St John's Catholic infant School

SCIENCE LONG TERM OVERVIEW

OUR SCIENCE INTENT

At St John's Catholic Infant School, our Science curriculum gives children a strong understanding of the world around them and develops their natural curiosity to find out how and why things happen in the way they do. As Scientists, children experience science through different contexts that are engaging, contextual and appropriate for their age group. They acquire specific skills and knowledge to help them to think scientifically using enquiry and investigation and encouraging creative thought. Children learn to ask scientific questions and discuss issues which affect their lives, their community and the world as a whole, now and in the future. Through a variety of first hand experiences, children have the opportunity to develop their understanding of the world through exploration and investigation. This "hands on, minds on" approach continues throughout school to aid conceptual understanding. In addition, the children are immersed in scientific vocabulary, which aids children's knowledge and equips them with the ability to be able to explain scientific concepts for themselves.

YEAR ONE	Autumn Term Autumn 1 'Where I Live' (Materials) Autumn 2 'Being Famous' (Materials/ Seasonal Change)	Spring Term Spring 1 'My Amazing Body' (Humans) Spring 2 'The Adventure Of The Green Ship' (Animals/ Seasonal Change)	Summer Term Summer 1 'Down On The Farm' (Plants) Summer 2 'The History Box' (Seasonal Change/)
IMPLEMENTATION	*As scientists, children will:* **Autumn 1 'Materials'** Know and describe different materials. Sort materials by given criteria. Describe similarities and differences between materials. Scientific Enquiry to see which materials are waterproof. **Autumn 2 'Materials/Seasonal Change'** Describe similarities and differences between materials. Investigate heating and cooling. Scientific Enquiry to see which materials are insulating Identifying Seasonal Change Identify and talk about changes in the weather / season.	*As scientists, children will:* **Spring 1 'My Amazing Body'** Able to name the parts of the human body. Draw and label human body parts. Name some parts of the body that can't be seen – such as internal structures. Working Scientifically Investigating using senses **Spring 2 'Animals/Seasonal Change'** Able to point out some of the differences between different animals. Sort into living / non living. Able to name and identify a variety of common animals – birds, fish, amphibians, reptiles, mammals, invertebrates. Describe how an animal is suited to its environment. Identify and name a variety of common animals that are carnivores, herbivores and omnivores.	*As scientists, children will:* **Summer 1 'Plants'** Able to name and describe the petals, stem, seed and root of a plant. Identify and name a range of common plants and trees. Able to name the trunk, branch and root of a tree. Recognise and know the difference between deciduous and evergreen trees. Investigate and test different growing conditions for plants. **Summer 2 'Seasonal Change** Able to identify and talk about seasonal changes and weather associated with these. Describe how day length varies.

| END POINTS | Materials
Children working at the expected standard:
I can identify and name different materials.
I can talk about some of the properties of materials.
I can compare, sort and group materials by their properties.

Children working at greater depth:
I can use ambitious vocabulary relevant to my age and stage, to talk about my understanding of materials and their properties.
I can apply knowledge, skills and understanding from previous learning with security and accuracy without recall to the teacher, to be able to give reasons for my sorting.
I can use more ambitious vocabulary to give reasons for my sorting.

Seasonal Change
Children working at the expected standard:
I can talk about the weather in Autumn.
I can talk about the season of Autumn.
I can observe, record and measure the weather.
I can identify and talk about different type of weather.
I can talk about the weather data I have recorded.
I can ask questions about the weather
Children working at greater depth:
I can make links and give reasons to how the weather affects us.
I can measure with accuracy.
I can use oracy effectively to enhance my work, talking about patterns I can see.

Materials
Children working at expected standard:
I can experiment, observe and record which material is the most waterproof.
I can use findings to make conclusions.
I can use knowledge of materials to make reasonable predications
I can compare my predictions to my findings to of which materials are good at keeping things warm.
I can use my observations to answers questions.
Children working at greater depth
I can **give reasons** why some materials are waterproof. | My Amazing Body
Children working at the expected standard:
I can talk about different body parts.
I can label body parts correctly.
I can talk about different body parts that are inside of me, I can label them correctly.
I can name the five senses.
I can say which body part matches each sense.
I can take part in a test and use my observations to sort using my senses.
I can ask and find an answer to a question.
I can use my sense to sort and group crisps
I can talk about how I classified crisps using my senses.

