Talavera Junior School
MATHEMATICS POLICY

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Introduction

At Talavera Junior School we believe that mathematics equips pupils with a uniquely powerful set of tools, through developing an ability to calculate, reason and solve problems. It enables children to understand and appreciate relationships and patterns in both number and space in their everyday lives. Through their growing knowledge and understanding, they also learn to appreciate the contribution made by many people to the development and application of mathematics.

It is our aim to develop:

- A growth mindset about ability to learn mathematics and encourage children to apply the school motto '*Every Learning Minute Counts.*'
- A positive attitude towards mathematics and an awareness of how fascinating elements of mathematics can be
- Competence and confidence with numbers and the number system and other mathematical knowledge, concepts and skills
- Problem solvers, who can reason, think logically, work systematically and apply their knowledge of mathematics
- An ability to communicate using mathematical language
- An ability to work both independently and with others

Teaching and Learning

Teachers' planning and organisation

We follow an approach based on mastery principles which:

- makes use of mathematical representations that expose the underlying structure of the mathematics;
- helps children to make sense of concepts and achieve fluency through carefully structured questions, exercises and problems that use conceptual and procedural variation to provide 'intelligent practice', which develops conceptual understanding and procedural fluency in parallel;
- blends whole class discussion and precise questioning with intelligent practice and, where necessary, individual support

Within a unit of work, the time spent on teaching a specific learning objective or set of learning objectives depends on the needs of the children.

Lessons follow a flexible, multi-part structure to allow for continuous Assessment for Learning. Lesson planning should follow the mastery principle of ***I do, We do, You do.*** They will be a combination of some or all of these parts:

1) Do Now
2) Sharing of the learning objective and modeling of the new learning
3) Paired Talk Task
4) Develop Learning
5) Independent Work
6) Plenary

All teachers plan daily mathematics lessons (of 1 hour) using an agreed planning format. This must be planned using the objectives detailed in the medium term plans. Further planning guidance is given in the calculation policy. Planning is done on a weekly basis, although it may well be adapted on a daily basis as a result of ongoing assessment for learning.
Planning should also be guided by key documents such as the DfE 2020 National Primary Curriculum Guidance and the ready to progress criteria contained within it, as well as the NCETM Spines.

The aim is that children see mental calculation strategies as their first 'port of call' – only resorting to written strategies, if there is no appropriate mental alternative. A daily mental maths session must take place outside of and in addition to the daily lesson. This must be planned using the separate mental maths objectives detailed in the medium term plans. Further planning guidance is given in the mental maths section of the calculation policy.

Planning includes learning objectives, success criteria, brief text on what the teacher will be modelling, key vocabulary, key open questions and differentiated activities.
Where possible teachers pre-empt 'big' misconceptions that many children will have – eg a rectangle/oblong has four lines of symmetry (diagonals). Teachers also plan which vocabulary they will use and which models, images and concrete resources they will use to aid learning.

Effective plenaries are only part-planned as misconceptions only arise during the teaching of the lesson. However, all plenaries refer to the learning outcome and the success criteria in a meaningful way, allowing the children some time for self-assessment.

We ensure that across each term children are given a range of experiences in mathematics lessons e.g. practical activities and mathematical games, group problem solving activities, individual, group and whole class discussion activities, open and closed tasks.

We ensure that children can use a range of methods to calculate and have the ability to check whether their chosen methods are appropriate, reliable and efficient.

A Calculation Policy is used throughout the school to ensure the continuing, and gradual, development of number skills.

Differentiation

Our staff have high expectations of all children, irrespective of ability, and encourage them to be successful and achieve their full potential. Our aim is to move away from the traditional approach to differentiation, where children are grouped by ability and set different tasks accordingly, to ensure challenge for all. Instead the class moves broadly together through a unit of work. Instead of differentiating tasks, children who are finding it difficult to master the concept(s) will be supported by an adult during the lesson or through immediate intervention after the lesson (but before the next lesson)

Children are encouraged to have a growth mindset about their ability to do mathematics. Encouraging children to 'have a go' is seen as paramount, in order to facilitate self-discovery. We aim to apply the Talavera value of *determination* to develop an ability to persevere in maths. This enables children to learn that: '*it's okay to be stuck because it is fantastic when you get unstuck!*' Teachers direct children to the correct level of challenge based on their assessment in the initial phases of the lesson.

