



Kinellar School

A Curriculum for Excellence

Maths/ Numeracy Policy

Introduction

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.

Numeracy promotes the development of the number-based skills that are needed regularly by everyone in their lives and is a subset of Mathematics.

Below are broader definitions of both:

Mathematics

It is a rich and stimulating subject with the capacity to engage and fascinate learners of all ages, interests and abilities. 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.

Mathematics can enable us to contribute effectively in the workplace and gives us the capacity to be both creative and logical when enjoying the challenge of solving problems, tackling puzzles or playing games. It has the ability to fascinate and stimulate and is as important to adult learners as it is to children and young learners. Mathematics plays an important role in other areas, such as Science or Technologies, and is vital to research and development in fields such as engineering, computer science, medicine and finance. Learning mathematics gives pupils access to the wider curriculum and the opportunity to pursue further studies and interests.

(ACFE- Maths Cover paper)

Numeracy

Numeracy is a fundamental life skill.

Being numerate involves developing a 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 a subset of mathematics, it is also a core skill which permeates all areas of learning, allowing pupils the opportunity to access the wider curriculum.
(ACfE- Numeracy Outcomes 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 activities and through inter-disciplinary projects and studies.

Aims

1. To develop a positive attitude to numeracy/maths as an interesting and attractive subject in which all children gain some success and pleasure
2. To develop mathematical understanding through systematic direct teaching of appropriate learning objectives
3. To encourage the effective use of numeracy/maths as a tool in a wide range of activities within and outwith school and, subsequently, adult life
4. To develop an ability in the children to express themselves fluently, to talk about the subject with assurance, using correct mathematical language and vocabulary
5. To develop an appreciation of relationships within maths
6. To develop ability to think clearly and logically with independence of thought and flexibility of mind
7. To develop mathematical skills and knowledge and quick recall of basic facts

Learning and Teaching Approaches

Numeracy and Maths are currently planned for using Active Learning techniques in line with A Curriculum for Excellence.

Active involvement in mathematical experiences, set in real and relevant contexts, is vital to the development of knowledge, understanding, skills and a positive attitude towards numeracy and mathematics.

Within a rich and supportive learning environment, best practice will draw upon a skilful mix of approaches, including:

- planned active learning with opportunities to observe, explore, investigate, experiment and play
- development of problem-solving capabilities: see appendix 1

- development of mathematical thinking skills
- use of relevant contexts, familiar to young people's experiences
- appropriate, effective use of technology
- building on the principles of Assessment is for Learning
- collaborative and independent learning
- making links across the curriculum where appropriate
- increased opportunities for discussion, communication and explanation of thinking

From the early stages onwards, we aim for all our pupils to experience success in mathematics and develop the confidence to take risks, ask questions and explore alternative solutions without fear of being wrong. They should, therefore, 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, the use of collaborative learning encourages children to reason logically and creatively through discussion of mathematical ideas and concepts. Misconceptions and wrong answers are be used as opportunities to improve and deepen children's understanding of mathematical concepts, through use of effective questioning and discussion.

Teachers work to ensure that the fundamental numeracy skills are established and consolidated through imaginative and interactive approaches, to enable children to develop a sound understanding of number. Emphasis is still to be placed on establishing the foundations of numeracy, such as confidence in recall and use of number bonds and multiplication facts, understanding of place-value, and the application of mental strategies. These skills will be continually reinforced throughout the pupils' education.

Individual, group or class teaching, using direct or indirect methods, are used as appropriate to the circumstances of the class/ stage. We have a wide range of well organised resources to support this, and will continue to maintain these as necessary.

