Hugh Joicey C of E Aided First School Mathematics Policy October 2016

Rationale

Mathematics is a core subject of the National Curriculum, and the concepts and skills acquired are an essential part of everyday life enabling children to understand relationships and patterns in both number, space and measures. Mathematics teaches children how to make sense of the world around them through developing their fluency to calculate, reason and solve problems. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of maths. It is a fundamental means of investigating and interpreting our experiences, and of communicating our findings to others. Children need to develop an understanding that maths is a life skill.

**Aims**

* To ensure that all pupils become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time.
* To foster a strong, positive and enjoyable attitude towards mathematics, in order that pupils become confident in developing and using mathematical ideas and strategies.
* To give a broad and balanced mathematics curriculum regardless of gender, race or ethnic background.
* To raise pupil awareness of the application of mathematics in their everyday lives and encourage them to apply their mathematics to a variety of problems by breaking them down into simpler steps and persevering in seeking solutions.
* To ensure that children master the new National Curriculum objectives in a deep and meaningful way.
* To challenge and stimulate pupils of varying abilities.
* To increase confidence in mathematics so that pupils are able to express themselves and their ideas using the language of mathematics with assurance.

**Content**

Mathematics is taught in accordance with the New National Curriculum (2014) for Mathematics Programmes of Study Key Stage 1 and 2 and the Curriculum Guidance for the Early Years Foundation Stage. Long term plans ensure balance and distribution of work across the year. A mastery approach is taken to ensure each area of Maths is revisited on a regular basis allowing children to deeply master curriculum outcomes and that their learning is extended through increasingly complex problems. Weekly and daily plans list the specific learning objectives and expected outcomes for each lesson and give brief details of how the lessons are to be taught, with differentiation for different abilities (Also see Calculation Policy). Specific activities for these lessons are taken from various schemes and resources; NCETM Mastery documents, White Rose Maths, Numicon, Abacus Textbooks, Big Maths CLIC book, Hamilton Trust and Active Maths. The School’s Calculation policy sets out clear guidelines for progression in teaching the four operations and teacher’s use this to inform their planning, posters in KS2 are displayed to reflect these steps and are available on the website for parents. Learning journeys are used to help teachers plan for progression in a variety of maths’ topics. The School’s Calculation Policy also clearly establishes key terms and mathematical vocabulary that must be used. The teaching of mathematics supports and is embedded into learning in other curriculum areas e.g. English, Science, ICT, P.E, Personal, Social and Health Education and Citizenship, Spiritual, Moral, Social and Cultural Development, and also in Child Initiated and Outdoor Learning.

**Teaching and Learning**

We aim to provide an environment where there are high expectations, where a positive image of mathematics is conveyed at all times, where children enjoy mathematics and their mathematics achievements are recognised.

We approach the teaching of mathematics through a variety of Teaching and Learning styles:

* Direct teaching and interactive oral work with the whole class and groups
* An emphasis on mental calculations and the teaching of number facts thoroughly before written methods are introduced (CLIC Maths)
* Controlled differentiation, with a class engaged in maths related to the same topic.
* Fluency, reasoning and problem solving activities and the application of skills learnt in real life contexts
* An active approach, where practical activities are used to engage all children (at least 30 minutes each week)
* Growth Mindset approach – children are encouraged to ‘Deploy the Yeti’ – to train their brains, learn from their mistakes, enjoy challenge, to persevere and keep in mind that they haven’t got it **yet** – posters are displayed in all classrooms and stickers placed in books in KS1 and KS2 when children have shown evidence of a Growth Mindset approach

The teaching of mathematics at Hugh Joicey provides opportunities for: Group work, paired work through co-operative learning strategies, whole class teaching and individual work. Pupils engage in:

* Situations where children enjoy practical experiences and discussion in recognition that these are vital prerequisites to children understanding mathematical concept
* The development of mental strategies
* Written methods
* Practical work
* Investigational work
* Developing fluency activities
* Reasoning activities
* Problem- solving (Mastery and Mastery with Greater Depth Challenges)
* Mathematical discussions
* High level questioning
* Consolidation of basic skills and routines
* ICT based mathematics activities

Our principal aim is to develop children’s knowledge, skills and understanding. During our daily lessons we encourage children to ask as well as answer mathematical questions. They have the opportunity to use a wide range of resources, such as number lines, number squares, digit cards and small apparatus to support their work. Numicon is significant in developing a context for learning whereby children are able to make a network of connections between concrete experiences, representations, language and symbolic notation. ICT is used in maths lessons for modelling ideas and methods. We are using the Big Maths CLIC book to drive up and consolidate children’s basic maths skills and ensure curriculum coverage of Place Value, Addition, Subtraction, Multiplication, Division and Fractions. Wherever possible, we encourage the children to apply their learning to everyday situations and in as many lessons as possible children complete ‘Mastery Challenges’ to develop fluency, reason and solve problems using taught skills. Guidance is to be taken from NCETM Teaching for Mastery Materials by teachers.

**Maths and Inclusion**

We use a mastery approach to teaching, therefore year groups are kept working together on the same topic and challenge is provided by going deeper rather than accelerating into new mathematical content. In all classes children have a wide range of mathematical abilities. We recognise this fact and provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this through a range of strategies, in some lessons through differentiated group work and in other lessons by organising the children to work in pairs on open-ended problems or games. We use Teaching Assistants to support some children and ensure that work is matched to the needs of individuals. Special Educational Needs and Disabilities provision in maths is made through the application of Intervention and Support Plans and highlight strategies for pupils requiring extra support.