Differentiation of tasks is done in various ways:

- Open ended questioning and activities which allow more able children to offer more sophisticated mathematical responses

- Intelligent Practice A key feature of teaching for mastery is the precise designing of pupil activities and practice questions, so that, rather than pupils repeating a mechanical activity, they are taken down a path where the thinking process is practised with increasing creativity

- Recording e.g. allowing some children to give verbal responses and photographing their learning

- Resourcing eg. Use of concrete apparatus such as Dienes, multilink, numberlines and beadstrings to support some children. Children are encouraged to develop an independent approach to using such apparatus and may decide to use them independently

- Grouping of low attaining children with **significant gaps** in knowledge, so that they can have focused teaching to close those gaps. These may mean they have different learning objectives and tasks from the rest of their year group. The aim of these groups will always be to return those children to learning centred on their year group's curriculum.

- Adult support Children are given additional adult support during the lesson

- Immediate Intervention Children are given additional support outside of the main lesson, but before the next lesson.

- Pre-teaching Children may where appropriate undertake pre-teaching of concepts

Part of independent work often involves some focused, targeted group work from the teacher. However, groupings are 'fluid and flexible' based on the children's performance in a previous lesson or the beginning of that particular lesson.

Where Teaching Assistants are available, they are fully briefed before the lesson and use the same teaching methods modelled by the teacher to support individuals or groups. In some cases, they may also model concepts to the class allowing the teacher to assess particular groups of children in more detail and identify their next steps.

Special Educational Needs

Children with SEN are normally taught within the daily mathematics lesson. When additional staff are available to support groups or individual children, they may withdraw small groups to use intervention materials.

Within the daily mathematics lesson teachers not only provide activities to support children who find mathematics difficult, but also activities that provide appropriate challenges for children who are high achievers in mathematics. Support and alternative activities are explicitly signposted on planning flipcharts.

Equal opportunities

All children should have equal access to the curriculum, irrespective of particular circumstances such as race, background, gender and capability. In the daily mathematics lesson, we ensure this by supporting children in a variety of ways: E.g. repeating instructions, emphasising key words, using picture cues.

Vocabulary and precision of language

Developing children's language and vocabulary **is absolutely essential.**

- In all lessons attention is given to whether key vocabulary has been learnt.
- Key vocabulary is shown on interactive whiteboards and/or working walls during lessons and instantly added to, as new words arise.
- Paired talk activities are used to encourage children to talk about their mathematics.
- Teachers insist that children mirror the language they hear the adults using.
- Where appropriate, children are encouraged to answer in full sentences.
- Adults mirror back alternative words for the same meaning to enrich children's range of vocabulary. E.g. Child says '3 times 5 is 15', teacher says, 'yes, the product of 3 and 5 is 15' or '3 multiplied by 5 equals 15'.
- Children are required to provide justification and reasoning for their answers. A clear feature of teacher talk will be the word *Why?* For example, 'I know the shape is a square because….'
- Teachers are required to have sound subject knowledge and understanding of the correct terminology and vocabulary and they refer to the school's glossary of maths terms if unsure. E.g. There is no such thing as a 'take away' sum (because 'sum' means 'add'). We use the terms 'calculation'

or 'equation'.

- Lax terminology such as '*carrying' and 'borrowing'* must not be used. The correct terminology should reflect the mathematical structure. In this case, the terms '*regrouping*' and/or '*repartitioning*' are appropriate, since they reflect the way the numbers are being changed

  flexibly, whilst retaining the same value.

