

# Ysgol Gynradd Creigiau Primary School

## Mathematics Policy

### Aims and Objectives

Mathematics teaches us how to make sense of the world around us through developing a child's ability to calculate, to reason, and to solve problems. It enables children to understand and appreciate relationships and pattern in both number and space in their everyday lives. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics.

Within mathematics, a significant key skill is numeracy. Numeracy is not narrowly defined as merely knowing about and knowing how to use them to perform calculations. It also includes the ability to apply the numerical skills and to solve numerical problems as well as the ability to use numbers in the context of measurement, money and handling data.

(Cardiff LEA CAN Project)

The aims and objectives of the CAN Project remain just as relevant to the curriculum requirements as laid down in the current documentation. Indeed the emphasis is on the development of the pupils mathematical and thinking skills rather than the ability to rote learn techniques. The requirements of the workplace mean we have to develop, within the pupils, the ability to meet new mathematical challenges with a range of strategies to help solve the given problem. As Art Costa wrote, 'To know what to do when you don't know what to do,' and it is vital, therefore, that the development of the skills relating to: the solving of mathematical problems, mathematical communication, and the ability to reason mathematically are developed fully by each pupil.

The aim, when teaching mathematics, should be:

- To make the lesson fun and relevant to the pupils everyday life;
- To promote an atmosphere where pupils are prepared to take a risk and where incorrect answers are used to develop the understanding of all pupils;
- To learn through practical activities which allow for exploration of ideas and an opportunity to discuss, collaboratively, as a pair, group or class i.e. the sharing of ideas;
- To promote confidence and competence with numbers and the number system so the skills can be utilised in problem solving activities;
- To develop the ability to present information in a logical and increasingly complex manner but one that is pertinent to the set task;
- To develop the pupils ability to explain ideas using the appropriate mathematical vocabulary;
- To utilise mathematics in all subject areas so that it is seen as an important life skill, not a subject in isolation (see Section 7- Cross-Curriculum opportunities).
- To develop the pupils ability in respect of: shape position and movement and when using money and measuring.
- To develop the pupils awareness of the importance of mathematics in everyday life.

## **Teaching and Learning Style**

The school uses a variety of teaching and learning styles incorporating individual, paired, group and whole class lessons, or mixture of all three, as and when required. The principal aim being to develop the pupils' mathematical skills and understanding of the concepts introduced. On most days mathematics will feature on the timetable, either as a discrete mathematics lesson or through the theme, context, being studied.

The use of 'Assessment for Learning' (A.f.L.) strategies are incorporated into lessons, when appropriate, e.g. 'No Hands Up', 'Traffic Lighting' and through the use of 'Peer and Self Assessment, which allows the pupils to play an important part in their own mathematical development. A.f.L. also allows the teacher to plan lessons of a suitable level allowing the pupils to make quicker progress and stops the pupils 'switching-off mentally'.

The use of 'Higher Order Thinking skills' allows pupils to develop their understanding, through discussion and the open-ended nature of the questioning.

It is vital that the pupils also develop a secure foundation in the mental calculation and a firm grasp of number facts. Without this ability the pupils' confidence will not grow and the development of mathematical skills becomes much more difficult. To achieve this goal mental skills relating to the recall and use of times-tables and the ability to add, subtract, multiply and divide are developed during the mathematics lessons.

The lessons that follow the National Numeracy Strategy (NNS) format include: a mental/oral starter, the main focus of the lesson and a plenary to consolidate the pupils understanding.

The pupils have the opportunity to use a wide range of resources e.g. number lines, digit cards, mathematical dictionaries, 2D and 3D shapes as well as calculators to help develop their confidence and skills.

The pupils also use I.C.T. to develop their ability and use is made of the interactive whiteboard to enhance the quality of lessons (see Appendix 6)

In all classes there are pupils with a wide range of mathematical ability. The school recognises this fact and provides suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. This opportunity is achieved through the use of a range of strategies: mixed-ability groups, differentiated tasks, open-ended activities and through the playing of mathematical games. The school also makes use of teaching assistants, which allows the pupil to work on a one-to-one or in a selected group environment.

## **Curriculum Planning**

Mathematics is a core subject in the National Curriculum and we use the National Numeracy Strategy Framework as a basis for implementing the statutory requirements as laid down in the Programme of Study's Range i.e. Number, Measures and Money, Handling Data, Shape, Position and Movement.

Planning for mathematics is broken down into three elements: long-term, medium-term and short-term. The National Numeracy Strategy Framework for Teaching gives a detailed outline of what we should teach within each of the three terms, though teachers can adapt the sequence of lessons to fit in with the theme undertaken during a given term.

The medium-term planning incorporates both the range and content to be undertaken during the term but also includes the mathematical skills to be developed. The medium-term planning ensures an

appropriate balance and distribution of work is undertaken and the areas, which haven't been covered, can be identified and carried over into the following terms programme of study.

The short-term planning is more detailed and includes: the content taken from the Programme of Study (Range), numeracy skills to be developed, resources to be used, the pedagogy- including A.f.L. strategies, which 'Skills across the Curriculum'- Thinking Skills, Communication Skills and ICT Skills as well as flagging up the areas of 'Learning across the Curriculum'- Curriculum Cymreig, Personal and Social Education and the links to Careers and the World of Work (when appropriate)- icons are used, within the planning, to highlight the areas being addressed.

