Durweston CE VA Primary School

Science Policy

Feed the mind, nurture the spirit, free the imagination!

Contents

Governors are mindful of their duties under the Equality Act 2010 and have screened this document to ensure compliance with the law.

Intent

Our aim at Durweston is to cover the National Curriculum for Science. Children will:

- 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 knowledge required to understand the **uses and implications** of science, today and for the future.

At Durweston, we want our children to leave with:

- The ability to think independently and raise questions about working scientifically
- The confidence and competence in the full range of practical skills to enable them to take the initiative in planning and carrying out scientific investigations
- Excellent scientific knowledge and understanding which is demonstrated in written and verbal explanations, solving challenging problems and reporting scientific findings
- The ability to undertake practical work in a variety of contexts including fieldwork
- A passion for science and its application in past, present and future technologies

Equality, Diversity and Inclusion

Our curriculum planning ensures regular, progressive access to Science for all children irrespective of gender, race, creed or disability.

We recognise the fact that we have children of differing ability in all our classes, and we provide suitable learning opportunities for all by matching the challenge of the task to the ability of the child. We achieve this through a range of strategies:

- setting tasks that are open-ended and can have a variety of responses
- setting tasks of increasing difficulty, where not all children complete all tasks
- providing a range of challenges with different resources
- having more adults support the work of individual children or small groups

Implementation

We have a 2-year rolling programme that ensures coverage of the National Curriculum and caters for our mixed-age classes. All the units cover the key knowledge in the Key Knowledge Progression Document and new learning builds on previous learning across the Biology, Physics and Chemistry Strands. A summarised copy of this plan (Appendix 1) is stuck into each child's subject book and units are coloured in as they are completed. This allows teachers to quickly see what the children in their class have covered and what they might have missed. Science books are passed up each year to the next teacher.

	Starfish (Rising Stars)	Dolphins (Hamilton year 1/2 plans)	Seahorses (Hamilton year 2 and year 3 plans)	Sharks (Hamilton year 3/4 plans	Porpoises (Hamilton year 5/6 plans)
Autumn A	**Save the Gingerbread Man** **Food of the Season**	**Amazing Me! Y1/2** RS Who Am I? (y1) DE About Me (y1)	**Rocks and Fossils** **Y3** RS Rocks, Fossils and Soils (y3) DE Rocks Fossils and Soils (y3)	**Electric Personalities** Y4 RS Power It Up (y4)	**Illustrating Life Cycles** RS Healthy Bodies (y6)
	Dough Babies **Superhero Materials**	**Wild Weather** RS Polar Places (y1)	**Amazing Magnets** **Y3** RS Forces and Magnets (y3) DE Forces and Magnets (y3)	**What's the matter?** **Y4** RS Looking At States (y4)	**Materials Consultants (y5/6)** RS Material World (y5)
Spring A	**Into the Woods** **Light Magic**	**Brilliant Builders: Choosing the Best Materials.** RS Celebrations (y1) DE Exploring Everyday Materials **Y1**	RS Little Master Chefs-Working Scientifically (y2)	**A world of living things y3/4** RS Living Things (y4) DE Living Things and their Habitats (y4)	**The Human Species** **RS Growing Up and Old (y5)**
	The Potting Shed **Mud Glorious Mud**	**Growing Things** RS Plants and Animals (y1) DE Introduction to Plants (y1)	**Keeping Healthy** **Y3** RS Food and Our body y3 DE What Makes Us? y3	**Let's Get Moving-Forces (y5)**	**Theatre Lighting Technicians** RS Light (y6)

