Abernyte's vision for Numeracy

Numeracy is a fundamental life skill which permeates the curriculum. It gives increased opportunities within the world of work and provides individuals with the knowledge, concepts and skills required for lifelong learning. It is therefore essential that these are skills we equip our children with to allow them to make effective contributions to society, and for teachers to look for opportunities to develop and reinforce numeracy and mathematical skills within their own teaching activities and though contextualised learning, across the curriculum. Activities that address critical numeracy outcomes enable children to carry out basic number processes, access and interpret information, identify possibilities and weigh up different options and decide on which is the most appropriate.

Children should have opportunities to explain their thinking, develop their numeracy skills and evaluate their solutions at a level which engages and challenges them. They should develop an understanding of personal finance and have the opportunity to apply skills and understanding creatively and logically to solve problems. Excellent teaching has teacher and learner working in a dynamic partnership, where discussion of the next steps and the level of support is a central part of the process. This valuable collaboration can be between learners, as well as between learners and teachers.

**‘*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’***

(Curriculum for Excellence, Mathematics: principles & practice page 1)

**Aims**

These aims represent the benefits which our pupils can expect to gain as a result of learning mathematics at Abernyte Primary School. They form a set of basic principles upon which the teaching of mathematics in our school is based.

 • To ensure that every pupil fulfils their full potential as a learner of Mathematics/Numeracy.
 • To foster a positive attitude to Mathematics/Numeracy as an interesting and attractive

 part of the curriculum.
 • To develop the ability to think clearly and logically, with confidence, flexibility and independence of

 thought.
 • To develop a deeper understanding of Mathematics/Numeracy through a process of enquiry and

 investigation.

 • To develop an understanding of the connectivity of patterns and relationships within mathematics.

 • To develop the ability to apply knowledge, skills and ideas in real life contexts outside the classroom,

 and become aware of the uses of Mathematics/Numeracy in the wider world.

 • To develop the ability to use Mathematics/Numeracy as a means of communicating ideas.

 • To develop an ability and inclination to work both alone and co-operatively to solve

 Mathematical/Numeracy problems.

 • To develop personal qualities such as perseverance, independent thinking, co-operation and self-

 confidence through a sense of achievement and success.

 • To develop an appreciation of the creative aspects of mathematics and an awareness of its aesthetic

 appeal and in so doing create a numeracy rich environment.

**Effective Teaching and Learning**

All pupils require teaching and learning strategies that will be appropriate in developing their knowledge and skills. They should experience success and develop confidence in mathematics through interactive and collaborative learning. Children will also have the opportunity to work:

* individually, on tasks where they need to work independently, i.e. textbook exercises, problems or on assessments
* in pairs, to solve problems, complete practical work, play games and feedback to others
* in small groups, for direct teaching, to discuss problem solving strategies and for mental maths.

The experiences and outcomes as outlined in A Curriculum for Excellence encourage teaching and learning approaches that challenge and stimulate children. Programmes of work reflect the methodology of A Curriculum for Excellence, promoting creativity of lessons and wide-ranging learning experiences. Teachers are encouraged to use Abernyte’s ‘Good Lesson’ format to guide their activities, ensuring these are varied and make most appropriate use of resources available. Sessions should be structured as follows:

* At the beginning of each session a short whole group interactive mental maths slot, building on basic mathematical knowledge that children should know for that year
* An explanation of what each set/group will be required to do that session, clearly sharing the learning intentions and success criteria with learners
* Group tasks set including a recap of prior knowledge, interactive direct teaching sessions, practical tasks and games.
* One or two direct teaching sessions to ability groups
* At the end a short plenary session to discuss what has been achieved by the group, relating back to the learning intentions and success criteria, and identifying next steps.

Teachers using a skilful mix of approaches will maximise learning and promote enjoyment in their learners. Some of these include

* Contextualised, cognitive and active learning
* Learning through play
* Development of mental agility
* Making links across the curriculum showing how mathematical concepts are applied in a wide range of contexts
* Development of problem solving and critical thinking skills.

**Planning**

Planning begins from a thorough understanding of children’s needs through effective and rigorous assessment and tracking, combined with high expectations and ambition for all children to achieve.

Medium term planning will outline the areas of mathematics that will be taught during the term to ensure coverage of CfE.

Within short term planning, there is evident clear learning intentions and success criteria for each learning experience and outcome taught. This will enable the class teacher to follow a clear and systematic teaching sequence, where input and activities are differentiated by considering which parts of the success criteria individual children are ready for.

Planning, where possible, should involve real life contexts for maths, where children are problem solving with a purpose in mind.

Class teachers should regularly plan for opportunities for children to apply their maths skills to different problems within maths lessons and across the curriculum. This will also allow children to revisit, practice and consolidate different areas of maths and apply them within different contexts.

**Teaching**

At Early level, children are given the opportunity to develop their understanding of number, measurement, pattern and shape and space through a combination of short, formal teaching as well as a range of planned structured play situations, where there is plenty of scope for exploration.

Children will become very competent ‘counters’ so that their fluency with the number system provides a foundation for mathematical understanding. Counting forwards and backwards in many different sized steps as well as from different starting and ending points is essential.

