Castle Tower School

Post Primary Numeracy Policy

Date Ratified by Board of Governors	
Review Date	**2027**

Castle Tower welcomes pupils aged 3-19 who face a wide range of barriers to learning. Educational opportunities are provided within our Nursery, Primary, Secondary and Post 16 departments.

Our Vision

Vision:
To be a leading light in special education through educating, nurturing and inspiring all our school community.

Mission:
Castle Tower School is committed to creating a community which:

- Ensures everyone is safe and included
- Always learns
- Promotes independence and resilience
- Celebrates achievements
- Looks forward with hope to the future

Everything we do is driven by our core values:

- Child-centred
- Nurturing
- Fun
- Team work
- Inclusive
- Independence

Our Ethos
Castle Tower strives to create a caring community in which every member feels valued, supported and happy. All staff work to maintain an ethos in which fairness, tolerance, compassion and forgiveness permeate all relationships within the school community. High standards of respect, self-discipline, commitment and sensitivity are sought and everyone is encouraged to set and achieve the highest personal, academic and social goals. The safety, welfare and development of everyone in our school community is of paramount importance to all staff and Governors.
At Castle Tower, there is continued development of the quality of the teaching and learning environment. Resources are used efficiently. Opportunities are created for learning in co-operative and interactive settings. Pupils are presented with challenging as well as stimulating teaching and learning opportunities. Staff at Castle Tower seek close working relationships with other providers and services throughout each stage of our pupil's education and through the transition stage to further education and life after school.

POLICY STATEMENT – Mathematics and Numeracy

At Castle Tower School we share the belief that:

- The term numeracy does not merely apply to skills in number but encompasses other areas of mathematics.
- The development of numeracy skills and competence is a basic entitlement for all.
- All pupils, regardless of intellectual ability and/or Special Educational Need, should experience a rich numeracy learning environment.
- Mathematics and Numeracy involve the application of knowledge, skills and understanding essential for everyday life and for lifelong learning.
- All staff should endeavour to promote numeracy in a manner that builds pupils' self-esteem.
- Mathematics should be promoted through purposeful, relevant, and enjoyable activities.
- Numeracy activities should provide both a challenge and a sense of achievement for all pupils.
- Competence and understanding in numeracy are important for progress in other areas of study.
- Numeracy is the responsibility of all teachers and there should be a shared vision for numeracy within the school.
- There should be high expectations for numeracy development in all schools, including special schools.
- Pupils' competences in numeracy should be improved by developing both mathematical knowledge and a range of strategies together.
- Learning and teaching mathematics is about addressing pupils' misconceptions, exposing them and discussing them.

Aims

In the Secondary Department at Castle Tower School, we value every pupil and the contribution they can make to learning. As a result, we aim to ensure that every child achieves success and that all are enabled to develop their skills in accordance with their level of ability and Special Educational Need.

The programme for Mathematics and Numeracy will:

- Encourage pupils to use mathematics effectively.
- Encourage a positive attitude in pupils towards Mathematics including confidence, enjoyment, and success through being engaged as active participants.
- Develop, in pupils, the ability to think clearly, confidently, and logically.
- Promote pupil's personal qualities of perseverance, confidence, independence, and co-operation with others.
- Enable all pupils to experience success and pleasure through practical activities.
- Raise standards within the school.

- Foster an understanding of Mathematics through a process of enquiry and experimentation; and communicate this in a variety of modes.
- Encourage, in pupils, a mastery of basic mathematical skills and knowledge.
- Encourage, in pupils, an appreciation of the inter-dependence of different branches of Mathematics and an appreciation of the ways Mathematics is used.
- Encourage opportunities for this subject area to be applied across the curriculum.
- Encourage the use of ICT to support the learning and teaching of this subject.
- Encourage pupils to develop the skill of effective communication, through the medium of Mathematics by using its language, symbols and diagrams with increasing confidence and fluency.
- Encourage staff to work collaboratively with parents/carers so that they can become more involved in their child's learning.
- Promote, within pupils, the ability and inclination to solve problems and develop financial capability.
- Develop, within pupils, the knowledge, skills and understanding needed to apply a range of mathematical concepts to situations which may arise in their own lives.

PROGRAMME OF WORK FOR MATHEMATICS AND NUMERACY

Rather than prescribe a set programme of work for each year group, which is unrealistic considering the wide variation of ability and SENs within any year group, it is considered more appropriate to present the Programme of Work as a continuum within each area of Mathematics. Pupils/groups of pupils can be placed on this at an appropriate point and allowed to progress (and be challenged) at a pace suited to their individual mathematical skills, learning difficulties and needs.

