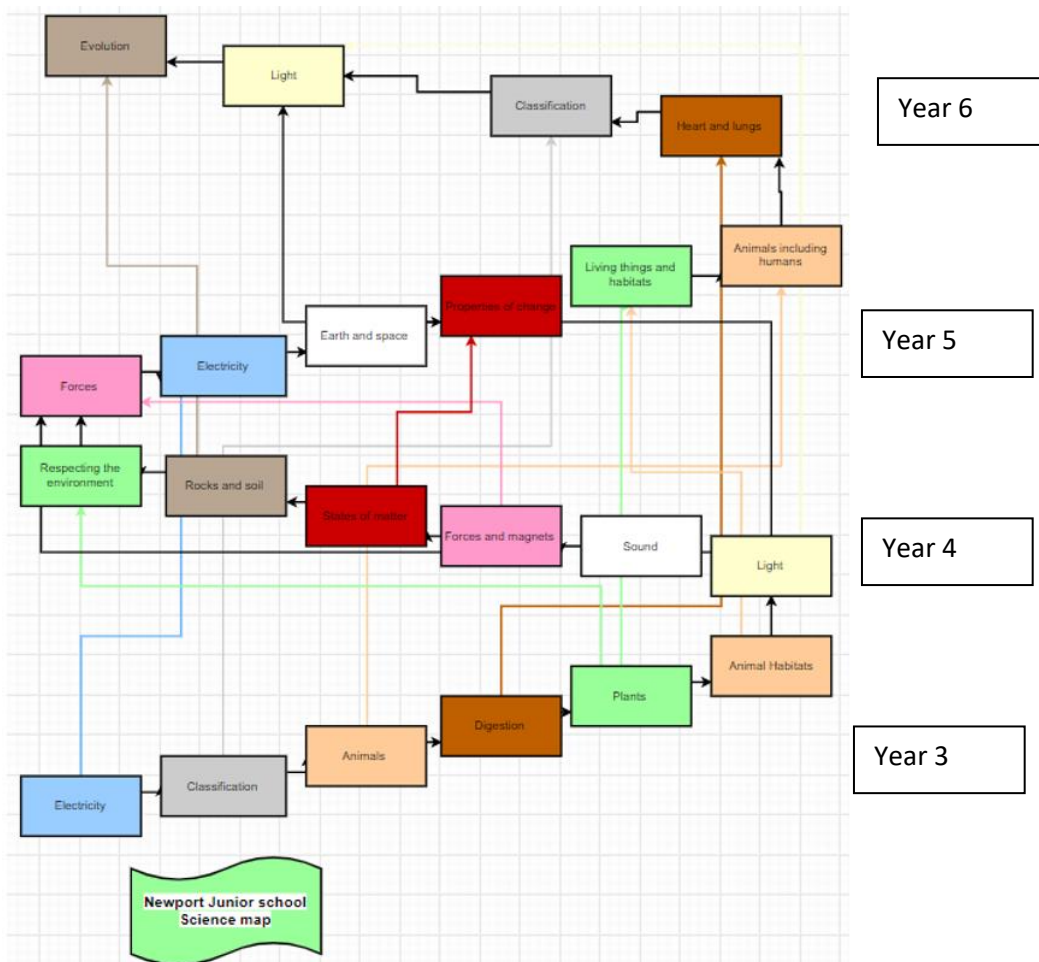
At Newport Junior School we believe that the curriculum encompasses every experience the children encounter during their time at school.

We have developed a curriculum that ensures that all pupils have access to each of the National Curriculum key aspects of learning and skills, as well as a range of other learning opportunities in order to reach their full potential. Knowledge is determined as substantive and disciplinary with key areas identified by the subject leader as important knowledge.

We aim to promote our key values of compassion, courage and community which underpin all the learning experiences across science.

The curriculum evolves and is responsive to events around us; we want children to leave us able to make a difference and have a strong impact on the world around them.

