Hoole St. Michael's Church of England Primary School

Calculations Policy

Member of staff responsible: S Cookson
Date approved by the SEC committee: April 2021
Date to be reviewed: April 2024

Mission Statement

Christ's love is in everything we do at Hoole St Michael. Our creative and high-reaching Church of England Primary School is safe, loving and supportive. We encourage the building of good relationships and friendship through respect, tolerance and understanding. Within our Christian family, where parents are our partners in all aspects of school life, we aim to inspire a love for learning within each and every child.

'I can do everything through Christ who strengthens me.' Philippians 4:13

Overall Intent of our School:

Achieving excellence within the light of God.

We encourage our children be **bold and courageous** in their learning, willing to **take risks** within a **supportive, caring Christian ethos**. Our **Christian Values** underpin everything we do at Hoole St Michael. Hoole St Michael children develop **confidence, resilience and a thirst for knowledge** to **prepare them for the future**. As a small Christian family, children **build strong relationships**, learn to **work together** and **support each other** through life's celebrations and challenges. **Growth Mindset and Sumo principles** teach our children to approach all areas of learning positively. Our children are **active learners** who thrive when learning outdoors; we provide outdoor learning and Forest School sessions on a weekly basis. Although we are a village school we reach out to develop **meaningful partnerships** within the **local community and wider world**. We provide **enrichment activities** regularly for our children to **broaden their experiences and love of learning**.

Introduction:

At Hoole St Michael, we take a consistent and progressive approach to calculating across school. Working with the NCETM, we make are constantly reviewing and adapting or practice in maths in order to provide our children with high quality teaching. In our calculations policy, we have highlighted key areas that our teachers consider daily in their lessons when working with our children in maths.

Aims and Objectives:
We believe that mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. Our pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects. We aim to ensure that all pupils:

- become **fluent and efficient** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Consistent Representations for our School:
Working alongside the NCETM in our Teaching for Mastery workgroup, we have decided to use the following consistent representations throughout school to teach calculation.

- Tens frames
- Dienes equipment
- Counters – plain and place value
- Part/whole models
- Bar models

This will give our children a base on which to hang their mathematics and encourage children to take independent risks with their thinking.

Fluency:
Priority is given to the recall of number bonds to 10, then 20 and times table facts. The accurate and rapid recall of these facts has been proven to improve fluency skills. This is done at Hoole St Michael through daily fluency sessions. These facts may be taught in a variety of ways, through chanting in lesson, use of programs such as T T Rockstars and encouraging children to see patterns or connections when aiming to recall facts. Being encouraged to recall patterns means that children have a strong sense of number relations. Rapid recall of facts such as number bonds, has been proven to have a great impact on mental calculation.

Written Calculation:
When developing a column method, we believe that the emphasis should be on place value, with practical equipment used on desks and in drawings to represent calculations. Our children are encouraged not only to complete formal calculations but also to use jottings to help support and keep track of their thinking. These jottings provide a stepping-stone to formal methods and encourage children to use their number sense when calculating.

Equality and Inequality:
Conceptual and procedural variation is embedded throughout our teaching. This promotes a broad and deep understanding of concepts. We focus from an early age on varying the position of the equals sign in calculations so that children see it as more of a balance sign than where the answer goes. When teaching calculation, it is important to vary the position of missing numbers to embed understanding. The inequalities signs are used also from an early age in school to encourage mathematical thinking and reasoning.

Patterns and Connections:
When appropriate, teachers will use a variety of low floor and high ceiling tasks to engage all children in the task. These tasks will come alongside a key reasoning question, encouraging children to use the patterns that they see to answer. This encourages children to see pattern and transfer this skill when they need to work systematically.
These key questions include:
Teachers will push reasoning skills by asking children:

- True or false questions
- Show me an example and a non-example
- Odd one out questions
- What is the same and what is different.