In addition to using various assessment strategies (see section on assessment) the following is also used to help develop appropriate teaching strategies for each pupil/group of pupils and to determine what level they should work at:

- The age of the pupil
- Pupil's previous experiences
- The nature of the topic
- Available resources
- Differing learning styles
- Individual learning needs that are reflected within Individual Education Plans (IEPs).

This all allows for effective differentiation to be incorporated into teacher's own individual planners and it ensures a rich, varied and sufficiently challenging learning experience for all pupils.

Within the Secondary Department at Castle Tower School, all teachers at Key Stage 3, Key Stage 4 and Post 16 deliver Mathematics and Numeracy. Detailed topic overviews are followed by teachers at each of these stages. These outline what specific topics are to be covered each term. The Programme of Work to be followed depends on what stage pupils are at.

Key Stage 3: Within the topics identified within the topic overviews, the Programme of Work largely follows the stages of progression outlined by CCEA. This includes Q Skills and Levels of Progression.

Key Stage 4: Pupils study ELQ Mathematics at this level and so the Programme of Work is largely led by the learning outcomes and assessment criteria for each unit of study, as outlined in the specification.

Post 16: Pupils study the refreshed Numeracy Essential Skills Curriculum for Northern Ireland and so the Programme of Work is largely led by the learning outcomes outlined within this curriculum.

Further information on each Key Stage is outlined in the next few sections.

KEY STAGE 3

Mathematics and Numeracy is a compulsory Area of Learning at Key Stage 3. In studying it, pupils gain a firmer understanding of how the world around them works, and their skills of decision-making and problem-solving are developed. Pupils will really see how the subject relates to their working life and personal life.

Pupils studying this Area of Learning are encouraged to develop the mathematical knowledge and understanding that they gained at Key Stage 1 and 2. They are encouraged to think creatively and critically, be flexible in their approach, solve problems and make informed decisions.

At Key Stage 3, Mathematics and Numeracy has two subject strands: Mathematics and Financial Capability.

Mathematics helps pupils to develop important skills such as calculating, logical thinking and investigating. It enables pupils to understand and appreciate quantity and measures, patterns and relationships, size and shape, and data and chance.

Within Financial Capability, pupils have an opportunity to develop their knowledge and understanding of different financial issues and develop their skills in financial decision-making.

Specific Aims – Key Stage 3

Pupils have the opportunity to:

- Demonstrate mental mathematical capability with simple problems.

- Decide on the appropriate method and equipment to solve problems–mental, written, calculator, mathematical instruments or a combination of these.
- Demonstrate financial capability in a range of relevant everyday contexts.
- Research and manage information effectively to investigate and solve mathematical problems, using ICT where appropriate.
- Show deeper mathematical understanding by thinking critically and flexibly, solving problems and making informed decisions, using ICT where appropriate.
- Demonstrate creativity and initiative when developing ideas and following them through.
- Work effectively with others.
- Demonstrate self management by working systematically, persisting with tasks, evaluating and improving own performance.
- Communicate effectively in oral, visual, written, mathematical and ICT formats, showing clear awareness of audience and purpose.

KEY STAGE 4

At Key Stage 4, pupils work towards a CCEA Entry Level Qualification in Mathematics. This gives learners opportunities to develop and apply mathematical skills in everyday situations. It also helps learners develop an awareness of mathematical concepts.

This qualification builds on the knowledge, understanding and skills developed through the Mathematics and Numeracy Area of Learning.

This specification is made up of units, and learners can gain a qualification at Entry Level 1, 2 or 3. For each unit, learners produce a portfolio of work to show how they've met the assessment criteria; there are no exams.

There are six units:

- Unit 1: Working with Whole Numbers
- Unit 2: Working with Time and Measures
- Unit 3: Using Money
- Unit 4: Working with Shape
- Unit 5: Working with Position and Space
- Unit 6: Data Handling

Specific Aims – Key Stage 4

Learners have the opportunity to use mathematics in everyday situations:

- Developing their knowledge, skills and understanding.
- Selecting and applying mathematical techniques and methods.
- Interpreting and communicating mathematical information in a variety of forms appropriate to the information and context.

- Developing employability skills.
- Applying their learning in a practical context.

POST 16

At Post 16 level, pupils study the refreshed Numeracy Essential Skills Curriculum for Northern Ireland.

The Numeracy Essential Skills Standards and Curriculum were refreshed and updated in 2016, particularly regarding references to technology and modern working practices. Practitioners from colleges and training organisations; representatives of the CCEA Regulation; and the Education and Training Inspectorate were all involved in this refresh of the curriculum.

The curriculum is expressed across three contexts, making it universally applicable. The three contexts are:
• Society and Citizenship – personal and community
• Economy – workplace and employment
• Individual – education and training

Topic areas for study include:
Number including Money
Measures Shape and Space
Handling Data

Specific Aims – Post 16

At this level pupils can apply their skills to different but familiar contexts. They can apply their knowledge of different topics to develop skills, knowledge and understanding of contextual tasks. Sources are taken from a variety of digital and non-digital media and reflect modern practices.