More able children have opportunities to apply their knowledge and abilities to relevant, meaningful and constructive activities which will stretch and challenge them. Open ended problems give the children greater freedom to extend their capabilities and master skills in greater depth. Reference is made to the Programme of Study to ensure children have a sufficient broad base of understanding before moving them onto the next level. The EYFS is an inclusive curriculum and as such we meet the needs of all children. We support children with SEND according to the 2014 Code of Practice using the Inclusion Toolkit.

EARLY YEARS Foundation Stage

Mathematics is taught using the guidelines in the Early Years Foundation Stage Framework. Itinvolves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems, and to describe shapes, spaces, and measures. In planning and guiding children’s activities, we recognise the different ways that children learn (Characteristics of Effective Teaching and Learning) and reflect these in our practice. We relate the mathematical aspects of the children’s work to the objectives set out in the Early Learning Goals for Mathematical Development. We use Objective Led Planning that gives all the children ample opportunity to develop their understanding of number, measurement, pattern, shape and space, through varied practical activities, both indoors and outdoors, that allow them to enjoy, explore, practise and talk confidently about maths. A calculation policy was made available to the class teacher to support progression in calculation strategies.

**Resources**

Resources for the delivery of the mathematics curriculum are stored in a central area and in individual classrooms. A wide selection of teachers’ resources are also available in each classroom. Resources are reviewed and purchased when necessary, subject to budget restrictions. Staff will keep themselves aware of new ideas and apparatus, taking the opportunities for appropriate staff development as they arise and measure its usefulness and relevance to our needs. The importance and impact of quality display on children’s learning is well recognized, within each class there is an assigned display area for mathematics which may contain children’s work, teacher made resources, interactive learning activities and published resources. These could include:- washing lines, number lines, number squares, mathematical vocabulary, group targets, challenges, shape displays, graphs, calculation posters etc. ICT is used to support and enhance the mathematics curriculum. The Forest School and outdoor areas are also regularly utilized during lessons and there are many resources available to support outdoor learning in maths. The playground markings are about to be updated and will include the introduction of a large hundred square and number line.

Assessment for learning

We continually assessing our pupils and recording their progress. We see assessment as an integral part of the teaching process and endeavor to make our assessments purposeful, allowing us to match the correct level of work to the needs of the pupils, thus benefiting the pupils and ensuring progress. Short-term assessments are an informal part of every lesson and are closely matched to the teaching objectives. Pertinent comments are recorded on children’s work and short-term planning sheets with the next steps of learning and are for the teacher and pupil’s immediate attention and action (Refer to Feedback and Marking Policy). Learning objectives/success criteria for each lesson are either placed on stickers in pupil books or copied in by pupils during some KS2 lessons. These are then highlighted according to the Feedback and Marking Policy to show assess how pupils have progressed towards the lesson objective. Half-termly assessments are carried out using I-track. A copy of National Curriculum outcomes is in the back of each pupil’s book and is highlighted and annotated to allow children to see their progress and support teacher’s assessments on I-track.

We use PUMA tests each term to track pupil progress. We make long-term assessments towards the end of the school year, and we use these to assess progress against school and national targets. We use National Statutory Assessment Tasks to assess children at the end of KS1. We use Pupil Self-Assessment strategies to support pupils in identifying their own learning. All data is regularly monitored and reviewed by the Math’s subject leader.

In the Foundation Stage pupils are assessed regularly using Tapestry, objective Led Planning and achievement towards the Development Matters Bands and Early Learning Goals recorded termly on the Early Years Foundation Stage Profile.

**Mastery and Assessment**

Mastery of the curriculum requires that all pupils:

* Use mathematical concepts, facts and procedures appropriately, flexibly and fluently
* Recall key number facts with speed and accuracy and use them to calculate and work out unknown facts
* Have sufficient depth of knowledge and understanding to reason and explain mathematical concepts and procedures and use them to solve a variety of problems

A useful checklist for what to look out for when assessing a pupil’s understanding to show a pupil really understands a mathematical concept, idea or technique if they can:

* Describe it in their own words
* Represent it in a variety of ways (e.g. using concrete materials, pictures and symbols - The Concrete – Pictorial – Abstract Approach)
* Explain it to someone else
* Make up their own examples of it
* See connections between it and other facts or ideas
* Recognise it in new situations and contexts
* Make use of it in various ways, including in new situations

Developing mastery with greater depth is characterised by pupil’s ability to:

* Solve problems of greater complexity (i.e. where the approach is not immediately obvious)
* Independently explore and investigate mathematical contexts and structures, communicate results clearly and systematically explain and generalise the mathematics

(Taken from NCETM Teaching for Mastery materials)

Monitoring and Evaluation

Monitoring the standards of children’s work and the quality of teaching in maths is the responsibility of the subject co-ordinator and Head Teacher. The work of the subject co-ordinator involves supporting colleagues in their teaching, being informed about current developments in the subject, and providing a strategic lead and direction for maths in the school. The subject co-ordinator evaluates the strengths and weaknesses in the subject from lesson observations, pupil interviews, book scrutiny and data analysis to indicate areas for future improvements. The head teacher allocates regular management time to the subject co-ordinator so that she can review samples of children’s work and undertake lesson observations of maths teaching across the school. Two named members of the school’s governing body are responsible for the Monitoring and Evaluation of maths.

This policy will be reviewed annually by the Maths Subject Co-ordinator, and every three years by Maths Governors. The Maths Subject Co-ordinator is Kerrie Green

**Approved by Governors:**

**Signed…………………………………………….**

**Chair of Governors Review July 2018**