Planning

The curriculum is currently delivered principally through the following schemes of work:

Scottish Heinemann Maths
 Heinemann Maths
 TENS
 Education City
 TeeJay Maths

Teachers should use the school planners, developed in sessions 2011/ 2012 and 2012/ 2013, to plan and record progression and should liaise with appropriate stage partners as to pace/ challenge. (Appendix 2)

Planning should follow the process outlined below:

- Identifying the learning- *What do I need to teach/develop? Can the children be involved in any part of this planning process?*
- Stages of development- *Where are children "at" in understanding and experience?*
- Ensuring progression- *What are the small steps needed?*
- Aspect or inter-disciplinary focus- *Will it be within one aspect of Maths, e.g. Money? Will it go across the CfE organisers, e.g. Money/Addition/Subtraction? Will it be part of a theme across learning, e.g. going Shopping?*
- Making Connections- *Are there links I can help children to make, e.g. addition/subtraction, counting on to get to a number?*
- Learning opportunities to engage children in their learning- *What quality learning experiences can I offer? How will these be managed to give children time to extend/consolidate learning?*
- Possible contexts- *What contexts could make it meaningful, real and relevant/challenging/motivating and exciting? What opportunities can I provide for pupils to apply new skills/knowledge in another context?*
- Success Criteria- *How will I/children know what has been learned? How will I record this evidence?*
- Building in and on action points- *What do I plan for next?*

(Adapted from Lynda Keith Education, 2010)

Assessment and Monitoring

In mathematics, as in other curricular areas, assessment forms an integral and ongoing part of learning and teaching. It is gathering of evidence of attainment and progression for the purpose of aiding in future planning, teaching and reporting. In working with pupils, the teacher will be continuously assessing and making use of this assessment in planning future activities. Formal and informal assessment will be used:

1. To give pupils clear and regular feedback
2. To assist learners and teachers to identify the next steps in the learning process which will ensure progression
3. By teachers to evaluate the effectiveness of learning and teaching

On-going class work will be the main source of evidence, available through observation of:

1. Oral questioning and discussion
2. Practical tasks
3. Pupils' written work, including rough jottings

4. Pupil's own assessments and comments

Assessment is done with a clear purpose in view. Specific assessment activities are identified and used to provide further information to reinforce the continuous assessment. These activities are used at the end of a topic or section of work, or later to check retention. The information gained will be used to plan future work. National Assessment is used at the discretion of the teacher, to confirm pupil levels. Assessments are always from the current catalogue and chosen to cover all areas of the maths curriculum. This arrangement will be reviewed in the light of local and national policy, as appropriate.

Transitions (Pre- school/Primary/Secondary)

Through liaison within our establishment and with our associated pre-school establishments cognisance of prior learning in relation to maths and numeracy will be the starting point for pupil learning. Information regarding pupil attainment in mathematics at P7 will be passed on through existing and developing primary/secondary liaison arrangements. Pupils from P6 onwards will also have opportunities to collect personal measurement data each term, and this will be used during Link Week and into S1 by the Academy Maths Department.

Partnership

Partnership working will underpin the mathematics policy in practice:

1. Teaching and support staff collaboration to enhance learning experiences with practical activities
2. Partnership working between children will be encouraged when appropriate
3. Collaboration between ASN Teacher and Class Teacher to plan IEPs for children as needs arise
4. Teacher staff and support staff collaboration to ensure resources and displays are well organised and maintained
5. Partnership with parents will be encouraged through the appropriate use of Homework, including games packs.

References

A Curriculum for Excellence- Building the Curriculum 1

A Curriculum for Excellence-Cover paper for draft experiences and outcomes in Mathematics

A Curriculum for Excellence- Cover paper for draft experiences and outcomes in Numeracy

Draft- December 2008

Kay McIntosh, HT & Christine Faruqi, DHT

Agreed by staff -January 2009.

Reviewed and revised by C. Faruqi, February 2010.

Reviewed and revised May 2013

Appendix 1

What are “Problem Solving Capabilities”?

It should be noted that these are not simply the same as strategies, and include:

- anything the child brings to the task
- trial and error- knowing it is fine to be “wrong”
- “having a go”- building confidence, resilience and a positive attitude
- being able to apply knowledge/ skills to a different context
- talking about thinking in mathematical language
- listening to, and learning from, others
- responding to, and asking, questions
- flexible thinking
- investigative approaches
- challenge
- thinking creatively
- making connections
- reasoning, logical thinking
- demonstrating understanding and learning using a range of materials
- showing different ways of recording

(*Lynda Keith Education, 2009.*)

Appendix 2

First Level Maths plans Staff shared area, Planning, Numeracy

Seconds Level Maths plans-Staff shared area, Planning, Numeracy