The detailed nature of the planning ensures the full coverage of the statutory and non-statutory requirements and means the pupils get the appropriate curriculum allowing for the full development of their skills.

The subject leader keeps a copy of the medium term planning for each class and through the monitoring cycle and analysis of test data, see N.F.E.R. tracking file, ensures that the pupils make the desired progress.

The short-term planning of all teachers is reviewed on a regular basis and copies of the weekly planning kept by the individual teachers with an evaluation of the lessons written in when felt of use e.g. use of a different strategy when introducing a concept or the usefulness of a given interactive website.

### **The Foundation Phase**

Mathematics is taught in our foundation phase classes. The mathematical work undertaken by the pupils is related to the objectives set out in the Foundation Phase Documentation.

The pupils are given ample opportunity to develop their understanding of: Number, Measures and Money, Shape and Space, Position and Movement and Handling Data through varied activities which allow them to enjoy, explore, practice and talk confidently about mathematics. The work set is based on practical activities followed by recording when, and if, ready.

### **Developing Mathematical Skills in Other Subjects**

Mathematical skills are useful in a wide variety of curriculum areas and the thematic approach adopted in school allows these opportunities to be identified e.g. measuring in design technology, graphic representation of data in science and history, Islamic patterns in religious education, symmetrical shapes in physical education in the medium and short-term planning (see Section 6 relating to the possible incorporation of mathematics in other subject areas).

### **Special Educational Needs**

All pupils are entitled to a curriculum designed to develop their mathematical understanding and to this end ‘Individual Learning Programmes (I.E.P.’s)’ are produced to ensure the pupils receive an appropriate programme of work, with set targets laid out in the I.E.P., which is reviewed at the end of each term. The work is therefore differentiated and use is made teachers aides to enable the pupil to make the most of their ability.

More Able and Talented pupils are identified and set work accordingly e.g. using material from ‘Nrich’ and ‘NACE’ websites (see Appendix 6 for specific websites).

The R.M. Maths Learning System allows individual programmes to be set for pupils who require further support and appropriate websites are also used to develop mathematical skills.

## **Equal Opportunities**

All pupils have equal access to the Mathematical Curriculum regardless of their ethnicity, gender and ability (see Equal Opportunities Policy’).

## **Curriculum Cymreig**

When possible, opportunities are taken to encourage the pupils to develop their cultural, historical and linguistic understanding of Wales e.g. problem solving activities with a Welsh element.

## **Assessment and Recording**

Assessment will be undertaken in line with the whole school policy (see Assessment Policy and Section 8 relating to Monitoring and Assessment) but a specific level will be given to parents at the end of each Key Stage in the annual report, as legally required.

Pupil tracking will take place, using data from the NFER Mathematics tests, undertaken by the pupils from Year 3 to 6, and a report, regarding strengths and areas for development produced by the maths co-ordinator.

Formative assessment (A.f.L.) is used on a daily/weekly basis with field notes being made which allows for the progression of pupils skills.

The mathematics co-ordinator keeps samples of pupil’s work and photographs of maths related displays to demonstrate the activities undertaken in both Key Stages.

## **Monitoring**

Monitoring of the standards of pupil’s work, and the quality of mathematical teaching, is the responsibility of the maths coordinator. The monitoring of standards will involve: lesson

observation, looking at pupils books and analysing the teachers' planning. The coordinator will give individual feedback and lead INSET sessions to develop areas identified as needing attention.

The data provided by Cardiff, Fisher Foundation and DEWI will also be utilised to provide a focus for the future monitoring of mathematics.

The support of colleagues in the teaching of mathematics, informing and explaining about new curriculum developments as well as providing a strategic lead are also the responsibility of the Coordinator.

### **Transition**

The transition between Year 6 and Radyr or Plasmawr entails the transmission of all relevant data by the school and a day visit by the pupils during which a mathematics lesson will be taught.

Year 6 also undertake a unit of work, often taken from A.C.C.A.C.'s Optional Assessment Material, which is then discussed amongst the feeder primary and comprehensive teachers.

### **Moderation**

The Year 6 teachers meet with members of the Mathematics Department from Radyr or Plasmawr to determine the level of a range of pupils from Level 3 to 5.

A similar system exists for the moderation of work from the pupils of Dosbarth with the mathematics staff in Plasmawr.

### **Standardisation**

The standardisation of work takes place during meetings of the high school mathematics departments and teachers from the feeder primaries. This ensures that there is uniformity when levelling pupils' work.

## **Resources**

There is a range of resources to support the teaching of mathematics across the school. All classrooms have a range of small apparatus but specific resources are kept in the mathematics central resource area.

A wide range of publications, books and course files, are also found in the resource area along with DVD's and CD-Rom.'s to be used as required (see Appendix 1 and 3).

## **Self-Evaluation**

A self-evaluation of mathematics will be undertaken each academic year using the Seven Key Questions as a guide to highlight successes and shortcomings (See Self-Evaluation File).

## **Review and Evaluation**

THE 'Mathematics Policy' will be evaluated and reviewed in accordance with the schedule of the Whole School Development Plan' and will be updated on a yearly basis.

P. Ivins

1.1.10