Progression Planner:



INS /port CE Junior School: Curriculum Progress Map for _Science_ 2022/2023

	Year 3	Year 4	Year 5	Year 6
Autumn 1	<p>Unit Title: Electricity</p> <p>Vocabulary: Electrical, circuit, bulb, battery, crocodile clip, buzzer, Motor, conduct/ conductor, insulate, insulator, switch, break, power, bright, brightness, dim, batteries</p> <p>Key Knowledge: To understand the dangers of electricity To understand how to make a circuit and know what happens if you break the circuit</p> <p>Key Skills: To use the materials needed for a circuit in order to construct one that lights a bulb.</p>	<p>Unit Title: Light</p> <p>Vocabulary: Dark, shadow, opaque, direction, light travels, transparent, Translucent, shortest, longest, highest, object, material, light source, sun, night, day</p> <p>Key Knowledge: To learn about different light sources, to understand how light travels, translucent, transparent and opaque materials. Shadow formation</p> <p>Key Skills: To use knowledge of light and find, natural and man made sources. Use torches understand how it travels and what blocks it.</p>	<p>Unit Title: Forces</p> <p>Vocabulary: gravity, acceleration, newtons, air-resistance , up thrust, friction, axle, pulley, gear, fulcrum, lever, ratio, ramp</p> <p>Key Knowledge: To understand what gravity is and the effect it has. To understand what air and water resistance and friction are. To understand how levers, pulleys and gears use force.</p> <p>Key Skills: To experiment with different objects to understand the force that they exert or have exerted on them.</p>	<p>Unit Title: Heart and Lungs & animals including humans)</p> <p>Vocabulary: Heart, circulation, pulse, muscle, blood vessel, lung, breathe activity</p> <p>Key Knowledge: To identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood To recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function To describe the ways in which nutrients and water are transported within animals, including humans.</p> <p>Key Skills: To research and understand how the heart and lungs work within our bodies.</p>
Autumn 2	<p>Unit Title: Animals and skeletons</p> <p>Vocabulary: Skeleton, bone, ribs, spine, skull, vertebrate, contract, Relax, contraction, joint, move, muscle</p> <p>Key Knowledge: To learn skeletons, the bones contained within it and understand why animals need one. Knowledge of different food groups</p> <p>Key Skills: To understand what a diet is(human and animals and plants)To know what happens to the foods we eat. To understand that we have a skeleton and know why we have one. Recognise other animal skeletons.</p>	<p>Unit Title: Sound</p> <p>Vocabulary: Sound, pitch, loudness, vibrate, vibration, vibrating, tuning, muffle, Quiet, soft, loud, high, low, noise, source</p> <p>Key Knowledge: To learn what makes sound, that sound travels through vibrations and that it has different pitch. Recognise that sound gets fainter the further away you get</p> <p>Key Skills: To make sounds altering the pitch, understanding that sound travels through vibrations. Know what blocks sound.</p>	<p>Unit Title: Electricity</p> <p>Vocabulary: circuit, conductor, insulator, symbol, circuit diagram, component, voltage, brightness</p> <p>Key Knowledge: To understand that using different amounts of cells will have an effect on at he brightness of light or sound of the buzzer. To understand how to represent their ideas using symbols.</p> <p>Key Skills: To know how to represent a circuit using symbols and how to change the brightness/ loudness by varying the amount of cells</p>	<p>Unit Title: Classification</p> <p>Vocabulary: mammals, plants, animals, vertebrates, invertebrates, reptiles, amphibians, fish, birds, species, environment, habitat, extinct, virus, bacteria, microorganism, algae, fungi, decay, microbe</p> <p>Key Knowledge: To know that plants and animals are classified according to their characteristics. To understand the work of Carl Linnaeus.</p> <p>Key Skills: To draw keys to separate species according to their characteristics. To research the work of Carl Linnaeus.</p>
Spring 1	<p>Unit Title: Classification</p> <p>Vocabulary: Classify, group, animal, plant, characteristics, similar, different</p> <p>Key Knowledge: To be able to identify the features of animals and plants</p> <p>Key Skills: To understand the characteristics of different plants and animals in order to develop a branching key.</p>	<p>Unit Title: Forces and Magnets</p> <p>Vocabulary: Friction, force meter, newton, resistance, magnet, spring, Metal, iron, copper, aluminium, steel, brass, attract, repel, attraction, repulsion</p> <p>Key Knowledge: To understand what a force is, how magnets exert different forces, to know what they are attracted to. To understand friction and the role of a force meter. Know that different surfaces will exert different amounts of friction</p> <p>Key Skills: To be able to use and understand magnets and use a force meter to test the friction of different surfaces.</p>	<p>Unit Title: Earth and Space</p> <p>Vocabulary: earth, sun, moon, sphere, revolve, orbit, spin, rotate axis, sunrise / sunset, north, south, east, west</p> <p>Key Knowledge: To understand the movement and rotation of different planets and how this creates night and day and the apparent movement of the sun across the sky.</p> <p>Key Skills: To know research and develop an understand of the planets in our solar system and their functions.</p>	



