SPEAN BRIDGE PRIMARY SCHOOL
Maths Policy

Rationale:

Mathematics plays an important role in our lives. It is used in everyday activities such as buying food and clothes, keeping time and playing games. Through applications developed in various contexts, mathematics has been one of the decisive factors in shaping the modern world.

Aims:

Mathematics is a core subject within The Curriculum for Excellence and is also part of our interdisciplinary learning.

Through this policy we aim to offer all our pupils a mathematical programme of high quality. Using a variety of approaches we hope to develop in each pupil an inquiring mind, plus the necessary attitudes, skills and knowledge. To achieve this aim for mathematics, all pupils will experience a range of activities that are practical, investigative, enjoyable and challenging. We also aim to ensure that all pupils have equal access to the programme for mathematics irrespective of gender, ethnicity, ability or background.

To achieve this view of mathematics we need to develop in our pupils:

- A positive attitude to maths as an interesting, useful and attractive subject.
- An ability to think clearly, logically and creatively in mathematics with confidence, independence and flexibility of mind.
- An awareness of the usefulness of mathematics in the world beyond the classroom.
- An understanding of mathematics through a process of problem solving, enquiry and experiment.
- An understanding of the nature and purposes of mathematics.
- An appreciation of the importance of sharing mathematics by discussing, explain and reporting.
- An awareness of the personal qualities such as perseverance when working.

In order that our pupils receive a full and balanced programme The Curriculum for Excellence Experiences and Outcomes will be used as a frame of reference when planning and auditing the programme.

The advice within these guidelines is based on existing good practice in the design and planning of policies and programmes for the learning and teaching of mathematics in Scottish Schools and hence these guidelines will form the basis of our mathematics curriculum in terms of:

- Planning
- Implementation, i.e. teaching and learning
- Assessment and recording

Planning for Mental Maths and Problem Solving
We highlight appropriate Experiences and Outcomes for Mental Maths and Problem Solving as part of our maths planning. We presently use the school planning format for all areas of planning.
(See school policy on Teachers' Forward Planning.)

Learning and Teaching
To realise our aims we need to plan for and develop at all stages a variety of experiences and activities:

- Activities will be balanced between tasks which develop knowledge, skills and understanding and those which develop the ability to tackle practical problems or carry out mathematical investigations.
- Activities will be balanced between those which are short in duration and those which have scope for further development.
- Activities will involve, where appropriate, both independent and collaborative work.
- Activities will be supported by a variety of teaching approaches.
- Activities will encourage pupils to use oral, mental and written forms of mathematics.
- Activities will provide opportunities for pupils to select and use with confidence a range of mathematical resources.
- Activities will be set in a variety of contexts where mathematical skills and knowledge can be practised, e.g. real, imaginary and simulated.

Time allocation
A minimum allowance of 1 hour a day should be spent on core mathematics and in addition there would be time for any interdisciplinary maths work.

Class Organisation and Teaching Styles
Classroom organisation will be flexible in order to provide the following:
- Direct teaching of individuals and groups
- Discussion between teacher and pupils and between children themselves
- Practical work
- Consideration and practice of fundamental skills and routines
- Problem solving
- Investigative work
- Aspects of interactive/oral activities
- Individual active learning
- Interactive approaches

Wherever the situation allows, any new mathematical concept will be presented in a practical (concrete) way initially and then related at a later stage, to a theoretical (abstract) approach.
Pupils will be given opportunities to use the relevant work skills associated with mathematics:
- Recording and presenting work clearly with care
- Using a variety of measuring instruments with accuracy
- Care and confidence using structured material

- Calculators and computers when necessary
- Using a variety of text and reference books

An effective class lesson in mathematics should:
- Revisit previous topic work
- State learning objectives or targets for lesson
- Have a variety of activity and written tasks
- Have a plenary session at the end to reinforce/consolidate what has been learnt

(See Whole School Learning and Teaching Policy for further advice)

Resources

In order to develop the necessary skills, attitude and confidence in working mathematically, pupils will need to have access to a range of appropriate resources and materials. We have a wide range of accessible resources to support Mathematics including computer software.

Maths Scheme

The school has a core maths scheme called Teejay Maths and Heinemann Mathematics and is also linked to this. Supplementary scheme materials are available at all levels if needed and TV and Radio programmes can be used to enable the children to experience maths in a variety of contexts. The Scheme Teachers Notes provide a range of practical activities, specific teaching points and suggested resources to support teaching. These notes should be referred to at the forward planning stage. The scheme should be used as a flexible resource, i.e.:

- ✓ To support the teaching programme
- ✓ As a record of pupils work
- ✓ As an assessment tool for mathematics taught in a different context
- ✓ To provide opportunities for consolidation and, if necessary, further practice.