Summer A	**Pirates** **Frozen**	**Wild and Wonderful Creatures** RS On Safari (y1)	**Ready, Steady, Grow** **Y2** RS Young Gardeners y2	**This Planet Rocks** **Y3**	**Electric Art** RS Electricity (y6)
	Slimy things **Whatever the Weather**	**Food chains (y1/2)** DE Living Things and their Habitats (y2)	DE Plant Life Cycles (y3)	**Listen Up (y4)** **DE Sound (y4)?**	**Medical Manoeuvres (Revision)**
Autumn B	**Save the Gingerbread Man** **Food of the Season**	**People and their Pets (y1/2)** **Our Pets (y1)** DE About Animals (y1)	**Healthy Animals** Y2 RS Healthy Me (y2) DE Diet and Health (y2)	**Space! (y5)** RS Out of this World (y5) DE Earth and Space (y5)	**Special Effects Materials (y5/6)** RS Amazing Changes (y5) DE Changing Materials (y5)
	Dough Babies **Superhero Materials**	**Weather Art** DE Seasonal Changes (y1)	**Healthy Animals** Y2 RS Healthy Me (y2) DE Diet and Health (y2)	**Sounds Spectacular** **Y4/5** RS What's That Sound? (y4)	**Space Presenters (5/6)**
Spring B	**Into the Woods** **Light Magic**	**Brilliant Builders: Comparing Materials** RS: Materials Monster (y2) DE Uses of Everyday materials Y1	**Squash, Bend, Twist and Stretch** **Y2** RS SBTS (y2)	**Habitat Helpers** **Y3/4** Help our Habitats Y4 DE Living Things and their Habitats: Nature and the Environment (y4)	**Welcome to Force land(5/6)**
	The Potting Shed **Mud Glorious Mud**	**Plants: Art and nature (Y1/2)** DE Plants- Growth and care (y2)	**RS The Nappy Challenge-** Working Scientifically **(y3)**	RS The Big Build- Working Scientifically Testing Materials	**The Classification Code** RS Classify Living Things (y6)

Summer B	**Pirates** **Frozen**	**Exploring Changes (y1/2)**	**Artful Flowers, Fruits and Seeds** **Y3** RS How Does your Garden Grow (y3) DE Exploring Plants (y3)	**The Circle of Life** **y4** RS Teeth and Eating (y4) DE The Human Life Cycle (y5)	**Survival of the Fittest (y5/6)** DE Evolution and Inheritance (y6) RS Evolution and Inheritance (y6)
	Slimy things Whatever the Weather	**Habitats and Homes (y1/2)** RS Our Local Environment (y2)	**Magnetic Fun And Games y3**	**Shining Light y3/4**	**Sensational Science (Revision)**

Biology	Physics	Chemistry
Animals including Humans Plants Living Things and Their Habitats Evolution and Inheritance	Seasonal Changes Light Forces and Magnets Sound Electricity Earth and Space	Everyday Materials Rocks States of Matter

EYFS

Science is taught in Handy Paws and Reception as an integral part of the topic work covered during the year. As the reception class 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 which underpin the curriculum planning for children aged three to five. These topics link with the KS1 and 2 planning. Science makes a significant contribution to the objectives in the Early Learning Goals of developing a child's knowledge and understanding of the world. The objectives covered in our EYFS and Reception class can be found on the *Durweston School: Progression of Skills, Knowledge and Vocabulary (Science)* Document (see Appendix 3 and 4).

Retention of learning - non-negotiables

- working wall with enquiry questions and whether this terms work is Biology, Physics or Chemistry
- key vocabulary displayed
- display of non-fiction texts
- start of new unit clearly indicated in Science books
- non-fiction included in every lesson
- Knowledge map co-constructed during the course of the unit
- Each lesson should begin with a recall of previous learning. New learning is added to the knowledge map
- Knowledge map reconstructed by children as assessment at the end of a unit
- Knowledge map/photo of knowledge map stuck in children's book at the end of a unit

Impact

Ongoing assessment of the children's retention of key knowledge is integral to teaching and learning of Science. Teachers plan opportunities to revisit and revise the key knowledge covered across a unit of work and units taught in previous years. Key knowledge is displayed on the class **knowledge map** and used as a tool to aid recall across a unit and beyond. At the end of the unit, children are asked to reproduce this knowledge map in order to assess the knowledge they have retained. (Younger children may do this as shared writing as part of a small group). A copy of the class knowledge map is stuck into the child's book at the end of each topic. This, plus observations made during the year, inform future planning and enable the teacher to make an annual assessment of progress, using our progression map (Appendix 3) as part of each child's annual report to parents.. Each term, teachers input subject assessment data onto Insight.

Homework

Teachers send home termly Topic Home Learning Grids, which include challenges linked to topics covered in Science and other areas of the curriculum. These are shared with parents before half term and children bring in and share their home learning at termly Open-Mornings/ afternoons.

Resources

There is a growing range of practical resources to support the teaching of Science across the school which is kept upstairs. This room is accessible to children only under adult supervision. School subscriptions to Hamilton Trust, Rising Stars and Developing Experts provide resources to support the Scheme of Work. Teachers are to liaise with the Science coordinator, if there is anything further that is required and/or things that need to be purchased to enable delivery of the topic.

