

## Frizinghall Primary School Science Curriculum Intent, Implementation and Impact

### Intent

At Frizinghall Primary School, the science curriculum is based on the Science National Curriculum, the EYFS Framework and Development Matters. Science education provides the foundations for understanding the world through the development of a body of key foundational knowledge and concepts.

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

The Frizinghall Science Curriculum is underpinned by: the whole school SCARF values, the development of scientific skills, set within the context of the knowledge to be acquired, and the development of spoken language, including dialogic talk. It is enhanced by experiences, including visits and visitors, scientific links in the activity passports and active learning opportunities. The safety and caring aspect of SCARF is a key focus for science work as the curriculum, and activities, provide opportunities for children to assess and manage risks and to foster concern about, and active care for, the environment.

Each year group follows a curriculum map, which includes science driven themes and provides the context of the learning, links with English and dialogic talk and the experiences to be covered through each theme. (See the Whole School Curriculum Map) Science has been mapped across the school to ensure that children have the opportunity to revisit and consolidate past learning and look forward to future learning, through common scientific threads e.g. plants. (See appendix 1)

Science knowledge and subject-specific skills are set out in long-term plans, ensuring coverage of and progression in the National Curriculum. (See Year Group LTP) Science is mapped so that knowledge and skills are developed through and across phases, as is vocabulary progression. (See appendix 2)

## Implementation

Themes, which include science, contain the specific science knowledge and skills to be developed and are used by teachers to map the theme learning journey. The learning journey is sequenced and adapted by the teacher to meet the needs and build on the interests of the class. This plan is shared with parents and children at the beginning of the theme.

In line with the Teaching and Learning Policy, in science teachers will:

- use the progression in skills document to ensure that scientific skills are appropriate to the needs of all groups of children;
- ensure each lesson begins with a clearly articulated purpose relating to both knowledge and skills;
- encourage children to ask scientific questions as well as answer them;
- use a range of strategies to ensure all children are actively engaged in the lesson e.g. an emphasis on scientific enquiry, presentation (oral and written) and research;
- link scientific lessons to real-life situations, problems and the world of work;
- assess learning and use this to help pupils move on to the next stage.

Frizinghall Primary School subscribes to CLEAPSS ([www.cleapss.org.uk](http://www.cleapss.org.uk)) which provides advice on health and safety for science including model risk assessments, information sheets, a helpline service and advice in the event of an emergency.

## Assessment

The knowledge and skills developed through each science theme are tracked on the science AfL grid (Exaat in EYFS). The overall achievement is then tracked for each child. These are completed termly and enable:

- teachers to identify gaps and areas of weakness and adjust future plans accordingly
- the science leader to identify groups/cohorts where achievement is not as expected and through this to work with teachers to resolve problems/issues
- themes and long term plans to be reviewed annually
- SLT to identify subjects where further development is needed (CPD, resourcing)

## Impact

We will use a range of strategies to monitor the impact of the science curriculum. These include: work scrutiny, pupil and teacher discussions, data analysis and observations. We will consider how the impact on progress against the knowledge and skills objectives, the aims of the science curriculum, pupil's readiness for the next stage of learning and whole school priorities. This information will feed into school self-evaluation, areas for further development and curriculum review.

## Appendix 1

| Frizinghall Primary School Year Science Development Overview |   |   |   |   |  |  |                                      |
|--|---|---|---|---|--|--|--------------------------------------|
| <b>Nursery</b>   | Getting to know you<br>(Links to: Y1 Ourselves0)                            | If you need a friend.   | Are you afraid of the dark?   | A long and winding road.  | Giants!  | A garden adventure<br>Links to: reception How does your garden grow?             |                                      |
| <b>Reception</b>   | Once upon a time  | Let's all celebrate!  | Adventures in space<br>(Links to: Y2 Explorers)   | Animals Big and Small<br>(Links to: Y2 The Animal Kingdom)  | How does your garden grow?<br>(Links to: Y1 Will it grow?)                                 | Off on an adventure  |                                      |
| <b>Year 1</b>  | Ourselves<br>(Links to: Y2 The Animal Kingdom)                              | What do we do in winter?  | Are we nearly there yet?<br>(Links to: Y2 Explorers, Y3 May the force be with you)  | Famous Bradfordians   | Will it grow?<br>(Links to: Y3 Plant Life,)  |  |                                      |
| <b>Year 2</b>  | Explorers<br>(Links to: Y3 May the Force be with you)                       | What do we do in winter?  | The Animal Kingdom<br>(Links to: y3 Dem bones, dem bones, Y4 Dangerous Planet)  | The Great Fire of London  | Africa   |  |                                      |
| <b>Year 3</b>  | The Ancient Greek Legacy  | May the force be with you<br>(Links to: Y2 Explorers, Y5 Blast Off) | Dem bones, dem bones.<br>(Links to: Y2 The Animal Kingdom, Y4 "Past the teeth and over the gums: look out, stomach, here it comes", Y6 Blood) | Settlements   | Plant Life (Links to: Y1Will it grow? Y5 If you go down to the woods today)                | Switch it on<br>(Links to: Y6 Game Designer, The light at the end of the tunnel) | How much has our local area changed? |
| <b>Year 4</b>  | Natural Disasters<br>(Links to: Y2 Explorers, Y5 May the Force be with You) | Good vibrations   | Roaming Romans  | "Past the teeth and over the gums: look out, stomach, here it comes."<br>(Links to: Y4 "Past the teeth and over the gums: look out, stomach, here it comes", Y5 If you go down to the woods today..., Y6 Blood) | Planet in Danger<br>(Links to: Y2 The Animal Kingdom, Y6 Have we always looked like this?) | The Battle of Britain  |                                      |