In addition to structured Mathematics and Numeracy lessons at each stage at Castle Tower School, teachers keep the subject at the forefront of their planning as they teach different subject areas and different topics. There have been great opportunities to integrate it into other areas.

THE ROLE OF THE MATHEMATICS AND NUMERACY CO-ORDINATORS

At Castle Tower School there are three Co-ordinators for Mathematics and Numeracy, one for Early Years and Primary which includes Nursery, Foundation Stage, Key Stage 1 and Key Stage 2 and two for Secondary which includes Key Stage 3, Key Stage 4 and Post 16.

As a staff we recognise the responsibility which each of us has in developing Mathematics and Numeracy, however, the Co-ordinators are responsible for the development of Mathematics and Numeracy throughout the school. This includes an evaluation of the effectiveness and fitness for purpose of the learning process within the school's provision.

Co-ordinators ensure that they are informed on developments within their area of study, taking advice and training as necessary. They lead the planning and development of learning and teaching through advice and INSET for all members of staff. This can involve the use of both internal and external trainers.

Co-ordinator meetings are arranged to monitor the development and progression of Mathematics and Numeracy throughout the school.

The Curriculum Managers/Leadership Team at Castle Tower School also oversee Mathematics and Numeracy at the school. They work closely with Co-ordinators to ensure that work undertaken within this subject area is in keeping with the School Development Plan.

TEACHING STRATEGIES AND CLASSROOM MANAGMENT

Some teaching and classroom management strategies, and resources and materials used include:

- Practical teacher demonstrations
- Individual, paired, group and whole class teaching
- Use of Learning Support Assistants to support pupils who require additional support
- Practical activities and resources
- Differentiated activities and resources
- Discussions
- Pencil and paper
- Mental Maths work
- Calculator work
- Games and puzzles
- Use of ICT: computers, interactive screens and Ipads
- Use of the outside environment
- Problem-solving activities
- Investigations
- Estimation
- Sensory based activities

RESOURCES

There is currently a focus within Mathematics on the formation of effective and meaningful resources, that teachers can use to meet the needs of all pupils. As so many teachers teach the subject, the focus is on forming a central base of resources from which teachers can choose to support their learning and teaching needs.

Maths Store

Storage of Maths resources within the Secondary Department is currently an issue that is being examined and considered. At the minute, a wide range of resources is stored in the Secondary Storeroom, beside the Canteen.

Resources available

In 2018, upon our move to our new school building, a vast range of Mathematics resources were purchased for the Secondary Department. The aim was to purchase resources within all topic areas that allowed for a more active learning experience for pupils.

Examples of active resources:

Number and Algebra – Numicon; Unifix and multilink cubes; Number bean bags; Number crunchers; Beads and Patterns Set; Dice activities book.
Money – Coin and notes packs; Money dominoes; Magnetic Money; Money lotto.
Shape, Space and Measures – Polydron construction and vehicle sets; Magformers; Shape snap; Floor tessellating shapes; Time activity mats; Time dominoes; Trundle wheels; Comparing sizes games; Scales and balances; Jug packs.
Handling data – Unifix graphing board; Classification rings.

Textbooks

A range of textbooks were purchased for the Secondary Department: New Heinemann and Rapid Maths. These cover a large ability range and so are effective, especially when used to support more active activities.

Worksheets

There is a bank of Mathematics and Numeracy worksheets within the Secondary Department. These cover all topic areas and ability levels. Again, this bank of resources is currently being developed and improved.

ICT

We believe that ICT has a very important role to play in the development of numeracy skills. It enables teachers to differentiate through worksheets and other resources. Pupils have the opportunity to learn while having fun, as many enjoy using various devices.

The use of ICT as a tool to enhance/promote numeracy skills in pupils is an area that we are currently developing.

Online Resources
Presently, we are considering our options for an online Maths package. We will focus on this this year. Some packages that we are keen to explore are Heinemann Active Maths, Mathletics and Conquer Maths. We are keen to find a package that offers opportunities for practical, active and hands-on experiences for pupils.

A bank of effective online resources is currently being worked on, to cover all topic areas and ability levels e.g. free online games and challenges. All teachers involved in teaching Mathematics and Numeracy contribute their ideas.

Wize Floor
Various games are available on the interactive floor, Wize Floor. As an example, the game involving popping balloons allows for discussions on time.

