



The Federation of Spixworth Schools

Mathematics Policy

Agreed by Individual Governor: Summer 2024

To be reviewed: Summer 2026

Intent

Overall curriculum rationale

This document is a statement of the aims, principles and strategies used for the development of the curriculum undertaken within The Federation of Spixworth Schools. This policy promotes best practice and establishes consistency in teaching and learning across the federation. It also takes into account the diversity of our learners, providing equality of opportunity for all, alongside varied learning experiences that lead to a consistently high level of pupil attitude and achievement in Mathematics.

At The Federation of Spixworth Schools we will develop confident learners who are able to see and make connections between the different areas of Mathematics. Our children will be able to confidently solve problems, reason mathematically and successfully perform investigations by drawing upon the mathematical experiences and knowledge gained through a rich, broad and exciting Mathematics curriculum. Mathematical learning at The Federation of Spixworth Schools will allow children to deepen their understanding and master key concepts. Children will use their skills and confidence to contribute positively to society.

By using comprehensive resources provided by White Rose Maths and the National Centre of Excellence in Teaching Mathematics (NCETM), the Federation of Spixworth Schools uses a Mastery approach to Mathematics to ensure all children achieve success.

Legal framework

This policy has due regard to all relevant legislation and statutory guidance including, but not limited to, the following:

- DfE (2024) The Statutory Framework for the Early Years Foundation Stage (EYFS)
- DfE (2013) National Curriculum in England: Science programmes of study: key stages 1 and 2

This policy operates in conjunction with the following school policies:

Curriculum Policy
Curriculum Risk Assessment
Multiplication and Division Calculation Policy
Addition and Subtraction Calculation Policy
Feedback, Marking and Assessment Policy

Aims and Maths Mastery Definition

We embrace the NCETM's definition: Mastering Maths means pupils of all ages acquiring a deep, long-term, secure and adaptable understanding of the subject. The phrase 'teaching for mastery' describes the elements of classroom practice and school organisation that combine to ensure pupils master maths. Maths Mastery makes use of the 5 Big Ideas:

1. Coherence

Lessons are broken down into small progressive steps that gradually unfold the concept. This leads to an understanding of the concept and the ability to apply the concept to a range of contexts.

2. Representation and Structure

Physical and pictorial resources are used in lessons to help develop understanding of the mathematical concept being taught until they are no longer needed by the pupil.

3. Mathematical Thinking

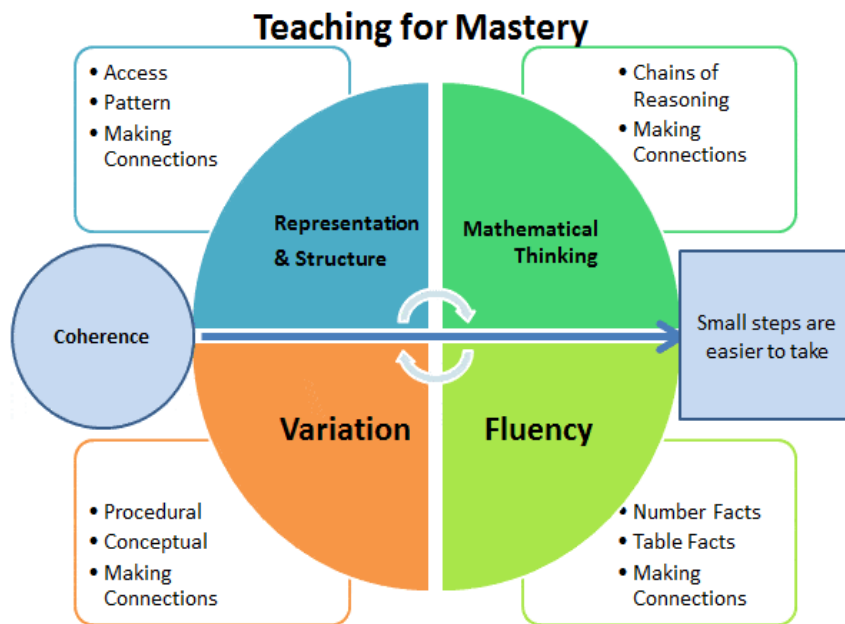
If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the child: thought about, reasoned with and discussed with others.

4. Fluency

We support our children to be able to recall facts quickly and efficiently so they develop the flexibility to move between different areas of maths.

5. Variation

Teachers represent concepts in more ways than one, to develop deep understanding. Steps are sequenced with activities and exercises to apply learning. Attention is paid to what is the same and what changes, to allow children to make connections within their learning.



Implementation

EYFS Educational Programme

Taken from the Statutory Framework for the Early Years Foundation Stage January 2024 – Mathematics:

Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.