Children working at greater depth:
Extend understanding by labelling more body parts.
Extend understanding by recording / talking about why each part is important and how we can care for it.
Independently extend understanding to give reasons why not having one of the senses could affect you.

Seasonal Change
Children working at the expected standard:
I can talk about the weather in Winter.
I can talk about the season of Winter.
I can observe, record and measure the weather.
I can identify and talk about different type of weather.
I can talk about the weather data I have recorded.
I can ask questions about the weather
Children working at greater depth:
I can make links and give reasons to how the weather affects us.
I can measure with accuracy.
I can use oracy effectively to enhance my work, talking about patterns I can see.

Animals
Children working at expected standard:
I can identify animal groups.
I can sort animals into their groups.
I can think of a question to find the answer to.
I can observe and classify animals.
I can name animals that are carnivore, herbivore or omnivore.
I can sort into living and not living. | Plants
Children working at the expected standard:
Can name the different parts of a plant.
Can name and talk about some of the plants and trees in our school grounds.
Can name different parts of a tree.
Know the difference between deciduous and evergreen.
Can help create a test to find the best growing conditions for plants.
Can gather data and use this to answer questions.

Children working at greater depth:
Can compare different plants and talk about what I notice.
Can independently extend understanding using books / internet resources.
Can give more detailed reasons and make links when answering questions.
Uses ambitious vocabulary relevant to age and stage of the child
Accurately and effectively link learning from previous lessons

Seasonal Change
Children working at the expected standard:
Can talk about the weather in Spring.
Can talk about the season of Spring.
Can observe, record and measure the weather.
Can talk about the weather data they have recorded.
Can ask and answer questions about the weather

Children working at greater depth:
Can use data to show the effect of seasonal change and give reasons to how the weather affects us.
Can measure with accuracy.
Can talk about patterns they see. |

	I can **compare** different materials and talk about which materials would be best. I can add **more detailed reasons** for my predictions.	I can talk about how an animal is suited to its environment. **Children working at greater depth:** I can extend my understanding using class books. I can apply knowledge, skills and understanding from previous learning with security and accuracy without recall to the teacher. I can give reasons why living things need certain things to stay alive, using ambitious vocabulary relevant to age and stage of the child. I can compare showing similarities and differences.	
VOCABULARY	**Materials** object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, properties, hard, soft, stretchy, stiff, bendy, (not bendy), floppy, waterproof, (not waterproof) absorbent,(not absorbent) breaks/tears, rough, smooth, shiny, dull, see through, not see through **Seasonal Change** weather (sunny, rainy, windy, snowy, thunder, lightning, hail, fog, sleet etc.), seasons (Winter, Summer, Spring, Autumn), sun, sunrise, sunset, day length **Working Scientifically** sort, same, different, describe, label, predict, prediction, observe, group, measure, equipment, compare, record, test, experiment, table	**Animals including Humans** head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced from each vertebrate group fish, amphibians (e.g.-frog), reptiles (e.g.-snake, lizard, crocodile), fish, birds (e.g.- robin, blackbird, blue tit, owl), mammals (e.g.-cat, dog, dolphin), carnivore (including common examples e.g.-lion, fox, shark), herbivore (including common examples e.g.-cow, tortoise), omnivore (including common examples e.g.-human, badger), meat, human, parts of the body including those linked to PSHE teaching: wrist, ankle, elbow, stomach, beak, tail, wings, senses: touch, see, smell, taste, hear, hearing, fingers (skin), eyes, nose, ear and tongue **Seasonal Change** weather (sunny, rainy, windy, snowy, thunder, lightning, hail, fog, sleet etc.), seasons (Winter, Summer, Spring, Autumn), sun, sunrise, sunset, day length **Working Scientifically** sort, same, different, describe, label, predict, prediction, observe, group, measure, equipment, compare, record, test, experiment, table	**Plants** leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, names of trees in the local area, names of garden and wild flowering plants in the local area, plant, wild Flowers (e.g. Daffodil, Bluebell, Snowdrops), common flowers (e.g. Rose, Tulips), petals, blossom, root, bud, bulb, trunk, branches, deciduous (e.g. - Oak, Sycamore, Beech, Horse Chestnut), evergreen (e.g. Holly, Fir), fruit, vegetables **Seasonal Change** weather (sunny, rainy, windy, snowy, thunder, lightning, hail, fog, sleet etc.), seasons (Winter, Summer, Spring, Autumn), sun, sunrise, sunset, day length **Working Scientifically** sort, same, different, describe, label, predict, prediction, observe, group, measure, equipment, compare, record, test, experiment, table

