Carnegie Primary School

Numeracy and Mathematics

Statement



Date

August 2022



*“***INTRODUCTION**

**Numeracy** is a branch of Mathematics that aims to promote an understanding of the number system and to develop skills in mental recall, calculation and problem-solving skills, applying this understanding in a variety of contexts.

**Mathematics** is the study of the properties, relationships and patterns in number and shape, and the application of this knowledge to analyse, interpret, simplify and solve problems in real-life situations.

**Numeracy**

*Numeracy is a fundamental life skill. Being numerate involves developing confidence and competence in using number that allows individuals to solve problems, interpret and analyse information, make informed decisions, function responsibly in everyday life and contribute effectively to society. It gives increased opportunities within the world of work and sets down foundations which can be built upon through life-long learning.*

*Whilst numeracy is part of mathematics, it is also a core skill which permeates all areas of learning, allowing pupils the opportunity to access the wider curriculum.*

*(CfE- Numeracy Outcomes paper)*

**Mathematics**

*Learning mathematics develops logical reasoning, analysis, problem-solving skills and the ability to think in abstract ways, as well as offering opportunities for creativity. It is a universal language of numbers and symbols which allows us to communicate ideas in a concise, unambiguous and rigorous way. Mathematics is important in everyday life, allowing us to make sense of the world around us. It gives us confidence in dealing with number and in understanding shape, position and movement. It enables us to think abstractly, model real-life situations and make generalisations and equips us with the skills we need to interpret and analyse information, assess risk and make informed decisions.*

*(CfE- Maths Cover paper)*

**RATIONALE**

*‘All teachers have responsibility for promoting the development of numeracy. With an increased emphasis upon numeracy for all young people, teachers will need to plan to revisit and consolidate numeracy skills throughout schooling.’*

*(Building the Curriculum 1)*

*‘To face the challenges of the 21st Century, each young person needs to have confidence in using mathematical skills, and Scotland needs both specialist mathematicians and a highly numerate population.’*

*(Building the Curriculum 1)*

It is therefore important that all teachers look for opportunities to develop and reinforce numeracy and mathematics skills within their own teaching practice and through inter-disciplinary learning.

*Mathematics is important in our everyday life, allowing us to make sense of the world around us and to manage our lives. Using mathematics enables us to model real-life situations and make connections and informed predictions. It equips us with the skills we need to interpret and analyse information, simplify and solve problems, assess risk and make informed decisions.*

 *(CfE Mathematics, Principles and Practices)*

**AIMS AND OBJECTIVES**

At Carnegie Primary School, we believe that Numeracy and Maths should be delivered within a learning environment that supports discovery, questioning, relevance, experimenting and most of all enjoyment. We take a conceptual approach to Numeracy. This approach strives to ensure that all children develop a deep and thorough understanding of the number system that is revisited and built upon at every stage of learning. It promotes deeper thinking about how numbers work and encourages learners to learn a variety of strategies to solve problems.

The conceptual approach to Numeracy, looks to move away from the traditional teaching of numerical processes, and towards exploration of why numbers work in the way they do. Our pupils are encouraged to openly discuss their thinking and understanding. They are encouraged to use a wide range of concrete materials from the early stages in Primary 1, all the way through to Primary 7, to encourage our learners to effectively demonstrate their understanding. The conceptual approach aims to develop curious, confident and highly numerate learners, who have an ability to problem-solve effectively and apply their knowledge and skills in a variety of contexts.

**LEARNING AND TEACHING AT CARNEGIE**

*High quality learning depends upon achieving a suitable balance between developing key facts and integrating and applying them in relevant and imaginative contexts.*

*(Numeracy across learning: principles and practice)*

From the early stages onwards, learners will experience success in Numeracy and Mathematics and develop the confidence to take risks, ask questions and explore alternative solutions without fear of being wrong. They will enjoy exploring and applying mathematical concepts to understand and solve problems, explaining their thinking and presenting their solutions to others in a variety of ways. At all stages, an emphasis on collaborative learning will encourage children to reason logically and creatively through discussion of mathematical ideas and concepts. The experiences and outcomes promote and support effective learning and teaching methodologies which will stimulate the interest of learners and promote creativity and ingenuity. A rich and supportive learning environment will support a skilful mix of a variety of approaches, including:

* Active learning and planned, purposeful play
* Development of problem-solving capabilities
* Developing mental agility
* Frequently asking children to explain their thinking
* Encouraging regular ‘Maths Talk’ in the classroom.
* The development of a growth mindset in relation to Numeracy and Mathematics.
* Use of relevant contexts and experiences, familiar to children and young people. For example, making links to IDL topics such as Romans – learning Roman numerals.
* Appropriate and effective use of technology
* Building on the principles of Assessment is for Learning
* Collaborative and independent learning
* Making frequent links across the curriculum, so that concepts and skills are developed further by being applied in different, relevant contexts
* Promoting an interest and enthusiasm for Numeracy.

