

Maths Policy

St Michael's Primary School





St Michael's Primary School Policy for Mathematics

Rationale

At St Michael's we aim to inspire all children to reach their full academic potential. In Mathematics this means ensuring a curriculum that is fully inclusive of all children which:

- Develops children's knowledge and understanding of mathematical concepts whilst enabling them to practice and hone skills and methods to develop fluency;
- Enables them to think critically and communicate their understanding;
- Gives them opportunities to apply learnt mathematical skills in different contexts across the curriculum;
- Provides opportunities to develop problem solving skills, useful for Maths and across the curriculum;
- Provides opportunities to develop verbal and written reasoning skills for Maths and across the curriculum.

This policy is set within the context of the school's policy on teaching and learning, in conjunction with which it should be read. As a result of their learning in mathematics and problem solving across the curriculum children will:

- Be prepared for applying their skills effectively in everyday life situations, in their future learning and in the work place.
- Have the building blocks in place and to provide a solid foundation to lead onto secondary, further and higher education.

Through teaching with a problem solving approach, children will learn to understand, distill and clarify information; consider what they know that will help them to solve problems, realizing what they need to know next; create systems and strategies, organizing

information in a way that helps find patterns, and ultimately solutions, communicating and presenting their findings effectively.

Planning

Planning begins from a thorough understanding of children's needs gleaned through effective and rigorous assessment and tracking, combined with high expectations and ambition for all children to achieve.

The appropriate objectives for children will be assessed by the teacher by:

- Summative assessment from previous teaching and NFER tests
 - Assessment prior to the teaching episode using a PLA
 - Formative assessment from current teaching (information derived from marking, as well as AFL activities at the outset of, or during, a lesson)
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- Medium term planning will outline the areas of mathematics that will be taught during the term to ensure coverage of the National Curriculum.
 - Within short term planning, clear success criteria for each learning objective taught should be created - demonstrating the progression needed to reach and exceed the objective. This will enable the class teacher to follow a clear and systematic teaching sequence, where input and activities are differentiated by considering for which parts of the success criteria individual children are ready.
 - Where children are working significantly above or below the objective towards which the majority of the class need to work, and where extending this by expanding the success criteria is inappropriate, objectives from higher or lower age-groups may need to be planned and taught, provided children have already demonstrated the fluency, problem-solving and reasoning skills required.
 - Children should learn to apply their year group's relevant skill set to problems before they learn skill sets from succeeding year groups.
 - Planning, where possible, should involve real life contexts for Maths, where children are problem solving with a purpose in mind.

There should be a whole class investigation planned at least once per half term to practice different elements of problem solving, including: finding all possibilities, logic problems, finding rules and describing patterns, diagram/visual problems and exploring different aspects of number. During these investigations, there should be a homing-in on specific problem solving skills that are transferable to other contexts.

Class teachers should regularly plan for opportunities for children to apply their Maths skills to different problems within Maths lessons and across the curriculum. This will also allow children to revisit, practice and consolidate different areas of Maths and apply them within different contexts. When planning across the curriculum, questions should be used

within titles of units of work and lessons, to initiate an 'enquiry' approach. Skills of problem solving (Appendix A) can then be taught consistently.

Teaching

Maths is taught **every** day (KS1 - 45/ 50 minutes, KS2- 60 minutes a day). Each lesson should start with a practice session so that children can revisit, practice and consolidate previously learnt skills. This also gives the teacher the opportunity to intervene, supporting or challenging small groups and individuals.

The school Calculation Policy should be followed. Children should be encouraged to use jottings to support their Maths where appropriate, although a progression towards appropriate and efficient written calculations should be developed and applied consistently in each year-group.

Children's mental Maths is of great importance, with number bonds, times tables facts and various strategies for calculation taught and practiced throughout school, and support sought from parents through homework activities. Mental Maths skills will be taught, practiced, tested and assessed on a regular basis.

Staff use a variety of teaching strategies including, but not limited to, collaborative learning in mixed ability groups, differentiated activities, and independent activities. When planning lessons, staff take into account different ways of learning, and a mixture of kinaesthetic, visual, written and auditory tactics are used to deliver objectives. Where appropriate, children who do not require the whole-class input from the teacher will start work independently.