	Year 3	Year 4	Year 5	Year 6
Spring 2	Unit Title: Digestion	Unit Title: States of Matter	Unit Title: Properties and changes of materials	
	Vocabulary: Digest, absorb, move, mouth, oesophagus, stomach, small intestine, excrete, molar, premolar, canine, incisor	Vocabulary: material, solid, liquid, gas, melt, freeze, dissolve, solution oxygen, carbon dioxide, air, evaporation, condensation	Vocabulary: mixture, dissolve, solvent, solution, solute, soluble, Insoluble, filtration, evaporation, condensation, solid, liquid, gas, solidify, freezing, melting, state thermal, insulate	
	Key Knowledge: To understand the parts of the digestive system and how they act together to process food. To understand the different teeth that humans and other animals have and what function they perform.	Key Knowledge: To understand the differences between solids, liquids and gases, what happens when materials are heated and cooled, understand the water cycle and evaporation and condensation within it.	Key Knowledge: To understand how we compare and group different materials according to their properties. To understand dissolving filtering evaporation and separation of materials. Understand what changes are reversible and irreversible.	
	Key Skills: To understand how food breaks down and how it is absorbed. To know the role of the teeth.	Key Skills: To develop understanding of solids, liquids and gases and what happens to them if they change state. Know how water is recycled in the water cycle.	Key Skills: To know the properties of materials and know how different processes will affect them.	
Summer 1	Unit Title: Plants	Unit Title: Rocks and Soils	Unit Title: Living things and their habitats. (plants)	Unit Title: Light
	Vocabulary: Seed, seedling, water, warmth, compost, soil, light, Fruit, stem, leaf / leaves, shoot, root, seed, grow, growth	Vocabulary: slate, granite, chalk, sandstone, soil, clay, limestone, sand marble, absorbent, characteristic, surface	Vocabulary: Reproduce/ reproduction, stamen, stigma, sepal, petal, ovary, pollen, Style, Germinate/ germination, Fertilise/ fertilisation, pollination, Disperse / dispersal	Vocabulary: Light, beam, reflect / reflection, opaque, mirror, source, reflected, Travel, block, shiny surface
	Key Knowledge: To know what a plant needs to grow and understand what happens if those requirements are not present	Key Knowledge: To understand the characteristics of different rocks and their properties. To know how different rocks are formed and how fossils are formed within them.	Key Knowledge: To learn and describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird Describe the life process of reproduction in some plants and animals.	Key Knowledge: To recognise that light appears to travel in straight lines use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye .To explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes To use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
	Key Skills: To grow plants and understand what they need, understand how water is carried and know the life cycle of flowering plants.	Key Skills: To experiment with rocks to learn their properties. To understand how fossils are formed.	Key Skills: To research and develop an understanding of reproduction and the changes in animals including old age.	Key Skills: To explore the ways that light travels and how shadows form
Summer 2	Unit Title: Animal Homes	Unit Title: Respecting the environment	Animals including humans	Unit Title: Evolution
	Vocabulary: Nutrition, keys, condition, consumer, producer, organism Predator, prey, food chain, similar, different	Vocabulary: Environment, rivers, water, pollution, clean, protect, issues.	Fertilise/ fertilisation, pollination, Disperse / dispersal, life cycle, babyhood, childhood, adolescence, adulthood	Vocabulary: natural selection, survival, variation, inherited, adaption, hypothesis, DNA, mutation, survival of the fittest, camouflage, predator / prey, organism, fossil, characteristic
	Key Knowledge: To understand why animals choose particular homes and know why they choose that environment	Key Knowledge: To understand how humans have an impact on the quality of water in our rivers, to know other pollutants, to understand how we can clean and maintain our environment.	I can explain how humans change. I can describe stages of life in humans. I can discuss affects of puberty.	Key Knowledge: To understand how animals and plants adapt and change over time and how animals produce offspring in their own likeness.
	Key Skills: To develop an understanding of different habitats.	Key Skills: To use their knowledge of their environment to suggest how we can change our habits and respect the world we live in	I understand living things grow as they get older. I understand living things reproduce. I understand the change in humans that enables reproduction.	Key Skills: To research how plants and animals have adapted and changed over time and the reasons why.

Statement on developing skills in science:

As science helps us to develop an understanding of the world within and beyond our immediate experience; the development of science skills is taught to support the developing knowledge of what we can see and experience around us.