|               |  |   |  |   |  |                      |
|---------------|--|---|--|---|--|----------------------|
| <b>Year 5</b> | The wonders of Ancient Egypt<br>(Links to: Y4 May the force be with you, Y5 Blast off) | Could you be a crime scene investigator? (Links to: Y4 Natural Disasters) | Blast Off!<br>(Links to: Y3 May the force be with you)   | Anglo Saxon and Viking Invasion   | If you go down to the woods today...<br>(Links to: Y4 Dangerous Planet, Y3 Plant Life, |                      |
| <b>Year 6</b> | Game Designer<br>(Links to Y4 Switch it on)  | Destination Dilemma   | Blood!<br>(Links to: Y3 Dem bones, dem bones.<br>Y4 "Past the teeth and over the gums: look out, stomach, here it comes.") | Have we always looked like this?<br>(Links to Y4 Dangerous Planet, Y2 The Animal Kingdom) | The light at the end of the tunnel<br>(Links to: Y4 Switch it on)                      | Islamic Civilisation |

## Appendix 2

### Vocabulary Progression

**EYFS** – question, how, why, answer, observe, group, equipment, picture

### KS1 – Working Scientifically

question, answer, observe/observing, equipment, identify, classify, sort, group, record (diagram, chart) , data, compare, contrast, describe

### LKS2 – Working Scientifically

research, relevant questions, scientific enquiry, comparative test, fair test, careful observation, accurate measurements, equipment, data (gather, record), record (drawings, labelled diagram, bar chart, table, key, construct, interpret) explain, conclusion, predict/predictions, differences, similarities, changes, evidence, secondary source

### UKS2 – Working Scientifically

plan, variables, measurements, accuracy, precision, repeat readings, record data (scientific diagrams, labels, classification keys, tables, bar graph, line graph), predict/predictions, comparative test, fair test, report, conclusions, causal relationships, explanations, evidence (support, refute) identify, classify, describe, patterns

| Year 1  | Year 2  | Year 3  | Year 4   | Year 5  | Year 6   |
|---|---|---|--|---|--|
| <b>Ourselves</b><br><b>Animals including humans</b> | <b>Explorers</b><br><b>Everyday materials and their uses</b><br>Wood, Plastic, Metal, | <b>May the force be with you</b><br><b>Forces and magnets</b><br>Magnetic, Force, | <b>Natural Disasters</b><br><b>States of matter</b><br>Solid, Liquid, Gas,<br>Volume, Shape, | <b>Could you be a crime scene investigator?</b><br><b>Properties and Changes of materials</b> | <b>Game Designer</b><br><b>Electricity</b><br>Cells, Wires, Bulbs,<br>Switches, Buzzers, |