Health and safety

Science is a subject with considerable health and safety implications. We endeavour to teach children to respect and handle safely both living things and any equipment and materials which they may need to use. Pupils and teachers recognise the hazards involved, assess the risks and take action to minimise both in all science activities. Please see attached Science Risk Assessment (Appendix 5)

Monitoring and Review

The coordination of the subject curriculum is the responsibility of the subject leader. Each term the subject leader will monitor planning to make sure it follows the long-term plan and will support colleagues in their teaching. They may carry out book scrutinies, learning walks and pupil interviews. At the end of the year, they will review their monitoring and write an action plan for the following year.

Subject co-ordinator - Jane Stirk

Science working walls

Appendix 1

Science Coverage Record Sheet Please colour the topics (green for Biology, purple for Physics, blue for chemistry) as you complete them.

	Dolphins (Hamilton year 1/2 plans)	Seahorses (Hamilton year 2 and year 3 plans)	Sharks (Hamilton year 3/4 plans	Porpoises (Hamilton year 5/6 plans)
Autumn A	**Amazing Me! Y1/2**	**Rocks and Fossils Y3**	**Electric Personalities** Y4	**Illustrating Life Cycles**
	Wild Weather	**Amazing Magnets Y3**	**What's the matter? Y4**	**Materials Consultants (y5/6)**
Spring A	**Brilliant Builders: Choosing the Best Materials.**	RS Little Master Chefs- Working Scientifically (y2)	**A world of living things y3/4**	**The Human Species RS Growing Up and Old (y5)**
	Growing Things	**Keeping HealthyY3**	**Let's Get Moving-Forces (y5)**	**Theatre Lighting Technicians**
Summer A	**Wild and Wonderful Creatures**	**Ready, Steady, Grow Y2**	**This Planet Rocks Y3**	**Electric Art**
	Food chains (y1/2)	DE Plant Life Cycles (y3)	**Listen Up (y4)**	**Medical Manoeuvres (Revision)**
Autumn B	**People and their Pets (y1/2) Our Pets (y1)**	**Healthy Animals** Y2	**Space! (y5)**	**Special Effects Materials (y5/6)**
	Weather Art	**Light and Shadow y3**	**Sounds Spectacular Y4/5**	**Space Presenters (5/6)**
Spring B	**Brilliant Builders: Comparing Materials**	**Squash, Bend, Twist and Stretch Y2**	**Habitat Helpers Y3/4**	**Welcome to Force land(5/6)**
	Plants: Art and nature (Y1/2)	**RS The Nappy Challenge-** Working Scientifically **(y3)**	RS The Big Build- Working Scientifically Testing Materials	**The Classification Code**
Summer B	**Exploring Changes (y1/2)**	**Artful Flowers, Fruits and Seeds Y3**	**The Circle of Life y4** Cycle (y5)	**Survival of the Fittest (y5/6)** Inheritance (y6)
	Habitats and Homes (y1/2)	**Magnetic Fun And Games y3**	**Shining Light y3/4**	**Sensational Science (Revision)**

Appendix 2 - Scheme of Work

General Overview of Knowledge in Biology, Physics and Chemistry

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Biology	**Animals, including humans** (naming animals and body parts) Plants (names & structure)	**Living things and their habitats** (suitable habitats/simple food chains) **Plants** (growing conditions for seeds and bulbs) **Animals, including humans** (Health and growth)	**Plants** (functions of parts and life cycles) **Animals, including humans** (skeletons)	**Living things and their habitats** (grouping and simple classifying/changes to habitats can pose dangers) **Animals, including humans** (teeth, eating and digestions)	**Living things and their habitats** (life cycles, reproduction) **Animals, including humans** (changes in humans as they grow)	**Animals, including humans** (circulatory system, functions of heart, blood vessels and blood, health, water transport in animals) **Living Things and their habitats** (classifying including microorganisms) **Evolution and inheritance** (more about fossils, adaptation)
Physics	**Seasonal Changes** (changes and weather)		**Light** (dark is the absence of light, size of shadows) **Forces and magnets** (friction – how things move on different surfaces, magnets)	**Sound** (fainter sounds further away, vibrations, pitch and volume) **Electricity** (simple circuit, switches, conductors and insulators)	**Forces** (gravity, friction, air resistance, levers, pulleys and gears) **Earth and Space** (other planets)	**Light** (travels in straight lines, how we see things) **Electricity** (what affects bulb brightness, buzzer volume, voltage, symbols)
Chemistry	**Everyday materials** (names and properties of simple materials)	**Uses of everyday materials** (suitability and changing shapes of materials)	**Rocks**(simple properties, fossils, soils)	**States of matter** (solids, liquids, gases, heating & cooling, water cycle)	**Properties and changes of materials** (more properties including thermal and electrical conductivity, mixing and separating reversible and irreversible)	
Working Scientifically: Across all topics, children will be learning to work scientifically – using and developing investigative skills, including observation, pattern-seeking, fair testing, classification and identification.						