**STRUCTURE OF LESSONS**

Lessons in Numeracy and Mathematics will aim to include:

1. A Maths Talk challenge to recap on prior learning.

2. A mental starter / warm up to consolidate prior knowledge.

3. Explicit sharing of Learning Intention and Success Criteria generated by children.

4. Direct teaching (may be group rotation).

5. Learning experience and activity.

6. Plenary with reflection on Learning Intention and Success Criteria.

In Carnegie Primary School, Numeracy and Mathematics will be planned and implemented through three main areas:

**NUMBER, MONEY AND MEASURE**

* Estimation and rounding
* Number and number processes (including addition, subtraction, multiplication, division and negative numbers)
* Multiples, factors and primes
* Powers and roots
* Fractions, decimal fractions and percentages (including ratio and proportion)
* Money
* Time
* Measurement
* Mathematics – its impact on the world, past, present and future
* Patterns and relationships
* Expressions and equations

**SHAPE, POSITION AND MOVEMENT**

* Properties of 2D shapes and 3D objects
* Angle, symmetry and transformation

**INFORMATION HANDLING**

* Data and analysis
* Ideas of chance and uncertainty

Teachers will plan within and across curriculum areas to enhance learning.

Outcomes will be used to support staff in planning challenging, engaging and enjoyable learning and teaching activities which tap into children’s and young people’s natural curiosity and their desire to create and work in practical ways.

**CLASSROOM ORGANISATION AND LEARNING ENVIRONMENT**

In Carnegie Primary School, we use a variety of ways of organising Numeracy and Mathematics lessons.

* Individual work - which can be used for consolidation and practice of skills
* Group work – allowing active learning challenges and opportunities to develop critical skills
* Whole Class – working collaboratively to share experiences gained through investigating, exploring and discussing topics

Each class should have a dedicated Numeracy and Mathematics area where children are actively encouraged to explore a variety of resources and activities which interest them, encourage deeper thinking and challenge and allow for learned skills to be applied in a variety of contexts.

Classrooms should have a Numeracy and Mathematics wall display which should act as a working wall that is interactive, interchangeable and reflects the current learning.

At Carnegie, we operate using fluid groupings for Numeracy and Mathematics. Planning for effective differentiation within these lessons should take place in a responsive way. Children are not given a group at the beginning of the year and expected to remain within this group. The ‘group’ they are part of can change from day to day, depending on what most appropriately meets their learning needs.

**PLANNING AND EVALUATION**

Teachers at Carnegie should aim to teach some form of Numeracy or Mathematics every day. Maths should be taught alongside Numeracy as opposed to a stand-alone block. This ensures that Numerical skills and knowledge are revisited and consolidated on a consistent basis.

At Carnegie, Class Teachers use the Fife Progression Pathways for Numeracy and Mathematics to plan for high quality teaching and learning experiences. They use the Records of Understanding to individually evaluate children’s learning and levels of understanding. This documentation is used to identify gaps in learning where potential intervention is required, whilst also ensuring those children who need it are appropriately challenged.

This information is then passed on to the following Class Teacher at transition.

**MENTAL MATHS**

Mental maths is the ability to truly understand maths concepts and solve problems in a logical, methodical way after thinking about it, rather than making notes on paper. Mental Maths planners are used at each stage to show the range of mental maths to be covered throughout the session. Mental Maths should be taught weekly across all classes.

**RESOURCES**

At Carnegie, a great deal of funding has been put into ensuring that every class has regular access to a wide range of Numeracy and Mathematics resources. These can be located within each classroom, the Numeracy resource cupboard and also within Numeracy trolleys outside each classroom.

Pupils will also have access to a range of appropriate resources and materials including:

* SHM / Leckie and Leckie / Active Maths textbooks and workbooks to dip into when appropriate.
* ICT (On-line websites such as nRich, Daily Rigour, Topmarks etc) should be used to reinforce learning
* Numicon resources
* iPads
* Mathematical games
* Outdoor learning environment
* Maths Talk

**ADDITIONAL SUPPORT NEEDS**

Pupils who require additional support for learning will be fully included, with their Class Teacher planning for and facilitating their individual needs. Additional support will be given by the Class Teacher, the SfL Team when appropriate, Pupils Support Assistants and peers to encourage children to achieve success and be confident in their abilities.

**JOTTERS**

All children from P2 onwards will use a squared jotter for their Numeracy and Mathematics. Class Teachers will encourage children from the early stages to develop the skills to write directly into their jotters, encouraging the school expectations for jotter layout (one number inside each box, short date, title, use of rulers, spaces between workings). Children will be encouraged to show their thinking and understanding within their jotters through the use of concrete materials, pictorial or written strategies.

Class Teachers at Carnegie will aim to provide a balance of worksheet-related tasks, active learning activities and learning that can be recorded directly in the jotter. Annotated photographs of active learning is highly encouraged, particularly in the early years stages.

AifL strategies should be used to include teacher, peer and self-assessment. Teacher comments should refer to the Learning Intention and Success Criteria, as well as the level of effort from the pupil. Class Teachers should aim to provide written or verbal feedback on 1 out of every 3 pieces of learning.

Jotters will be moderated twice per session, with constructive feedback provided.