St. Michael's Catholic Primary-Science Policy

'With Jesus we can *achieve* what we *dream* and *believe*'

Overview

Science makes an increasing contribution to all aspects of life. Children are naturally fascinated by everything in the world around them and Science makes a valuable contribution to their understanding.

At St. Michael's Primary School, working scientifically is at the core of our science lessons. We believe that providing a high-quality science education allows for the greater understanding of the world through the specific disciplines of biology, chemistry and physics. Children should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse the causes. By continually questioning the experimental design, children are able to leave St. Michael's Primary school with a high level of critical and evaluative thinking which can be transferred to all areas of the curriculum.

Aims/Objectives

We live in an increasingly scientific and technological age where children need to acquire the knowledge, skills and understanding to prepare them for life in the 21st century. Through the framework of the National Curriculum 2014, science aims to:

- To stimulate children's interest and enjoyment in the specific area of science: biology, chemistry and physics.

- Equip children to use themselves as starting points for learning about science, and to build on their enthusiasm and natural sense of wonder about the world.

- Develop through practical work the skills of observation, prediction, investigation, interpretation, communication, questioning and hypothesising, and increased use of precise measurement skills in maths and ICT.

- Enable children to develop their skills of co-operation through working with others, and to encourage where possible, ways for children to explore science in forms which are relevant and meaningful to them.

- Encourage children to collect relevant evidence and to question outcome and to persevere.

- Encourage children to treat the living and non-living environment with respect and sensitivity.

- To encourage children to raise questions and learn how to investigate and explore these using both first-hand experience and secondary sources.

• To help children understand the nature of scientific ideas and to obtain and test the evidence for them.

• To help children recognise and assess risks and hazards to themselves and to others when working with living things and materials and to take action to control them.

- To challenge the ability of all of our children and encourage them to reach their fullest potential.

Strategies

There is a whole school approach to planning and assessment, based on the National Curriculum 2014. This is organised using a creative curriculum supported by Pearson Science bug schemes of work. We believe science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Through the Programmes, children will acquire and develop these skills throughout their Primary years. We believe that science promotes communication in a specific and precise language involving mathematical and logical thinking. It allows children to develop ways of finding out for themselves and gives them practice in problem solving.

In science, pupils are encouraged to be open-minded and to try and make sense of what they see and find out.

Foundation Stage

We teach Science in the Reception and nursery classes 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 (ELGs), which underpin the curriculum planning for children aged three to five. Science makes a significant contribution to the objective in the ELGs of developing a child's knowledge and understanding of the world, e.g. through investigating what floats and what sinks when placed in water.

Key stage one and two

Science is taught as a discrete lesson and as part of cross-curricular themes when appropriate. Science has links with other areas of the curriculum including Geography, English, Maths, ICT.

The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage.

Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data.

Overview of units covered:

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5
Working Scientifically	Working Scientifically	Working Scientifically	Working Scientifically	Working Scientifically	Working Scientifically
Living things and their Habitats-Small world play. Playing with farm animals, wild beasts in their role play. Looking carefully at the world around them.		**3.4. Living things and their habitats.** Living and dead, describe habitats, basic food chains.		**2.Living things and their habitats.** Group living things, use classification keys. Change in environment can threaten life.	**6.Living things and their habitats.** Animal - different life cycles, reproduction in plants and animals. (covered as one topic with animals/humans)
Plants-Investigations. Observing features in their immediate environment. Learning how things grow.	**6. Plants.** Name basic parts— identify common plants	**6.Plants.** Seed/bulb grow into plants. What plants need	**5.6 Plants.** Function - including how water is transported Life cycle of plants		
Animals, including humans - Making observations of animals and plants and explaining why some things occur. Talk about change.	**4.5. Animals, including humans.** Name common animals Name carnivores, herbivores, omnivores.	**5.Animals, including humans.** Animals have offspring, basic needs for survival. Importance of exercise, food hygiene.	**4.Animals, including humans.** Need for right amount of nutrition Skeletons and muscles.	**1.Animals, including humans.** Basic function of digestive system. Teeth. Food chains.	**6. Animals, including humans.** How humans change with age.
			3.Rocks. Group different rocks, how they are formed Fossils.		
Everyday materials. Looking closely at similarities, differences, patterns and change.	**2.3. Everyday materials.** Name. Describe and sort everyday materials	**1.2. Uses of every day materials.** Uses of materials Changing shape of materials		**3.States of matter.** Solids, Liquids, gases Change state, Evaporation/ condensation	**1.3.4. Properties and changes of materials.** Dissolve, separating, reversible changes Change that produce new materials.
EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
			1.Light. Need for light to see. How shadows are formed-size.	**4.Sound.** How sound is made, travels. Pitch and volume.	
			2.Forces and magnets. Compare different surfaces. Magnets.		**2.Forces.** Gravity, air/water resistance, friction. Levers, pulleys and gears
Seasonal Changes. Develop an understanding of growth, decay and changes over time.	**1. Seasonal Changes.** Observe weather and changes across seasons.				**5.Earth and Space.** Movement Earth, planets & moon. Night and day
				5.Electricity. Simple circuits, Switches Conductors and insulators	

Outcomes

Assessment for learning is continuous throughout the planning, teaching and learning cycle. We focus on assessing one topic at a time, and we assess children's work in science by making judgments as we observe children during lessons, question, talk and listen to children, and review their written work. We also make use of Head start Pre-topic and post-

topic' assessments to support our judgments. At the end of each year teacher's make a formal comment on each pupil's progress in science on their end of year report.

Assessment in Science is based upon scientific knowledge and understanding, rather than achievement in English or Mathematics. In the Foundation Stage we assess children's knowledge and understanding according to the EYFS Learning and Development Stages.

Health and Safety

- A risk assessment will be made, as part of the planning process, before any potentially dangerous scientific activity is undertaken.
- Children will be informed of any risks or hazards but will also be encouraged to assess and identify risks for themselves.
- Children will be shown how to use scientific equipment safely.
- Safety glasses will be used where appropriate.

Equal Opportunities

- All pupils irrespective of gender, race, religion or disability, are entitled to a broad and balanced Science curriculum. We have high expectations of all our pupils.
- Teachers plan and provide resources that enable pupils to access their year group objectives at some level wherever possible.

EAL

- We are aware that pupils with English as an additional language may have specific challenges and may require tailored support in order to access the curriculum.

Monitoring

Monitoring is undertaken in various ways:

- Lesson drop ins – usually with a specific focus of interest
- Monitoring pupils' work in science books and on Twitter.
- Learning Walks – usually with a specific focus of interest. This includes evaluating the quality of the learning environment and use of working walls.
- Staff, parent/carer and pupil voice

Subject Lead: K. Gibney

This policy reviewed by K. Gibney February 2022

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