Concreate and Abstract:
When starting new areas of learning, teachers will use the practical side of our key representations to unlock mathematical understanding. All classes in school make use of practical representations, moving then to pictures and finally to more abstract representations. Formal calculations are often represented using place value equipment such as counters or Dienes.

Contextualising:
Calculations are taught through an anchor task that gives a real life concept to the mathematics. This allows children to use their knowledge of the world and makes the learning of maths purposeful.

Teaching Style/Questioning:
Teaching of calculation starts with an anchor task – a real life problem. Teachers will then progress through the lesson by asking a series of questions. The purpose of this is to encourage partner work, mathematical talk, increase confidence and boost risk taking. Children work with practical equipment and pictorial representations to explore calculation, giving a deep and broad understanding.

Terminology and Identifying Challenges in Learning:
Teachers are working closely with the NCETM to use the correct terminology for parts of a calculation and to embed learning in the form of STEM sentences. STEM sentences are used in most lessons to embed key parts of calculations that children may find challenging. These are repeated throughout the lesson and can be shared on working walls. Terminology for parts of calculations such as addend and multiplicand are currently being embedded in school.

Progression in Calculation:
Key Stages 1 and 2:
Link to COVID 19 Recovery:
Currently, we are following the White Rose progression in calculation. (Appendix 1)
This is supplemented by representations from the NCETM Spines for Place Value, Addition, Subtraction, Multiplication and Division.
The Covid Recovery Documents from the NCETM: Prioritisation Documents and Ready to Progress Criteria are used throughout school to support calculation.

EYFS Progression in Calculation:
EYFS use the six areas of Early Mathematical Learning from NCETM to support calculation.
These are:

- Cardinality and counting
- Comparison
- Composition
- Pattern
- Shape
- Space
- Measure

Number Blocks also support early calculation in lessons and at home.

13. EQUAL OPPORTUNITIES
All children are provided with equal access to the mathematics curriculum. We aim to provide suitable learning opportunities regardless of gender, ethnicity or home background.

14. PARENTAL INVOLVEMENT
As a school we do not send home formal, written calculations to parents as we realise methods have changed since their times at school. This can often cause arguments and confusion. Homework at school focuses on fluent recall with the use of T T Rockstars and Emile to support this. Parents are expected to support their child in the completion of homework tasks.

15. ROLE OF SUBJECT LEADER
The Subject Leader (Mrs Sarah Cookson), alongside the Head Teacher is responsible for improving the standards of teaching and learning in mathematics through:

- monitoring and evaluating mathematics: at least half-termly work scrutiny, pupil interviews, planning scrutiny, lesson observations, feeding back to staff *(see Monitoring timetable)*
- auditing and supporting colleagues in their CPD and supporting staff development through lesson study approach
- pupil progress; analysing data (termly)
- provision of mathematics
- Monitoring intervention in mathematics in school.
- the quality of the learning environment (through termly walk-through);
- the deployment and provision of support staff
- taking the lead in policy development
- purchasing and organising resources
- keeping up to date with recent mathematics developments
- writing an action plan for mathematics which may be part of the school improvement plan

- ensuring that governors are fully informed regarding standards in mathematics and progress made towards the action plan.

16. THE GOVERNING BODY

Regular reports are made to the governors on the progress of Mathematics provision. This policy will be reviewed every three years or in the light of changes to legal requirements. As we are a teaching for mastery school and this is the second year of our program, we may have to review the policy earlier in light of any changes.

17. CONCLUSION

This policy also needs to be in line with other school polices and therefore should be read in conjunction with the following school policies:

- Teaching and Learning Policy
- Assessment and Record Keeping
- Homework policy
- Responding to pupils' work/Feedback/Marking policy
- Special Educational Needs Policy
- ICT/e-safety Policy
- Equal Opportunities Policy
- Health and Safety Policy

This policy was approved by the Governing Body on…….

Signed…… Date…… *(Chair of SEC)*

Signed…… Date:……. *(Headteacher)*