|  |   |  |   |   |   |
|--|---|--|---|---|---|
| Leg, Foot, Arm, Hand, Elbow, Head, Neck, Ear, Nose, Eyes, Back, Smell, Taste, See/Sight, Feel/Touch, Hear  | Glass, water, Rock, Cardboard, Hard, Soft, Stretchy, Stiff, Shiny, Dull, Rough, Smooth, Bendy, Waterproof, Absorbent, Opaque, Transparent, Squashing, Bending, Twisting, Stretching, Elastic                                  | Contact, Attract, Repel, Friction, Poles, Push, Pull, Speed Up, Slow Down, Change Direction, Change Shape, Friction, Grip, Rough, Smooth   | Evaporation, Condensation, Particles, Temperature, Freezing, Heating, Cooling, Melting, Celsius (°C), Water Cycle, Thermometer<br><b>Rocks</b><br>Fossils, Soils, Sandstone, Granite, Marble, Pumice, Crystals, Absorbent, Organic Matter, Hardness, Softer, Harder, Impermeable, Permeable, Soak | Hardness, Solubility, Transparency, Magnetic, Filter, Sieve, Evaporation, Dissolving, Mixing, Solution, Solid, Liquid, Gas, Separate, Metal, Wood, Plastic, Reversible, Burning, Irreversible, Acid   | Lamps, Battery, Circuit, Series, Conductors, Insulators, Voltage, Cell, Brightness, Components, Loudness, Symbol, Circuit Diagram   |
| <b>What do we do in winter?</b><br><b>Seasonal changes</b><br>Summer, Spring, Autumn, Winter, Sun, Day, Moon, Night, Light, Dark, Sun, Rain, Wind, Snow, Ice, Hot, Warm, Cold, Storm | <b>The Animal Kingdom</b><br><b>Animals including humans</b><br>Survival, Water, Air, Food, Adult, Baby, Offspring, Kitten, Calf, Puppy, Exercise, Hygiene<br>Fish, Reptiles, Mammals, Birds, Amphibians (+ examples of each) | <b>Dem bones, dem bones.</b><br><b>Animals including humans</b><br>Movement, Muscles, Bones, Skull, Nutrition, Skeletons, Support, Protection, Movement, Joint, Balanced Diet, Carbohydrate, Protein, Fats, Vitamins, Fibre, Water             |   | <b>Blast Off! (The Wonders of Ancient Egypt)</b><br><b>Earth in space</b><br>Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, Full Moon, Half Moon, New Moon, Star, Solar System, Spherical, Planet, Orbit, Gravitational Pull | <b>Have we always looked like this?</b><br><b>Evolution and inheritance</b><br>Fossils, Adaptation, Evolution, Characteristics, Reproduction, Offspring, Identical, Parent, Variation<br><b>Living things in their environments</b><br>Classification, Groups, Characteristics, Vertebrates, Invertebrates, Micro-organisms, Amphibians, Reptiles, Mammals, Insects |
| <b>Are we nearly there yet?</b><br><b>Everyday materials</b><br>Wood, Plastic, Glass, Paper, Water, Metal, Rock, Hard, Soft, Bendy, Rough, Smooth                                    | Herbivore, Omnivore, Carnivore, Beak, Wings, Claws, Legs, Teeth, Fins, Skin, Fur<br><b>Living things and their environment</b><br>Living, Dead, Habitat, Energy, Food chain, Predator, Prey, Woodland, Pond, Desert           | <b>Plant Life</b><br><b>Plants</b><br>Air, Light, Water, Nutrients, Soil, Reproduction, Transportation, Dispersal, Pollination, Fertilisation, Flower, Flowering Plant, Roots, Stem, Trunk, Leaves, Life Cycle, Seed Formation, Seed Dispersal | <b>Good Vibrations</b><br><b>Sound</b><br>Volume, Vibration, Wave, Pitch, High, Low, Ear, Fainter, Increase, Decrease, Distance, Louder, Transmitted, Energy  | <b>Forces</b><br>Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys  |   |

|  |  |  |  |   |   |
|--|--|--|--|---|---|
| <p><b>Will it grow?</b><br/><b>Plants</b><br/>Deciduous, Evergreen trees, Leaves, Flowers (blossom), Petals, Fruit, Roots, Bulb, Seed, Trunk, Branches, Stem, Water, Light, Temperature, Healthy, Growth</p> |  | <p><b>Light</b><br/>Light, Shadows, Mirror, Reflective, Dark, Reflection, Opaque, Blocked, Source</p>  | <p><b>"Past the teeth and over the gums: look out, stomach, here it comes."</b><br/><b>Animals including humans</b><br/>Mouth, Tongue, Teeth, Oesophagus, Stomach, Small Intestine, Large Intestine, Herbivore, Carnivore, Canine, Incisor, Molar, Bacteria, Tooth Decay, Food Chain, Producer, Consumer, Predator, Prey</p> | <p><b>If you go down to the woods today... Living things in their environments</b><br/>Mammal, Reproduction, Insect, Amphibian, Bird, Offspring, Life Cycle, Flower, Stamen, Carpel, Pollination, Pollen, Stigma, Fertilisation<br/><b>Animals including humans</b><br/>Gestation, Fertilised Egg, Foetus, Baby, Toddler, Child, Adolescent, Adult, Elderly, Old Age, Birth, Death, Growth, Development, Puberty, Breasts, Ovaries, Eggs, Periods, Hair, Testicles, Sperm</p> | <p><b>Blood</b><br/><b>Animals including humans</b><br/>Circulatory System, Circulation, Heart, Blood Vessels, Veins, Arteries, Capillaries, Oxygen, Valve, Rib Cage, Respiration, Diet, Exercise, Nutrients, Transportation, Drugs</p> |
|  |  | <p><b>Electricity</b><br/>Cells, Wires, Bulbs, Switches, Buzzers, Lamp, Battery, Circuit, Series, Conductors, Insulators, Appliances, Mains, Batteries, Components</p> | <p><b>Planet in Danger</b><br/><b>Living things in their environments</b><br/>Vertebrates, Fish, Amphibians, Reptiles, Birds, Mammals, Invertebrates, Vertebrates, Insects, Environment, Habitats, Danger, Endangered</p>  |   | <p><b>The Light at the end of the tunnel</b><br/><b>Light</b><br/>Refraction, Reflection, Light, Eye, Light Source, Object, Shadows, Angle, Light Rays</p>  |