Appendix 3 - Key Knowledge Progression Document

	Handy Paws	**Starfish**
Plants	The World 30-50m Can I develop an understanding of growth, decay and changes over time? Can I show care and concern for living things and the environment? Can I talk about some of the things I have observed such as plants, animals, natural and found objects?	World -ELG Can I make observations of animals and plants and explain why some things occur, and talk about changes? Spring Term - Plants and Growing - Traditional Tales
Animals, inc humans	The World 30-50m Can I develop an understanding of growth, decay and changes over time? Can I show care and concern for living things and the environment? Can I talk about some of the things I have observed such as plants, animals, natural and found objects? The	World -ELG Can I make observations of animals and plants and explain why some things occur, and talk about changes? Spring Term - Plants and Growing - Traditional Tales Summer Term - Minibeasts
Living things and habitats	The World 30 -50m Can I show care and concern for living things and the environment?	The World ELG Children know about similarities and differences in relation to places, objects, materials and living things. Autumn Term - Houses and Homes Spring Term - Traditional Tales Summer Term - Minibeasts
Everyday Materials		The World ELG Can I talk about similarities and differences in relation to places, objects, materials and living things? Autumn Term - Houses and Homes Spring Term - Plants and Growing Summer Term - Minibeasts
Seasonal Changes	The World 40-60m Can I look closely at similarities, differences, patterns and change?	The World 40-60m Can I look closely at similarities, differences, patterns and change? The World ELG Can I talk about the features of my own immediate environment and how environments might vary from one another? Autumn Term - Houses and Homes Spring Term - Plants and Growing

Progression in Enquiry Skills

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Planning and predicting					
● Suggest what might happen ● Suggest simple ways to test ideas. GD- Organise a group to carry out an investigation/observation.	● With help, suggest some ideas and questions. ● Thinks about how to collect evidence. ● Suggest what might happen. GD- Choose own equipment and explain their choices.	● With help, forward ideas about testing. ● Make predictions. With help: ● Consider what constitutes a fair test. ● Plan a carry out a fair test. GD- Plan and carry out a test varying one factor and keeping the others the same.	● Recognise why it's important to collect data to answer questions. ● Suggest questions that can be tested. ● Put forward ideas about testing and make predictions. ● With help, plan fair tests. GD- Decide on appropriate approach in own investigations to answer questions.	● Begin to talk about how scientific ideas have developed over time. ● Make predictions based on scientific knowledge. ● Make their own decisions about practical enquiries and how to set them up. GD- Explain predictions in writing, using scientific knowledge.	● Discuss how scientific ideas have developed over time. ● Make predictions based on scientific knowledge and understanding. ● Select and plan the most appropriate types of scientific enquiry.
Investigating and Observing					
● Make observations using appropriate senses. ● With help, decide how to sort and group objects. ● Explore using the 5 senses. GD -Communicate observations orally, in drawing, labelling, simple writing and using ICT.	● Observing closely using simple equipment, ● Using simple features to sort and group objects. ● With help, observing changes over time. ● Using 1st hand experience and, with help, simple information sources to find answers to questions. GD- Begin to recognise when a test is fair.	This topic develops the following working scientifically skills: Ask simple questions and recognise that they can be answered in different ways. Observe closely, using simple equipment. Perform simple tests. Identify and classify. Use observations and ideas to suggest answers to questions. Gather and record data to help in answering questions	● Make relevant observations and comparisons. ● Suggesting criteria for sorting and grouping, using simple keys. ● Make measurements of length, temp, time and force. ● Begin to think about why repeated measurements of length should be repeated. GD- Explain which results should be chosen from a set of repeated results.	● Carry out fair tests, explaining why it is fair. ● Use and develop keys classify and describe. ● Understand why observations and measurements need to be repeated. ● Select information from provided resources. GD Using averages to gain one representative result from a set of repeated results.	● Carry out a fair test identifying key factors to be considered. ● Make a variety of relevant and accurate observations and measurements. ● Decide when repeat readings are appropriate. ● Select information from a range of sources. ● GD Understand the difference in how to investigate qualitative and quantitative data
Recording, Analysing and Evaluating					