EYFS Early Learning Goals

Number

Children at the expected level of development will:

- Have a deep understanding of numbers to 10, including the composition of each number.
- Subitise (recognise quantities without counting) up to 5.

- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Numerical Patterns

- Children at the expected level of development will:
- Verbally count beyond 20, recognising the pattern of the counting system
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Key Stage One (Year 1 and 2)

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools]. At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money. By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency. Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Lower Key Stage Two (Years 3 and 4)

The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number. By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work. Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Upper Key Stage Two (Years 5 and 6)

The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio. At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them. By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages. Pupils should read, spell and pronounce mathematical vocabulary correctly.

Curriculum Delivery and Planning Expectations

The Federation of Spixworth Schools follow the White Rose Schemes of Learning. White Rose Maths provides detailed step-by-step lesson planning for each year group from Reception to Year 6 that meet all of the relevant year group objectives set out in the National Curriculum in England (2014). Long Term Planning is as detailed for each year group on the White Rose Website linked below:

Years 1-6: <https://whiterosemaths.com/resources/primary-resources/primary-sols/>

Reception: <https://whiterosemaths.com/reception-sol/>

Reception and Key Stage One also use NCETM's 'Mastering Number' programme, a programme aimed at improving pupil's fluency in number. In Reception this forms the core content of the Mathematics curriculum covering Number and Numerical Patterns, with the remaining curriculum being covered by the White Rose scheme of work. In Key Stage One this is used in addition to the White Rose scheme of work.

Medium and short term planning for Reception to Year 6 consists of lesson-by-lesson overviews also found here: <https://whiterosemaths.com/resources/primary-resources/primary-sols/>

Each lesson is carefully designed to build on from previous learning, this ensures appropriate progression, enabling all objectives to be met.

Using Rosenshine's Principles of Instruction (2012) we have adopted a 'I do, We do, You do' approach to Maths lessons.

Class teachers reflect upon all units taught and consider next steps or adjustments required. This is part of our day to day practise to inform planning for subsequent lessons and also part of each end of unit review to inform future teaching of each mathematical concept. These reflections support long term planning for subsequent years.

Teaching and Learning Approaches

Lessons across the Federation use the concrete, pictorial, abstract (CPA) approach to embed mathematical concepts. The ultimate goal of the CPA approach is to support children in securing their understanding of abstract mathematical concepts by linking them to concrete and pictorial representations. All children receive high quality teaching that uses the CPA approach. Lessons ensure that all children are working towards the same outcome and that scaffolding is in place for children that may need extra support to achieve this.

Concrete - By using physical manipulatives, children can begin to develop conceptual understanding.

Pictorial - Through using pictures and diagrams, children can begin to link the physicality of concrete mathematics to the abstract.

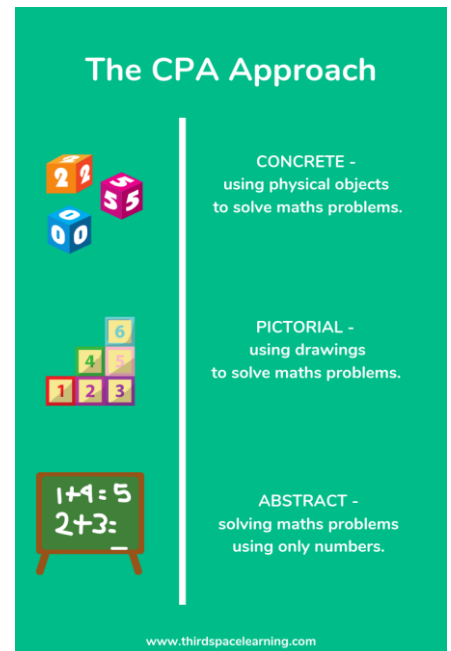
Abstract - By developing a secure understanding of the concrete and pictorial representations, children can make sense of the abstract. Staff ensure children move on from the concrete and pictorial when conceptual understanding is secure.

Equipment and Resources - Manipulatives

Manipulatives illustrate the concrete element of CPA. As children move through the year groups, manipulatives will generally be used to a lesser degree as children become more secure with abstract maths. However, manipulatives are still used to introduce new concepts, reintroduce previous learning or support key objectives where mastery needs to be secured.

Key core manipulatives used across the Federation are listed below. These are versatile pieces of equipment that can be used in a multitude of ways.

- Ten frames
- Multilink cubes
- Straws or counting sticks
- Bead strings
- Base 10
- Double sided counters
- Place value counters



- Place value grid
- Numicon
- 100 squares
- Number lines

'Keep Up' Interventions are short small group or 1-2-1 focused sessions that ensure every pupil has achieved success in learning the lesson objective for the day. These will take place as soon as possible, on the same day after the lesson.