Clevertouch Screen
This screen allows various activities to be played in class, either individually or as a group. Many numeracy apps are installed on teacher's screens and prove very effective for learning and teaching.

iPads and Chromebooks
iPads and Chromebooks are available to staff and can be shared where appropriate. Pupils enjoy learning through using the many numeracy apps available on iPads, and they enjoy researching and presenting their work on Chromebooks.

Apple Macs
Apple Mac Computers, situated on the Secondary corridor, are available for classes to use.

To continue moving forward with the development of MathematicaI resources and ICT we will work closely with other teachers at each key stage, including those who deliver a more sensory curriculum. We will also communicate with relevant Coordinators e.g. the ICT Coordinator. This would mean that we can share ideas and build up a useful bank of resources that can be made available on Teams. We would also hope to communicate with teachers in other local schools, as we previously formed cluster groups with some. One of the focus areas of our previous Cluster Group was ICT strategies within Numeracy.

Assessment
Assessment strategies are used by all teachers in the secondary department, to determine the ability level at which pupils/groups of pupils are within particular topic areas.

Assessment is constantly being updated alongside the School Development Plan.

Work is assessed readily through outcome of pupil work.

All pupils have the opportunity to assess their own work e.g. verbally or by evaluating their work.

Baseline Assessments are completed twice a year, In Term 1 and Term 3.

Formative assessment is used to monitor progress and provide feedback for pupil and teacher.

Summative assessment is used once a year to monitor progress for use on school reports to parents.

Collaborative assessment is used to develop pupil/teacher relationships and improve communication

ASSESSMENT METHODS COMMON ACROSS ALL KEY STAGES

- Oral –effective questioning
- Practical tasks
- Photographic evidence
- Witness statements
- Teacher observation
- Worksheets

Assessment strategies, specific to different Key Stages, is shown below.

Key Stage 3

At the start and end of the year, pupils (were possible) are asked to complete Numeracy Progress Tests or Baseline Tests. This informs teachers of the level pupils are at within different topic areas.

Currently, within the Secondary Department, we are designing a range of additional assessment tasks for different topic areas, that can be used throughout the year.

Key Stage 4 and Post 16

Numeracy Progress Tests may be used by KS4 and Post 16 teachers at the start and end of the year to determine the level that pupils are at, and to guide them on the level most appropriate for pupils to work at for their ELQs/Essential Skills course.

At Key Stage 4 only, pupils complete a portfolio of work for their ELQ qualification, to show that they have met the assessment criteria for each unit. They gain external accreditation through this course.

Mental Maths

In line with the focus of the Numeracy Strategy we consider the development and encouragement of pupils' mental skills a priority. While recognising that many of our pupils find this area extremely difficult, we accept that it is all too easy for pupils to become too dependent on the use of concrete materials, number squares or number lines.
Consequently, we aim to include a short mental activity at least once a week, depending on the needs of the class.

We have a range of resources to support mental maths teaching e.g. Number fans, Number crunchers, magnetic 100 square, Numeracy Big Boards, Giant Connect Fours, and addition and subtraction snap.

Monitoring & Evaluation
The role of the Co-ordinators includes the monitoring and evaluation of Mathematics teaching within Key Stage 3, Key Stage 4 and Post 16, as well as examining Numeracy issues across the wider curriculum. This has been achieved in a number of ways:

- An initial audit of Numeracy within different subject areas
- Scrutinizing all Mathematics planners for each planning session and providing positive feedback to teachers by means of Feedback sheet and informal interview when appropriate
- Spot checks on other subject planners (available on Teams) to keep an eye on how numeracy is being reinforced across the Curriculum.
- Occasional book-scoops including evidence of numeracy work (e.g. top, middle, and bottom group)
- Collecting evidence (photographs etc, showing teaching methods promoted through Numeracy Strategy in practice in the classroom)
- Collating samples of tasks involving Numeracy across a range of other subject areas
- Occasional Classroom Observations (This is an area which we hope to develop in the future)
- Sorting and filing the Maths store (currently in progress)
- Keeping a check on how resources are being used – Sign out book

Staff Development
It is school policy that teachers are encouraged to continually develop their knowledge-base and skills through collaboration and in-service training. Teachers are also encouraged to make use of Internet as a source of development. The staff are

seen as continuous learners and model this process to encourage the parents and children to be life-long learners.

Appendices

https://ccea.org.uk/downloads/docs/regulation-asset/Qualifications%20Regulation/Essential%20Skills%20Standards%20and%20Curriculum%20for%20Literacy%20and%20Numeracy%20in%20Northern%20Ireland.pdf

https://ccea.org.uk/downloads/docs/Specifications/Entry%20Level/Entry%20Level%20Mathematics%20%20%282015%29/Entry%20Level%20Mathematics%20%20%282015%29-specification-Standard_4.pdf

https://ccea.org.uk/learning-resources/levels-progression-communication