• Communicate findings in simple ways. • Collect evidence to try to answer a question. GD- Use charts to communicate findings.	• Record findings in simple ways including graphs etc • Say whether what happened was expected. GD- Use comparative adjectives to explain patterns eg bigger, smaller, greater, higher.	• Communicate findings in a variety of ways. • Say whether what happened was expected and draw simple conclusions. • With help, identify simple patterns and suggest explanations. GD- Lead a group to present findings using a variety of resources.	• Explain scientifically what the evidence shows and whether it supports predictions. • Suggest improvements. GD Suggest improvements giving reasons.	• Communicate findings in a variety of ways. • Identify simple trends and patterns and offer explanations. • Draw conclusions and communicate them. • Suggest improvements giving reasons. GD: Begin to explain anomalous data. Draw own bar and line graphs to represent results.	• Communicate findings in tables, bar graphs and line graphs. • Identify trends and patterns and results that do not appear to fit the pattern.. • Provide explanations for these • Draw conclusions and communicate them. • Suggest practical improvements for improvements in their work giving suggestions. GD- Explain anomalous data with a variety of reasons and how interpretation of evidence leads to new ideas.

	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
	Progression of knowledge (Statutory requirements of NC)					
Plants	The names of at least 5 common wild and garden plants. The names at least 5 deciduous and/or ever green trees. The basic structure of plants and trees (roots, trunk, stem, flower, canopy)	How seeds and bulbs grow into mature plants How plants need water, light and a suitable temperature to grow and stay healthy.	The functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers The requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant The way in which water is transported within plants The part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.			

Seasonal changes	The names of the four seasons How the weather changes with the seasons and how day length varies.					
Animals including Humans	The name of at least 10 common animals including fish, amphibians, reptiles, birds and mammals. The name of at least 5 common animals that are carnivores, herbivores and omnivores. The basic parts of the human body and say which part of the body is associated with each sense.	That animal, including humans, have offspring which grow into adults. The basic needs of animals, including humans, for survival (water, food and air) The importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	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 That human and some other animals have skeletons and muscles for support, protection and movement.	The basic parts of the digestive system in humans The different types of teeth in humans and their simple functions That food chains vary and what animals are producers, predators and prey.	The changes as humans develop to old age.	The main parts of the human circulatory system and the functions of the heart, blood vessels and blood. The impact of diet, exercise, drugs and lifestyle on the way their bodies function. The ways in which nutrients and water are transported within animals, including humans.
Everyday materials States of matter Properties of Materials Rocks	The difference between an object and the material from which it is made. That objects can be made from everyday materials including wood, plastic, glass, metal, water, and rock The simple physical properties of a variety of everyday materials.	About the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses How the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	The simple physical properties of different kinds of rocks In simple terms how fossils are formed when things that have lived are trapped within rock Those soils are made from rocks and organic matter.	That materials are solids, liquids or gases. That some materials change state when they are heated or cooled, and how to measure or research the temperature at which this happens in degrees Celsius (°C) The part played by evaporation and condensation in the water cycle and associates the rate of evaporation with temperature.	The properties of everyday materials , including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets That some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution How mixtures might be separated, including through filtering, sieving and evaporating That dissolving, mixing and changes of state are reversible changes. That some changes result in the formation of new materials, and	

					that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	
Living things and habitats		The differences between things that are living, dead, and things that have never been alive 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 The name a variety of plants and animals in their habitats, including microhabitats 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.		That living things can be grouped in a variety of ways. That classification keys help group, identify and name a variety of living things in their local and wider environment. That environment can change and that this can sometimes pose dangers to living things.	The differences in the life cycles of a mammal, an amphibian, an insect and a bird. The life process of reproduction in some plants and animals.	How living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.

