Llanbedr Church in Wales Primary School

Ysgol Yn Eglwys yng Nghymru Llanbedr

Science and Technology Policy

September 2019

Headteacher: Mrs L.J.Green Chair of Governors: Cllr E. Lusted

Chair of Governors _____ Date_____

Curriculum Changes

At Llanbedr Church in Wales Primary School we will continue to ensure that pupils have access to the Curriculum Wales 2008 requirements in Science and Design Technology. In line with the Successful Futures document and the new Curriculum for Wales 2022 this policy states the requirements in developing the skills for the implementation of the new curriculum.

This policy is a statement of the aims, principles and strategies for learning and teaching of science and technology in Llanbedr Church in Wales Primary School. The policy will be reviewed in 2022.

Science in the National Curriculum

The study areas in science as set out in the National Curriculum 2008, is divided into three units namely:

1 Independence of organisms

2 The Sustainable Earth

3 How things work

Science and Technology and the Four Purposes (New Curriculum 2022)

Science and technology contributes to learners' personal and social education by helping them to make sense of issues within their lives and others' lives. It gives background evidence to health and well-being, sex and relationships, recycling and the sustainability of both materials and energy. With increasing maturity learners compare their lives with that in developing countries and review the impact of humans on the Earth.

School Philosophy of Science and Technology

Science and technology is about children developing an enquiring mind through exploring and creating resources and models to support their kinaesthetic learning throughout their topics. They can extend their knowledge and understanding of the world using a range of ICT to support and present this. Children should, therefore, be given the opportunity to investigate the world around them in a safe and systematic way, making use of their increasing knowledge and skills to describe, interpret and evaluate their findings, as well as using a range of materials and resources to create what they need.

Aims for Science and Technology

This area of learning and Experience capitalises on children and young people's curiosity about our natural, physical world and universe through investigating, understanding and explaining.

- To learn to generate and test ideas, gather evidence, make observations, carry out practical investigations, and communicate with others.

- To learn how through computer science the horizons of what is possible can be extended beyond our current imagination.

• To learn how technology is used to design products that improve the quality of human life and to apply their scientific and other knowledge to practical purposes and challenges.

As a school we will be providing children and young people with rich opportunities to develop technological skills, knowledge, understanding and attributes through designing and developing products and systems. Children will be able to explore the impact of technology on society through STEM projects.

Teaching Strategies and Planning

It is important that the teacher identifies the most appropriate teaching strategy to suit the purpose of a particular learning situation. There are a variety of ways in which the teaching may be effective and our school tends to encourage learning through investigation or enquiry, with an emphasis placed on first-hand experience, although it is also acceptable to use demonstration, research, exploration and teacher-led investigations when circumstances, resources and the needs of individuals and groups allow. Teachers are encouraged to use their flair, enthusiasm, and professional judgement to identify the most sensible, enjoyable and safe methods for the work being conducted. Our aim is to try to access what knowledge children bring with them in science, and to provide them with experiences that will help them to develop their level of knowledge and understanding of scientific concepts. The quality of questioning and talk is a central feature of the delivery of science within the school. Children are encouraged to work as individuals, in pairs, in three's, in groups and also as a whole class. Activities will be planned in such a way as to encourage full and active participation by all children irrespective of ability. Science is planned through long, medium and short term planning as an overview of coverage for each key stage. Medium term plans focus on learning outcomes, activities, assessment, development of key skills and cross curricular issues, the development of scientific learning outcomes, differentiation, assessment strategies, and evaluation of work carried out. Science and technology is delivered through a skills based topic approach which includes STEM projects such as F1 in Schools.

Differentiation

In order to provide for children of different abilities within each class, we endeavour to differentiate tasks in a suitable way: Questioning: by level of questioning appropriate to ability; Recording: using a variety of methods according to the differing abilities of the children. Pupils dealing with same topic but stimulus material at different levels of difficulty; Support: varying levels of support by teaching; Interest: individual pupils to pursue something which is of Interest to them (genius hour, can do.. STEM projects); Task: same text but a variety of tasks set, eg: Group 1: answer questions Group 2: writes commentary Organisation: organising materials in classroom to allow for many of the above approaches (different skills learned/group work).

The Role for the Science and Technology Team is to:

- ensure progression and continuity in science and technology throughout the school;
- support colleagues in their development of detailed work plans, in assessment and record keeping activities, monitor progress in science and technology;
- take responsibility for the purpose and organisation of central resources for science and technology and stimulating their use;

- keep up-to-date with developments in science and technology education and disseminate information to colleagues as appropriate.

Assessment, Recording and Reporting

Pupils are assessed half termly in books and once a term using INCERTS to ensure pupils are on track to reach end of year targets.

Strategies for the use of Resources

There is a central resource area to which each teacher has access. The pupils are encouraged to choose from a range of equipment when carrying out investigations. Pupils are trained in the safe and considerate use of animals, plants and equipment and to be neat and tidy workers. The safe use of equipment is promoted at all times.