YEAR TWO	Autumn Term Autumn 1 'Lord Lever & Port Sunlight' (Materials) Autumn 2 'Remembrance and Remembering ' (Materials)	Spring Term Spring 1 'Owl Who Was Afraid Of The Dark' (Animals incl Humans) Spring 2 'China' (Plants)	Summer Term Summer 1 'Lighthouses' (Habitats & Living Things) Summer 2 'Pirates On Tour' (Revision of KS1 Learning)
IMPLEMENTATION	As scientists, children will: **Autumn 1 'Materials'** Use of everyday materials Describe physical properties of materials Find out how materials can be changed by stretching, bending etc. **Working Scientifically** Comparative Testing Which material stretches the most? Pattern Seeking Which type of soap makes the clothes cleanest? Observing Over Time How do different soaps change in one minute? **Autumn 2 'Materials'** To understand that some materials are natural and others have to be manufactured. Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular us s To know that some materials are used to help us to keep warm. Comparative Testing Which material makes the strongest bridge? Research How are plastics made? Observing Over Time Which material keeps you warmest the longest?	As scientists, children will: **Spring 1 Animals incl Humans** To explore and compare the differences between things that are living, dead, and things that have never been alive To know that animals, including humans, have offspring which grow into adults. Able to find out about and describe the basic needs of animals, including humans, for survival (water, food and air). To Know about food chains. **Working Scientifically** Identifying and Classifying *How would you group things to show which are living, dead, never been alive?* Research *What do you need to do to look after a pet dog/cat/lizard and keep it healthy?* Research *What foods do you need in a healthy diet and why?* Pattern Seeking *Which exercise has the most effect on my body?* **Spring 2 'Plants '** Know the requirements of seeds and bulbs for germination, growth and survival. Know the processes of reproduction and growth in plants. Able to name a variety of plants in the school grounds. Able to sort and classify leaves Able to use data to make a block graph. Able to use data to find an answer to a question	As scientists, children will: **Summer 1 'Habitats and Living Things'** To identify and name animals in their habitats and describe why it's suited to that habitat, Able to use their observations to create tally charts and block graphs. Able to say what their data is telling them. Able to identify, classify and group animals based on a suitable habitat. **Working Scientifically** <u>Research</u> How does a habitat help an animal to survive? <u>Pattern Seeking</u> Which trap will attract the most mini-beasts? <u>Identifying and Classifying</u> How would you group these animals based on what habitat you would find them? **Summer 2 Revision of KS1 Learning**