Light and Sound			That we need light in order to see things and that dark is the absence of light That light is reflected from surfaces That light from the sun can be dangerous and that there are ways to protect their eyes That shadows are formed when the light from a light source is blocked by an opaque object The size and shape of shadows can change.	How sounds are made, associating some of them with something vibrating. That vibration from sounds travel through a medium to the ear. That there are patterns between the pitch of a sound and features of the object that produced it. That there are patterns between the volume of a sound and the strength of the vibrations that produced it That sounds get fainter as the distance from the sound source increases.		That light appears to travel in straight lines That objects are seen because they give out or reflect light into the eye. That we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. That light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
Forces			That things move in different ways on different surfaces That some forces need contact between two objects, but magnetic forces can act at a distance That magnets attract or repel each other and attract some materials and not others That some everyday materials are attracted to a magnet That magnets as have two poles		That unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. The effects of air resistance, water resistance and friction, that act between moving surfaces. That some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	

Electricity Earth and Space				At least 5 common appliances that run on electricity. How to construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers 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. That a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Some common conductors and insulators, and associate metals with being good conductors.	The movement of the Earth, and other planets, relative to the Sun in the solar system. That the movement of the Moon is relative to the Earth. That the Sun, Earth and Moon are approximately spherical bodies The idea Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	That the brightness of a lamp or the volume of a buzzer is related to the number and voltage of cells used in the circuit They use recognised symbols when representing a simple circuit in a diagram.

Appendix 4 – Key Vocabulary Progression

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals including humans Fish, Reptiles, Mammals, Birds, Amphibians (+ examples of each) Herbivore, Omnivore, Carnivore, Leg, Arm, Elbow, Head, Ear, Nose, Back, Wings, Beak	**Animals including humans** Survival, Water, Air, Food, Adult, Baby, Offspring, Kitten, Calf, Puppy, Exercise, Hygiene	**Animals including humans** Movement, Muscles, Bones, Skull, Nutrition, Skeletons,	**Animals including humans** Mouth, Tongue, Teeth, Oesophagus, Stomach, Small Intestine, Large Intestine, Herbivore, Carnivore, Canine, Incisor, Molar	**Animals including humans** Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty	**Animals including humans** Circulatory, Heart, Blood Vessels, Veins, Arteries, Oxygenated, Deoxygenated, Valve, Exercise, Respiration
Plants Deciduous, Evergreen trees, Leaves, Flowers (blossom), Petals, Fruit, Roots, Bulb, Seed, Trunk, Branches, Stem	**Plants** Seeds, Bulbs, Water, Light, Temperature, Growth	**Plants** Air, Light, Water, Nutrients, Soil, Reproduction, Transportation, Dispersal, Pollination, Flower	**Living things and their habitats** Vertebrates, Fish, Amphibians, Reptiles, Birds, Mammals, Invertebrates, Snails, Slugs, Worms, Spiders, Insects, Environment, Habitats	**Living things and their habitats** Mammal, Reproduction, Insect, Amphibian, Bird, Offspring	**Living things and their habitats** Classification, Vertebrates, Invertebrates, Micro-organisms Amphibians, Reptiles, Mammals, Insects
Everyday Materials Wood, Plastic, Glass, Paper, Water, Metal, Rock, Hard, Soft, Bendy, Rough, Smooth	**Living things and their habitats** Living, Dead, Habitat, Energy, Food chain, Predator, Prey, Woodland, Pond, Desert	**Rocks** Fossils, Soils, Sandstone, Granite, Marble, Pumice, Crystals, Absorbent	**States of Matter** Solid, Liquid, Gas, Evaporation, Condensation, Particles, Temperature, Freezing, Heating	**Properties and changes of materials** Hardness, Solubility, Transparency, Conductivity, Magnetic, Filter, Evaporation, Dissolving, Mixing	**Evolution and Inheritance** Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics
Seasonal Changes Summer, Spring, Autumn, Winter, Sun, Day, Moon, Night, Light, Dark	**Everyday materials and their uses** Hard, Soft, Stretchy, Stiff, Shiny, Dull, Rough, Smooth, Bendy, Waterproof, Absorbent, Opaque, Transparent Brick, Paper, Fabrics, Squashing, Bending, Twisting, Stretching Elastic, Foil	**Light** Light, Shadows, Mirror, Reflective, Dark, Reflection	**Sound** Volume, Vibration, Wave, Pitch, Tone, Speaker	**Earth and Space** Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation	**Light** Refraction, Reflection, Light, Spectrum, Rainbow, Colour,
		Forces and magnets Magnetic, Force, Contact, Attract, Repel, Friction, Poles, Push, Pull	**Electricity** Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators	**Forces** Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys	**Electricity** Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators, Amps, Volts, Cell