Children's Safety in Science and Technology

Teachers engaging in science activities should take note of the safety advice below:

• avoid using glass apparatus apart from optical instruments;

• warn children of the dangers of mains electricity when dealing with topic electricity or using electrical equipment;

• choose household chemicals with care. Avoid any thing strongly caustic or containing bleach;

• discourage random sniffing or tasting;

• observe simple hygiene rules;

• take care when using any sort of heat or lighted candles. Never let children handle matches. Candles must be firmly fixed and children's long hair tied back;

• don't handle unknown or unfamiliar plants – especially fungi;

• tidy work tables and avoid clutter;

• put tops on bottles (especially those containing liquids) immediately after use;

• have sand (in case of fire), water, paper towels and first aid materials to hand minimise classroom movement, ensure liquid spillage is cleared safely, anticipate hazards and take precautionary measures.

Children's Safety in Design and Technology

Teachers engaging in Design and Technology activities should take note of the safety advice below:

• Keep close supervision at all times when using tools and other equipment

• Make sure equipment is safely stored and carried appropriately

• Children are not to carry sharp or heavy tools unsupervised

- Children should not use or clean sharp cutlery unsupervised when cooking
- Children should use tools and equipment in small groups so they are constantly supervised
- When cooking staff should be mindful of allergies

Children's Safety in ICT

Teachers engaging in ICT activities should take more of the safety advice below:

- Follow the E-safety policy
- ICT equipment should be stored appropriately, turned off or charged after use
- Pupils should be supervised at all times when using ICT equipment
- Problems with ICT should be logged with iTeach.

Developing Wider Skills and Literacy and Numeracy Framework

All learners should be given opportunities to build on skills they have already acquired. Learners should continue to acquire, develop, practise, apply and refine these skills through group and individual tasks in a variety of contexts across the curriculum. These skills include; Critical thinking and problem solving; Planning and Organising – implementing solutions and executing ideas and monitoring and reflecting on results. Creativity and Innovation – generating ideas, openness and courage to explore ideas and express opinions. Personal Effectiveness – reflecting on and understanding oneself and others, behaving in effective and appropriate ways; being an effective learner. At Llanbedr Church in Wales Primary School we fully endorse and have integrated the LNF into all our curriculum policies and long term planners. Within the foundation subjects of Humanities, Geography and Art, Design Technology, Physical Educational, ESDGC, Music the following skills have been mapped into both the medium term and short term planning; The LNF focuses on the learners' acquisition of, and ability to apply, the skills and concepts they have learned to complete tasks appropriate for their stage of development; Expectations are given for each school year from Reception to Year 6 in each of the elements and aspects. The LNF is designed to be inclusive of all learners, including those with additional learning needs (ALN); The Routes to literacy and Routes to numeracy components of the LNF describe progression into Foundation Phase for learners with ALN; Extension expectations are also given for those learners with higher-order literacy and/or numeracy skills, such as the more able and talented (MAT) learners. The two components of the LNF are divided into the following strands. Within literacy the strands are:

- oracy across the curriculum
- reading across the curriculum
- writing across the curriculum.

Within numeracy the strands are:

- developing numerical reasoning

• using number skills

• using measuring skills

• using data skills.

The teaching of these language skills should always be integrated so that each supports the others. Numeracy in the LNF is described as consisting of four strands. However, developing numerical reasoning underpins the three procedural strands of Using number skills, Using measuring skills, Using data skills. It is vital that numeracy is not viewed as four discrete strands, which are developed in isolation from each other. Progression through the stages is demonstrated by an ability to develop and demonstrate increasing competence in literacy and numeracy skills. The expectations are essentially concerned with developing and recognising a learner's ability to select and apply literacy and numeracy skills in ways that are appropriate to each context. The expectations are designed to recognise learners' abilities to select and apply numeracy and literacy skills in ways that are appropriate to each context. Developing Digital Competency Digital competence is one of three cross-curricular responsibilities, alongside literacy and numeracy. It focuses on developing digital skills which can be applied to a wide range of subjects and scenarios which will be integrated into our Science and Technology Curriculum.

Equal Opportunities and Additional Needs

Every effort is made to ensure that science and technology activities and investigations and subsequent assessments are designed to allow full access for all pupils, irrespective of gender or ethnicity. Although the programme of study for each key stage is taught to the great majority of pupils in the key stage, in ways appropriate to their abilities, for the small number of pupils who may need the provision, material is selected from earlier or later key stages to enable individual pupils to progress and demonstrate achievement. Such material is presented in contexts suitable to the pupil's age. Appropriate provision is made for pupils with physical and sensory difficulties using appropriate methods. Pupils with particular ability and flair for science who work more quickly through the levels of the National Curriculum are extended through the use of supplementary work cards and computer software. Llanbedr Church in Wales Primary School is committed to equality, including racial equality, for all members of the school community. The school promotes a positive and proactive approach to valuing and respecting diversity, and will not tolerate racial harassment of any kind.

Curriculum Cymraeg

Science and technology contributes to the Curriculum Cymraeg by the use of contexts that are relevant to learners' lives in Wales. The rich and varied environment around learners gives the basis for fieldwork. Learners have the opportunity to study recycling, sustainability and the impact of humans within their locality and further afield.