		Working Scientifically **Comparative Test / Observing Over Time** *Which conditions do seeds and bulbs grow best in?* **Identifying and Classifying** *How can we identify the plants in our school ground*	
END POINTS	**Autumn 1** **Children working at expected standard** I can identify, name and compare a range of every day materials. I can talk about their properties. I can show how some materials change shape when they are, stretched. I can say why a material is suitable / unsuitable. I can give reasons for my thinking. I can carry out a test, observe using simple equipment; find and answer and share my conclusion. **Children working at greater depth:** Use more accurate vocabulary to talk about changes to the molecules between liquid, solid and gases. I can apply my learning to show which material would be suitable for different purposes. I can use more accurate vocabulary effectively, and explain my understanding in more detail. **Autumn 2** **Children working at expected standard** I can explain what raw materials and manufactured materials are. I know the difference. I can find an answer to a question using secondary sources. I can present my findings clearly. I can use my knowledge of suitable properties of materials to identify a material to match with an object. I can ask a question to find an answer to. I can plan out what to do and how to use simple equipment. I can use simple equipment to find an answer. **Children working at greater depth.** I can make an inference from my observations and reflect on caring for the world.	**Spring 1** **Animals incl Humans** **Children working at the expected standard:** I know the difference between living and non living. I can compare and sort things that are living, dead and have never been alive. I can use my knowledge of living processes to help me classify and sort. I can talk about life cycles and food chains with understanding. I know the importance of healthy eating I can perform a test and take simple measurements and talk about what they tell me. **Children working at greater depth:** I can use more ambitious scientific vocabulary I can accurately and effectively link learning from previous lessons. I can be a learning buddy to others and explain my understanding in more detail. I can begin to think about why some activities had more effect (cause and effect). **Spring 2** **Plants** **Children working at the expected standard:** I can understand the difference between seeds and bulbs, and that they germinate. I know the life cycle of a plant and that many produce seeds I can name and sort leaves that I find using a criteria. I can identify and name plants. I can use my observations to look for changes. I can use measure in standard units. I can make a block graph using my results data, I can say which growing condition was the best and why. **Children working at greater depth:**	**Summer 1** **Habitats** **Children working at the expected standard:** I can identify why an animal is suited to the habitat. I can talk about food, water and shelter. I can identify different mini – beasts. I can identify some features of a habitat. I can think of an idea to answer a question. I can perform a test and gather data. I can sort and group animals by the habitat they belong to. I can talk about my sorting giving simple reasons. **Children working at greater depth:** I can draw on previous learning using Mrs Gren to give further explanation. I can make an inference by saying what I think data is telling us. I can return to an aspect of learning and still work with confidence and accuracy. **Summer 2** **Revision of Key Learning from KS1**

	I can be a learning buddy to others and help them measure accurately. Accurately and effectively link learning from previous lessons.	I can confidently explain the processes taking place in germination. I can use more ambitious vocabulary to explain what happens. I can extend my own learning by naming more plants independently. I can extend own understanding by thinking of other conditions that they could investigate.	
VOCABULARY	**Materials** Names of materials – increased range from Y1 Properties of materials - as for Y1 plus: opaque, transparent and translucent, reflective, nonreflective, flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing. bend/bending, stretch/stretching, suitable/unsuitable **Working Scientifically** sort, same, different, describe, label, predict, prediction, observe, group, measure, equipment, compare, record, test, experiment, table, Identify, features, method, results	**Animals incl Humans** offspring, reproduction, growth, child, young / old stages (examples –baby / toddler / child / teenager / adult, egg / caterpillar / pupa / cocoon / butterfly), air, survival, water, exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples – meat, fish, vegetables, bread, rice, pasta) **Plants** As for Y1 plus: light, shade, sun, warm, cool, water, grow, growth, mature, bulb, suitable temperature, germination, healthy, survival, reproduce, life cycle, requirements, reproduction, **Working Scientifically** sort, same, different, describe, label, predict, prediction, observe, group, measure, equipment, compare, record, test, experiment, table, Identify, features, method, results	**Habitats and Living Things** living, dead, never been alive, suited, suitable, basic needs, food, food chain, predator, prey, shelter, move, feed, names of local habitats e.g. pond, woodland etc., seashore, ocean, desert, rainforest, names of micro-habitats e.g. under logs, in bushes, conditions, hot / warm / cold, damp / dry / wet, bright / shade / dark **Working Scientifically** Investigate, sort, same, different, describe, label, predict, prediction, observe, group, measure, equipment, compare, record, test, experiment, table, identify, features, method, results,