- Children will develop skills in both the substantive knowledge being taught key facts and information as well as the disciplinary knowledge understanding scientific concepts which underpin their learning.
- They will build upon knowledge gained in key stage one and in preparation for further study in key stage three.
- Scientific vocabulary is identified and explained, it is revisited across the key stage and developed and expanded as pupils progress.
- Opportunities are given to apply and try out their ideas about each area of study through the use of experiments and investigations.
- Pupils experience quality, tailored support when needed and become active, independent scientists.

Special Educational Needs, Disabilities and Inclusion.

At Newport Junior School we believe in a broad and balanced curriculum that allows all children, no matter of ability or need, to access an innovative and imaginative science curriculum and allow the children to meet their full potential. We do this by setting suitably challenging learning tasks, identifying teaching styles and making adaptations to the curriculum which allows the children to fully participate in all activities regardless of need.

Where children are to participate in activities outside of the classroom, we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils. This is in line with the Equalities Act and school policy.

Inclusion is seen to involve the identification and minimising of barriers to learning and participation, and the maximising of resources to support learning participation. We aim to set suitable learning challenges, respond to pupils' diverse needs and overcome potential barriers to learning for individuals and groups of pupils. Every member of staff shares the responsibility to remove barriers to learning for all pupils, including those with a disability. As a result, we are committed to offering an inclusive curriculum to ensure the best possible progress for all our pupils.

Assessment:

Teachers use on-going teacher assessment to help inform their science planning. Teachers use observations, marking, notes to teacher, peer and self-assessment and daily interactions with children to inform next steps in learning. The children are involved in the assessment of their own work, using success criteria where they evaluate their progress against the learning outcome. They can identify gaps and next steps for learning.

Teachers use end of unit standards to make their on-going teacher assessment judgments evaluating pupils on 6 key skills.

Monitoring:

Science will be regularly monitored by the SLT and the Science Subject Lead. This may take the form of book looks, lesson observations as well as talking to pupils.

The SLT and Science Lead will use this feedback to further develop science within the school through the School Development Plan.

Resources:

Science resources are located within the bungalow in either labelled trays or lidded boxes. Year groups have access to these resources which they then return once they have finished with them. It is the responsibility of each year group to inform the science coordinator of resources which need to be replaced or replenished. It is the responsibility of the science coordinator to ensure these resources are maintained and the area in which the resources are kept can be accessed at all times.

Health and Safety:

The school is committed to ensuring that all pupils are safe within the school environment.

Please refer to the school's policy for Health and Safety for further information.

Roles and Responsibilities:

Head Teacher and Governing Body

- support the use of appropriate teaching strategies by allocating resources effectively;
- monitor teaching strategies in the light of health and safety regulations;
- monitor how effective teaching and learning strategies are in terms of raising pupil attainment;
- ensure that staff development and performance management policies promote good quality teaching.

Science Subject Lead

- ensures the effective implementation of the National Curriculum for Science.
- completes a subject action plan which addresses key areas for development based on analysis of data and key messages from monitoring.
- supports colleagues in the teaching of Science, identifying any training needs.
- maintains the availability of high-quality resources.
- maintains an overview of current trends and developments within the subject.
- ensures, together with the SLT, a rigorous and effective programme of monitoring and evaluation including planning reviews; lesson observations, learning walks, pupil voice interviews and book looks.
- gives feedback following monitoring and evaluation to individuals and teams as necessary to ensure teaching and learning improves/develops.
- To offer an exciting and accessible 'science week' where pupils can engage in science in and out of the classroom, the aim is to instruct and develop awe and excitement around the subject.

Class Teachers

- ensure the effective implementation of the National Curriculum for Science;
- follow this agreed policy and related policies.
- teach high quality reading lessons.
- demonstrate a love of science.

Cultural Capital and SMSC

We provide Cultural Capital for our children through our Science curriculum in these ways:

- through a sense of questioning and wonder about the world we live in
- through developing skills such as analytical thinking which can be transferred into their future careers
- through learning about scientific discoveries and famous scientists who have impacted on the world
- through developing a sense of discovery and investigation
- through developing a wider knowledge of key scientific vocabulary

Parent Partnership:

Parents are vital in supporting their child's scientific development. It is a partnership where we encourage parents to fully engage in what their child is learning. The opportunity to share what they have learnt with a parent/ carer develops an understanding of the subject.

Children's progress in science is reported in their end-of-year report at the end of the summer term and when parents ask for specific feedback.

E. Lawson

Autumn 2023