It is the responsibility of teachers and staff within the classroom to identify pupils who would benefit from a 'Keep Up' session. These sessions will last no longer than 15 minutes to secure learning so pupils are prepared for the next day's objective.

Sometimes pupils have substantial gaps in their learning that cannot be addressed with a 'Keep Up' session. Catch Up Interventions take place in a small group and are a block of learning over 6 weeks to close an identified gap. These are coordinated with the class teacher, SENCO and Maths Lead to ensure the most suitable provision.

We follow the White Rose calculation policy and progression document which tracks all the national curriculum objectives. These documents ensure teachers know what learning has come before and what will take place after in terms of the current year and future years.

Health and safety

Specific considerations for this subject can be found in the Curriculum Risk Assessment, which is reviewed annually. A log is kept of all staff who have read and understood this assessment each year.

Cross Curriculum Links

Wherever possible, the Maths curriculum will provide opportunities to establish links with other curriculum areas. These include subjects like Science, D.T. and P.E.

Inclusion and equality of opportunity

- All pupils will have equal access to the entire Maths curriculum.
- Gender, learning ability, physical ability, ethnicity, linguistic ability and/or cultural circumstances will not impede pupils from accessing all Maths lessons.
- Lessons will be adapted to meet the pupil's needs and alternative arrangements made involving extra support will be provided where necessary.
- All efforts will be made to ensure that cultural and gender differences will be positively reflected in all lessons and teaching materials used.

Impact

Assessing and Reporting

- Evidencing pupil's work will come in many forms and vary depending on the task, concept and year group. Not all learning will be recorded and teachers are trusted to make judgements based on evidence that is sometimes not recordable.
- Where learning is predominantly practical, photographs and pupil and staff voice will support evidencing learning. In EYFS and KS1, Tapestry is used to illustrate pupil's learning.
- Formative assessment takes place on a daily basis by teachers monitoring the learning within lessons, this will inform 'Keep Up' sessions.
- Marking is in accordance with the Feedback, Marking and Assessment policy.
- Block Assessments are used at the end of each White Rose unit. Results are logged so teachers and the subject leader can track and monitor progress.
- Summative assessments take place termly using the assessment resources provided by White Rose Maths. The results are analysed using the Question Level Analysis sheets provided by White Rose. These allow monitoring of and response to pupils retained understanding.
- Statutory assessments are completed as required. This currently includes the Reception Baseline, the non-statutory Year 2 Standard Assessment Tests (SATs), the Multiplication check in Year 4 and Key Stage 2 SATs.

SATs

- SATs measure children's educational achievement in Years 2 and 6.
- In Year 2 the tests are non-statutory and informal taking place over an extended period of time. The outcome of these tests inform the teacher's judgements.
- In Year 6 formal tests in arithmetic (1 paper) and reasoning (2 papers) are undertaken. The arithmetic paper is 30 minutes in length and each reasoning paper is 40 minutes in length.

Staff training

All staff have access to training. This may include but is not limited to:

- NCTEM training
- White Rose training
- Opportunities via the Angles Maths Hub

Monitoring and evaluation

The staff and Governors are committed to maintaining standards, establishing high expectations, and promoting effective teaching and learning. Procedures for monitoring and evaluation involve all members of the school community as part of the monitoring cycle.

A commitment to Assessment for Learning (AfL) endorses the school's participation in the National Curriculum and demonstrates an ethos in which the personalities, strengths and needs of pupils are considered and addressed individually. The monitoring and evaluating of practice enables the progress of individuals to be seen within the class and whole-school contexts of school and staff development.

The main purpose of monitoring, evaluation and review is to ensure that all members of the school community perform their roles effectively in order to maintain high standards of learning and teaching and raise achievements for all.

The range of approaches in monitoring and evaluating may include:

- Moderation exercises
- Internal standardisation – a comparison of pupil's work across classes and year groups
- Book Looks
- Questionnaires/Surveys/Audits
- Learning Walks
- Whole-school self-evaluation
- Review meetings with staff and pupils
- The inspection process

Teachers report children's age related expectations termly using Pupil Asset after combining formative and summative assessment.

Parents will be kept informed of their child's progress and attainment through parent/teacher meetings held four times across the year and with an end of year report.

Roles and Responsibilities

The Role of the Governing Body and Executive Head teacher is to:

- Approve and monitor the content of this policy.
- Liaise with the Executive Head, Heads of Schools, subject leaders and teachers with regards to pupil progress and attainment.
- Nominate a Governor to have specific responsibility for Curriculum including oversight, support and challenge
- Ensure the curriculum is inclusive and accessible to all.