Appendix 5- **Risk Assessment**

Risk Assessment **FORM 6**

Title **Science Risk Assessment**
Date of Assessment July 2021
Assessment completed by (Name) **Nicola Brooke** Due for review **Annually**
(Designation) **Head teacher**

Hazard / Risk Things at the venue, parts of the activity etc that could cause harm	**Who is at risk?**	**Current Controls in Place** Are they adequate? Is the risk acceptable? Refer to generic RAs or Form 2 if applicable	**Level of Residual Risk** Low, medium, high
Electricity Chemicals Heat sources	Pupils	Children are never allowed to experiment with mains electricity. Do not allow pupils to cut open batteries. Tiny batteries are not appropriate. The only substances we experiment with are those readily available from Tesco. Children are reminded to put anything in their mouth during a Science lessons unless instructed to do so by their teacher. Several practical activities require the use of heat. The following are suitable and acceptable sources but must be closely supervised by an adult: **Hot water/hot water bottles**	Low Low

		Water from a kettle or water heater should be cooled before use to no more than 50 °C. **Tealights** Place securely in a metal tray, e.g. baking tray or tin lid filled with sand. **Mains electric rings** Induction hob available in the kitchen. Only to be used under close adult supervision. **Hairdryers** Do not bring hairdryers in from home because they may not have been constructed to the same standards as those intended for use in schools. Hairdryers available from school suppliers are thoroughly tested beyond the requirements for domestic hairdryers. Spirit burners, picnic stoves and other bottled gas devices, hot-air paint strippers and Bunsen burners are not recommended for Primary school use. ***Heat Sources: General Precautions*** Warn pupils about hazards involved, e.g. hotplates may be hot without appearing so. Ensure all heating activities take place under close adult supervision. Warn pupils not to lean across the table in case they come into contact with the flame/hot object. Combustible materials should be removed. Never leave a naked flame unattended. Dispose of matches carefully. Long hair and loose clothing must be tied back. Do not allow lit candles to be carried around. Pupils should stand for the activity, so that they can move away quickly in case of an accident. Animals kept in schools pose minimal hazards provided that they are kept well in appropriate housing, people in charge of them are aware of any particular requirements the animals have and general precautions outlined below are followed.	

Animals *The hazards associated with the keeping of animals are the transmission of disease (particularly from farm animals) or parasites, bites, or stings; and infection or contamination due to animal waste products*		Typically, primary schools keep fish, various small mammals, giant African snails and stick insects. Greater hazards are involved when animals are brought into school for short periods, e.g. pets or garden 'minibeasts'. Proper planning regarding the care of animals is essential before deciding to keep animals in school. Consult a reference book before keeping any animal. Use reputable suppliers Keep animal housing clean and disinfect at regular intervals. Make suitable arrangements for holiday periods. Where animals are brought into school for a short period, ensure staff have sufficient experience of handling and looking after the animals concerned. Refer to reference texts (including CLEAPSS guidance documents listed below) if unsure. Liaise with parents when pets are brought in to school to ensure the particular animal is suitable for the particular class group. Cover cuts and abrasions on exposed skin. If animals run free on the floor or on tables, surfaces must be disinfected afterwards. Pupils and staff must wash their hands before and after handling animals. Pupils should wash hands in the classroom so that staff can be sure that hand washing takes place. Very young pupils should be supervised when washing hands. Animal wastes must be disposed of hygienically and any contaminated surfaces cleaned and disinfected. Children known to have allergic reactions to animals must have restricted access to animals that may trigger a response. Similar considerations apply to children who may be phobic about certain animals. The following CLEAPSS documents provide comprehensive guidance: ● 'Bringing Pets and Other Animals into Schools' (PS 55) ● 'Small Mammals' (L52) ● 'Housing and Keeping Animals' (L56) ● 'Incubating and Hatching Eggs' (L71) ● 'Aquaria in Primary Schools: Electrical Safety' (L124) ● 'Giant African Land Snails' (L197) ● 'Bees and Beekeeping in Schools' (PS87)	

Use of Plants in Primary Schools

The main hazard associated with the use of plants is that many are poisonous or irritants. Some pupils may be particularly vulnerable, e.g. those with allergies or asthma.