Issues for consideration

Calculating/Calculators

There are three methods of calculating that our pupils will use. These are:
- ♦ Mental calculations
- ♦ Pencil and paper methods
- ♦ Using a calculator

All of these methods are important. Activities designed to encourage interactive oral and mental mathematics will be a regular feature of classroom practice. Often these activities will be short in duration and ad hoc, while others will be planned for in a more systematic way.

It is important to recognise, that when calculating mentally, we usually make use of different methods from those we have used for written calculations. We will encourage pupils to develop and practise flexible mental approaches. One way of doing this, is through class or group discussion of the variety of different ways of carrying out particular calculations.

The school also uses First Mental Arithmetic for the early stages and Essential Mental Arithmetic for the upper stages in addition to other interactive maths strategies.
Some aspect of mental/oral mathematics will be carried out on a daily basis.

From Primary One onwards pupils will have access to the use of calculators.

Problem Solving and Enquiry
Mathematics should be viewed in the widest sense as a problem solving activity and it is integral to the teaching of Mathematics. Where pupils are involved in problem-solving and enquiry, they will be challenged to think about what they are doing, to question and to explain.
They will be taught the three broadly interdependent steps of:
- Starting a task
- Doing a task
- Reporting on a task

We use a variety of problem solving resources including NZ Maths.

Computers/ICT
The use of the computer and ICT is seen as an integral part of our mathematics programme. The computer is an aid to teaching and learning just as a blackboard, squared paper or structured material. Programs selected will be linked to the ongoing work of the class or for a specific purpose, e.g.:
- Problem solving
- Investigations
- Games/simulations

Good software will be used to stimulate mathematical discussion and can be effective when used either with a whole class or small group.
At our school we use the 'Number Box', Information Workshop, 'Excel' computer packages for data handling. Children who are working on 1st Level upwards can use Mangodata for databases and spreadsheets.

Programmable Toys
From Nursery onwards, pupils will have access to the 'Roamer' and 'Beebot' programmable toys. Used well, they have the potential to:
- Stimulate discussion and ideas
- Promote problem solving strategies
- Support activities related to the targets for position and movement
- Support activities related to the targets for shape and angles
- Support activities related to the targets for estimation of strength
- Support activities related to the Attainment, Outcome, 'Problem Solving and Enquiry'
- Promote enjoyment and a positive attitude towards mathematics.

Assessment and Recording
For assessment to be effective, it must begin in planning of maths programmes, topics and blocks of teaching. This is reflected in our planning sheets. Assessment will reflect

broad classroom approach to teaching and learning of maths and provide positive stimulus for future development.
Whenever learning difficulties are identified the cycle begins again of plan, teaching, reporting and evaluating.

Methods of Assessment:
The variety of methods employed in Mathematics include:
- Checking written work
- Observation activities
- Discussing events
- Pupil self-assessment
- Meeting targets of practical nature, e.g. measurement to be assessed in practical way, or by observing
- Class based formal assessments
- Assessment for Excellence testing in P3/5/7

Assessment will take place on a day-to-day basis, at the end of each block or topic and at the end of a level. To help ascertain readiness for National Testing we use the Teejay chapter assessments and Teejay Curriculum for Excellence Assessments.

Evaluation of assessment
Teachers will refer to the evidence from assessment when reflecting on the effectiveness of their teaching.
- How successfully did the pupils engage with the variety of contexts, with the different kinds of learning, with the range of mathematics?
- How good a match was achieved between abilities and interests and the task set?
- Might some pupils benefit from a change of group?
- Were the resources available?
- Was enough use made of 'concrete' apparatus?
- Is the calculator/computer being used appropriately?
- Was the wording of worksheets a problem?

The search for answers to such questions will help you to improve your planning of programmes of study in mathematics.
(See whole school Assessment and Record Keeping Policy for further advice)

Assessment Materials Available
- 5-14 National Tests
- Heineman Check Ups and Assessment Sheets
- Teejay Assessment Sheets
- Teacher devised topic assessment sheets
- Photocopiable maths material (staffroom)
- Network 10 Graded Assessments (Staffroom)
- Mental Maths Workbooks

Support for learning
All pupils will have access to a broad, balanced curriculum which includes Maths and should make the greatest progress possible. This includes supporting a challenging curriculum for able pupils as well as supporting pupils with specific needs and difficulties. This may be through the setting and implementation of short and long term targets within an I.E.P/Child's Plan.

(See whole school Support for Learning Policy)

Monitoring and Review

Review of the policy for Maths and any programmes of work takes place as part of the auditing cycle of the School Improvement Plan**.**

Monitoring of classroom practice is undertaken by the Management Team. The Head Teacher closely monitors individual attainment levels.

(See whole school Quality Assurance, Monitoring and Review Policy)

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