Maths learning builds from a concrete understanding of concepts where children are manipulating objects. When children are able to see concepts this way, they then need to understand the same concepts represented pictorially. Children are then ready for abstract representation before being able to apply their knowledge to different situations.

Children should be encouraged at all times to communicate their understanding of maths so that it clarifies their thoughts.

Children’s mental maths is of great importance, with number bonds, times tables facts and various strategies for calculation taught and practised.

Though the nature of lessons will be very different depending on the needs of the class, children should be: active; practicing skills they haven’t yet mastered; learning something new or learning to apply their knowledge to different contexts. They should be: ‘doing’ very quickly; working at a good pace and being productive; sharing their thoughts and methods and being successful.
 **Assessment**

Assessment for learning should occur throughout the entire maths lesson, enabling teachers to adapt their teaching/input to meet the children’s needs. This feedback should be incisive and regular.

On an ongoing basis, children should self-assess against the learning intention and success criteria, giving them a sense of success. Also teachers should keep short, concise notes to inform planning for next steps in learning. This will include identifying where additional support and challenge may be needed.

Summative assessments are made at the beginning and end of each building block group that has been planned for to provide further understanding of the level a child is working at and to inform a more rounded judgement of their abilities.

Formative assessment should be ongoing throughout the teaching and learning process, where dialogue takes place between adults and learners on progress and next steps. Summative assessment should take place in the form of TeeJay assessments, these should be completed before and after children complete a block of teaching on one particular area of maths to show depth of understanding of taught material. Abernyte’s Progression Assessments (adapted from Angus) should also be used as a summative assessment, ensuring children are confident in all areas of Numeracy and Mathematics up to that point. Summative assessment should be completed independently to give an accurate view of each individual’s understanding. Results of summative assessments should be detailed in termly teacher evaluations and a record of progression test results should passed to HT to collate.

Assessment will be undertaken in a variety of ways and different forms of evidence will be gathered

* Ongoing teacher evaluation
* Formative assessment
* Peer/self assessment
* Summative assessment - use of Teejay assessments and progression tests
* SNSA’s
* Completed Maths jotters

The National Benchmarks allow each child’s learning journey to be tracked to help monitor progress and support overall professional judgement of when a learner has achieved a curriculum level. Abernyte’s benchmark tracker is also useful as a transition document. It matches directly with the progression framework and should be used to record a pupil’s confidence, ability and understanding of learning. This tracking is used in order that children who are not making good progress over time can be targeted for support in one form or another. What that support will be and how intensive, depends upon the child’s needs and it may be a simple strategy within group teaching that is needed. Where further support is deemed necessary, children can access interventions, once discussed with SMT.

**Display and Resources**

In the classrooms there should be, either on display or easily accessible to children, level appropriate resources, particularly concrete and pictorial apparatus to support children to grasp concepts.

Mathematical vocabulary should be displayed so that children use this in the communication of their understanding.

There should be maths work on display in classrooms and in other areas of the school in order to encourage a positive attitude and enthusiasm towards mathematics for all groups of children.

**Guidance for Teachers**

Class teachers should complete the long term curricular overview of Es and Os by highlighting (with the corresponding term colour) outlining the structure and organisation of the year. Medium term plans will consist of interaction with the Numeracy and Mathematics Progression Framework which focuses on the main Learning Intentions developed through the Es and Os. Teachers must simply dot the Learning Intention which they plan to teach during the term and upon completion highlight (again in accordance with the allocated term colour for Abernyte) and date. This document allows teachers to look ahead and back at a glance. Mental Maths should be planned in the same way using the Maths on Track planners.

From this, weekly or daily short term plans should be compiled using the dotted learning intentions on the Numeracy and Mathematics Progression Framework. Planning must be flexible to needs, interests and progression and regarded as working notes.

Prior summative assessment (Teejay) before planning may display wide groupings (perhaps 2 or 3) the teacher then must make reference to this group of children by annotating on the framework. Children are not aligned to any particular year group and they will progress through the framework as and when they are ready and able to do so.

**Tracking and Intervention**

At Abernyte we aim to provide children who are not making expected progress, with extra support through interventions. Interventions in numeracy and mathematics should be based on developing key number skills that are appropriate for the children involved. Children identified may be involved with intervention programmes such as 'Catch Up Numeracy' or may be supported within groups or on a 1:1 basis by the Primary School Support Worker.

Intervention provided to boost children’s progression should be tightly planned, with success criteria set and assessments made frequently to ensure progress is being made. Whilst interventions could be carried out by PSSWs for example, what is being taught and how it is delivered is the class teacher’s responsibility and communication is essential. It is therefore the class teacher's responsibility to meet and discuss with all adults supporting pupils to ensure they are planned and ready.

**Monitoring**

Monitoring of children’s progress begins with discussions with SMT evaluating evidence to ensure children are making progress. This monitoring happens through examination of work in books, learner conversations, analysis of assessment results and the assessments used, professional discussions, teacher judgement and through other means depending on what information needs to be gleaned.

Following monitoring activities feedback is given to staff about how they can strengthen their practice and CPD opportunities built in where it would be deemed valuable. These might take the shape of inputs during a Numeracy focused staff meeting/s or by a variety of other means such as team teaching.

Where specific initiatives have been put in place through action planning for school development, these are monitored by SMT in order to evaluate their impact.