Teach children to avoid touching their eyes when handling plants.
Teach children never to taste any part of a plant unless they are certain that it is safe.
Warn children not to eat attractive looking fruits and seeds and teach children to always wash their hands after handling plants.
The plants listed below are poisonous. However, instances of more serious harm are extremely rare and following the general controls above should be sufficient in most circumstances.

Garden and hedgerow plants	
Black bryony	Ivy berries
Black nightshade – especially unripe berries	Larkspur leaves and seeds
Bluebell	Lily of the Valley
Bracken	Lupin
Buttercup	Mistletoe leaves and berries
Christmas rose	Monkshood or aconite
Cuckoo-pint	Potato – except the tubers
Daffodil – all, especially bulbs	Ragwort
Deadly nightshade	Rhubarb – except leaf stalks
Foxglove	Snowdrop – all, especially bulbs
Giant hogweed	Tomato – except fruits
Hemlock	Tulip bulbs

Micro-organisms
The main hazard associated with work with micro-organisms is infection through inhalation, ingestion or entry through the eyes or cuts to the skin.

Henbane	White bryony
Iris and ‘flags’, all but especially rhizomes	Woody nightshade – all, especially
House plants	
Castor oil plant seeds	Hyacinth bulbs
Dumb cane	Poinsettia leaves and flowers
Trees and shrubs	
Broom seeds	Privet – all, especially berries
Cherry laurel leaves and fruits	Rhododendron leaves and flowers
Holly berries	Snowberry fruits
Horse chestnut leaves, flowers and ‘conkers’	Spindle tree
Laburnum – all, especially seeds	Yew – all, especially seeds
Vegetables and fruit	
Beans – French and red kidney, raw or undercooked	Rhubarb – leaves
Potato – all green parts, including tubers	Tomato – leaves

See also ‘Plants for Classrooms’ (CLEAPSS document G42).

Viewing the Sun The main hazard is the sun's rays causing eye damage or fire if shone through convex lenses.		Only the following microbes that are known not to be hazardous to humans should be used: ● Yoghurt ● Baker's and brewer's yeast ● Mould gardens and compost ● Cheese-making bacteria ● Edible mushrooms Growing microbes on Petri dishes should not be carried out in Primary schools as this requires special skills, materials and equipment that Primary schools do not possess. Do not use microbes from natural materials such as soil or pond water. Also avoid obviously risky sources such as rubbish from dustbins, rotting meat or fish, human body fluids or the remains of animals. Staff and pupils must always wash their hands thoroughly with soap and water after working with microbes. Hands must also be washed before any work in which microbes are used to prepare food that will be tasted. Hands should be dried hygienically using disposable paper towels rather than a hand towel. Cover all cuts and abrasions on staff or pupils before starting work with microbes. All material used for growing microbes should be in covered containers (bottles, jars, cartons with lids, open containers covered with Clingfilm). When growing yeasts, the container should not be completely sealed to allow carbon dioxide to escape. Only grow microbes using the natural materials on which they normally grow. Pupils must never put anything into their mouths during this work. Mould cultures should be dated. If spills from microbe cultures occur, wipe them up immediately. Use disinfectant, wearing plastic or rubber gloves and guard against splashes into the eyes. For disposal, treat used cultures with disinfectant (hypochlorite or Virkon) before the remains are disposed of. Leave to soak overnight and preferably for 24 hours ensuring pupils cannot come into contact with the disinfectant. See also 'Studying Micro-organisms in Primary Schools' (CLEAPSS document L190) and guidance on Infection Control on Schools' PeopleNet.	

		Teach pupils never to look directly at the sun. Be aware that the focusing of the sun's rays with a convex lens can cause a fire. Lenses, especially large ones, should be stored out of direct sunlight. Teach pupils using binoculars and telescopes to take care not to look directly at the sun, even accidentally. Special care should be taken when viewing an eclipse of the sun. See also 'Viewing the Sun' (CLEAPSS document PS17).	