- At all times, teachers should refer to the maths subject leader if there is any uncertainty over terminology in order to maintain a consistent school-wide approach.

Working Walls

All classrooms have a clear working wall where models, vocabulary and visual images used in previous lessons are displayed and referred to. Children use these to support their learning. Working walls are to include the following:
Key vocabulary for the topic being taught only
Modelling of strategies and the apparatus relevant to the topic being taught
Areas displaying children's work
An area where children can share their own ideas and solutions or respond to challenges set by the teacher
Further guidance and non-negotiables are provided in the curriculum folder

Cross-curricular Links

Throughout the whole curriculum opportunities exist to extend and promote mathematics. Teachers seek to take advantage of all these opportunities within our topic-based curriculum. Each year group will teach one picture book unit per term.

Pupils' Record of Work

There are occasions when it is both quick and convenient to carry out written calculations. It is also important to record aspects of mathematical investigations. Children are taught a variety of methods for recording their work and they are encouraged and helped to use the most appropriate and convenient method of recording.

All children are encouraged to work legibly when recording their work. When using squares, we encourage children to use one square for each digit.

Marking

The quality of marking is crucial. All work is marked daily to show the children where they have succeeded and where errors have been made. The priority for the teacher, when marking, is to pick-up on some misconceptions/errors and using next steps to provide some examples for further challenge. This will be achieved through the use of one of the following:

- Challenge sticker, Close the Gap sticker or Explanation sticker

When appropriate the children themselves can mark exercises, which involve routine practice with support and guidance from the teacher. Peer marking may also be used.

Please refer to the Feedback and Marking policy for further detail.

Homework

It is our school policy to provide parents and carers with opportunities to work with their children at home. These activities may only be brief, but are valuable in promoting children's learning in mathematics. The school has subscribed to the Mathletics programme and all children are encouraged to use the platform for further practice at home.

Assessment

Ongoing Assessment for Learning

Formative assessment is the main mode used to gauge progress and inform planning. The learning objective (and the success criteria) are referred to during the lesson to gauge progress and at the end of the lesson to assess progress.

Teachers monitor and assess children throughout the lesson and through marking their work, identifying any misconceptions which need to be addressed.

Assessment should also be guided by the key DfE 2020 National Primary Curriculum Guidance and the ready to progress criteria contained within it.

Record Keeping

Teachers use their own short assessment tasks using resources such as the NCETM Mastery Assessment materials and Testbase. The work set, combined with a scrutiny of children's recorded work over the previous weeks, helps to review how well children have taken in the topics taught and identifies any remaining misconceptions.

Summative Assessment

Aside from Year 6 SATS testing, the only formal testing undertaken is the government's Year 4 Times tables assessment. Formal assessment takes place through teacher assessment at the end of each phase. This is informed by

Reporting to Parents

Parents are given the opportunity to discuss their child's progress at two parents' evenings but understand that the schools' 'open door' policy enables them to address concerns throughout the year. Reports are completed before the end of the summer term. Teachers use the information gathered from their assessments to help them comment on individual children's progress.

Monitoring and Evaluation

The mathematics subject leader is given opportunities to work alongside other teachers. This time is used to monitor and evaluate the quality and standards of mathematics throughout the school and enables the subject leader to support teachers in their own classrooms.

Opportunities for teachers to review the mathematics policy are given on a regular basis during staff meetings.

Role of the Subject Leader

- To take the lead in policy development
- To support colleagues e.g. leading staff CPD, planning support, team teaching

- To monitor and be accountable for progress in Mathematics – this may be done through scrutiny of work, observations and analysis of formal assessment data
- To take responsibility for the choice, purchase and organisation of central resources for Mathematics, in consultation with colleagues
- To liaise with other members of staff to form a coherent and progressive scheme of work which ensures both experience of, and capability in, Mathematics
- To be familiar with current thinking concerning the teaching of Mathematics, and to disseminate information to colleagues

The subject leader will report on mathematics to the Headteacher and will liaise with the named link governors.