The Role of the Head of School and Curriculum Leader is to:

- To ensure that the legal requirements of the National Curriculum for Mathematics are met across the Federation.
- To support the subject leader to complete their role to a high standard.
- Devise long and medium term plans for the curriculum in collaboration with teachers, subject leaders and other members of the SLT.
- Communicate the agreed curriculum to the governing board on an annual basis.

- Ensure the curriculum is inclusive and accessible to all on a day-to-day basis.
- Assist teachers and subject leaders with the planning and implementation of the curriculum, ensuring their workload is manageable.
- Ensure the curriculum is implemented consistently throughout the school, ensuring any difficulties are addressed and mitigated as soon as possible.

The Role of the Subject Leader is to:

The Subject Leader will ensure that the whole school approach is being embedded and that there is consistency and progression across year groups. In addition to this, they are expected to:

- Keep up to date with developments in subject, at both national and local levels.
- Lead sustainable improvement through supporting colleagues and others.
- Monitor pupil progress and analyse data and use it to support future actions.
- Provide efficient resource management.
- Review the way subjects are taught in the school and plan for improvement linking to whole school priorities.
- Ensure the School Improvement Plan priorities are monitored and consistently met.
- Monitor how their subjects are taught ensuring that appropriate teaching strategies are used.
- Reviewing curriculum plans for their key areas ensuring there is full coverage of the National Curriculum and that progression is planned for.
- Encourage and support Maths in the wider curriculum and increase its profile with stakeholders.
- To report termly, through the subject leader summary, on the progress and actions within Maths.
- Accurately judge standards within their subjects so they indicate the achievements of children at each key stage and indicate expectations of attainment.

The Role of the Class Teacher is to:

- Adopt the 'every child can achieve' mantra, identifying and supporting all children to give them the best chance at success.
- Promote a positive attitude towards mathematics in school and the wider community.
- Challenge and inspire pupils, expecting the most of them.
- Demonstrate a high level of knowledge of each subject they teach.
- Plan lessons with clear learning objectives that pupils understand.
- Use the CPA approach and the Mastery Approach, and seek out support when necessary.
- Use precision high-level questioning to deepen children's understanding and develop metacognition within mathematics.

- To follow long, medium and short term planning provided by White Rose and adapt this to suit the needs of the class.
- Plan lessons which provide effective scaffolding for learners. All children will be given the opportunity to access age related expectations. Children who are working at greater depth will be working on mastery of the same concepts within their year group.
- Identify barriers to learning and put strategies in place to overcome them.
- Build and maintain relationships with parents.
- Be able to accurately advise parents on how to further support their children at home.
- Reporting to parents on their child's progress across all areas of learning and development.
- Ensure that children meet the same mathematical concepts in a wide variety of contexts.
- Focus task progression on the mastery of concepts, avoid "more of the same" extensions and instead, use and apply learning to new problems.
- Use manipulatives as a tool across the Federation to develop abstract concepts with the end goal being to be able to solve problems without them.
- Enable children to work independently and collaboratively to suit the task.
- Ensure that class organisation and grouping is, fluid to match the learning and context.
- Develop their understanding of the children's ability through the use of formative and summative assessment in order to adapt future lessons to suit the needs of the children.
- Reflect on their personal strengths and weaknesses and to be proactive to plan their own professional development needs.

The role of a Teaching Assistants is to:

- Adopt the 'every child can achieve' mantra.
- Promote a positive attitude towards mathematics in school.
- Use the CPA approach and the Mastery Approach, and seek out support when necessary.
- Follow planning provided by the teacher and have a clear understanding of the expectations and outcomes of each lesson.
- Support pupils with selecting and using appropriate manipulatives and resources.
- Work with individuals and groups, in class and during Keep Up/Catch Up sessions, to support with mathematical understanding and mastery.
- Recognise when to support and scaffold and when to allow pupils time to work independently.
- Mark books and provide feedback, following the Feedback, Marking and Assessment policy.

The Role of the SENCO is to:

- Collaborate with the Executive Head, Head of School, Curriculum Leader and teachers to ensure the curriculum is accessible to all.
- Ensure teaching materials do not discriminate against anyone in line with the Equality Act 2010.
- Carry out SEND assessments where necessary and ensuring pupils receive the additional help they need.
- Liaise with external agencies where necessary to ensure pupils who require additional support receive it.

Review

- This policy is reviewed every two years by the SLT and the governor responsible for Curriculum.
- Any changes made to this policy will be communicated to all members of staff and relevant stakeholders.