Newtown C of E Primary School

Science Rationale

Intent

Understanding the world involves guiding children to make sense of their physical world and their community.

EYFS- Development Matters

Understanding the world

The EYFS is about how children learn, as well as what they learn. Children need opportunities to develop their own play and independent exploration. This is enjoyable and motivating.

It is important that children in Early Years begin to understand the need to respect and care for the natural environment and all living things. They are supported in exploring and talking about different forces they can feel and the differences between materials. They are encouraged to talk about changes they notice in their environment and begin to develop their vocabulary.

KS1-

Children will be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions.

KS2-

Children in KS2 (Y3&4) will be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

Children in KS2 (Y5&6) will be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments.

Implementation

How do we help children commit this knowledge and these skills into their long-term memory? What is our approach to the delivery of Science?

In Science, every child has the opportunity to retrieve previously taught content through the use of half-termly retrieval tasks and the retrieval of scientific vocabulary and concepts is regularly revisited throughout lessons. The Science curriculum is delivered through a variety of practical investigations and hands on learning experiences. Using Science Learning Journeys, we carefully plan our Science units around the interests of the children. We make the most of our school grounds, where appropriate, and where possible, we link our Science to each terms' project learning. The children are exposed to real and relevant situations, scenarios and questions that build on children's prior knowledge and experiences. Through investigative approaches to science, children are encouraged to make predictions before testing and summarising their findings. We ensure that the right recording is made in order to demonstrate a wide range of skills, as well as to embed the key learning in each lesson and that data collection and analysis is progressive across the school.

Impact

Our vision for Science

At Newtown C of E Primary we aim to provide high quality educational opportunities that give children an understanding of the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils will be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They will be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

We deliver Science lessons through the use of a Learning Journey. It offers the children learning experiences designed to develop their substantive and disciplinary knowledge and to develop a range of scientific vocabulary.

Within Science our expectations at Newtown C of E Primary are:

- children will be able to think aloud and ask scientific questions
- the direction of the learning can be steered by children's wonderings and findings
- practical investigations provide the basis of the knowledge which is embedded for science learning; building on the previous year or phase
- children will record in different ways e.g. frequency chart, diagram/drawing, photographs and develop a deepening understanding of data collection and analysis as they move through the Key Stages.
- children are fully aware of fair testing and demonstrate a secure understanding of variables
- children to be able to suggest further investigative questions based on their findings
- children to have a balance of substantive and disciplinary knowledge.