In the Foundation Stage, children are given the opportunity to develop their understanding of number, measurement, pattern and shape and space through a combination of short, formal teaching as well as a range of planned structured play situations, where there is plenty of scope for exploration. Children will become very competent 'counters' so that their fluency with the number system provides a foundation for mathematical understanding. Counting forwards and backwards in many different sized steps as well as from different starting and ending points is essential.

Maths learning builds from a concrete understanding of concepts where children are manipulating objects. When children are able to see concepts this way, they then need to understand the same concepts represented pictorially. Children are then ready for abstract representation before being able to apply their knowledge to different situations. Children should be encouraged at all times to communicate their understanding of Maths so that it clarifies their thoughts.

Though the nature of lessons may vary depending on the needs of the class, children should evidence progress by:

- practicing skills they haven't yet mastered (perhaps recapping on class targets);
- learning something new;
- or learning to apply their knowledge to different contexts.

They should be:

- active as soon as possible
- working at a good pace and being productive
- sharing their thoughts and methods
- being successful.

When teaching problem solving skills (Appendix A), time (and sometimes whole lessons) should be given to each aspect of problem solving ensuring children get thorough practice at **RUCSAC** (Appendix A). They should also evaluate the process. Over time children will improve at each aspect. Teachers should also try to teach strategies *through* practical activities and problems to give children a better grasp of the reality of Mathematics, rather than seeing it as a 'virtual' subject.

Staff are required to move children on to a new level of challenge when appropriate. Children should first demonstrate fluency, then be given the opportunity to problem-solve and develop their reasoning. There should be a bank of Challenge activities available in a specific location in the classroom, and children encouraged to develop the independence and self-assessment skills required to enable them to use such resources efficiently.

The success criteria created for planning should also be accessible to the children, so that they can be used to scaffold learning, as well as for self, peer, and teacher assessment.

Resources

In initial teaching of a strategy and to develop the children's understanding, teachers use the resources which best fit the success criteria and do not rely on published schemes. When children are formatively assessed as being fluent, they are given Fluency, Problem-Solving and Reasoning activities derived from, but not limited to, resources produced by the White Rose Hub and the National Centre for Excellence in Teaching Mathematics (NCETM).

To assist with the planning, teaching and assessment of mathematics, electronic resources such as Abacus, times tables support etc are available in the shared area of the school's computer network. Textbooks and other paper resources such as photocopiables (pcms) are divided into 'core' and 'lateral' resources.

Core Resources

The most current textbooks available as a whole-school resource (currently Abacus Learn) will form a common or 'core' teaching resource to achieve EOY objectives, as it is expected

that these will most closely match the current expectations for each year group. Where reasonably possible, the core resource for a year group will be used mainly by that year group, rather than being used to challenge earlier year groups. This is to lessen the risk that children might encounter the same work repeatedly, or that the succeeding teacher might be deprived of a basic resource. This policy has been reviewed for impact and efficacy with relation to SEN children.

Lateral Resources

'Lateral resources' consist of a wider range of textbooks and PCMs such as Maths on Target, Medal Maths, Maths Express etc., and may be used where appropriate to challenge and support the children, not being restricted to one year group. Thus a high-achieving Y4 child might be given MoT 5 or 6 work at an appropriately challenging level (provided they have achieved Mastery of a strategy), or another supported with MoT 3.

Assessment and Marking

Assessment for learning should occur throughout the Maths lesson, enabling teachers and teaching assistants to adapt their teaching and input to meet the children's needs. This should be incisive and regular.

On a daily basis children should self-assess against the learning objective and success criteria, giving them a sense of success.

Pupil's work should be marked in line with the Marking Policy and should include modelled corrections, giving children a chance to learn from their misconceptions or incorrect methods.

Teachers use information gained from marking to inform planning for groups and individual pupils. Future lesson planning should also be influenced by class success evaluated through marking and observations made during the lesson. Assessment of pupil work and progress is ongoing by the class teacher and informs future planning.

Assessment should be used to ensure areas in which the majority of the class have not grasped a concept can be revisited and mastered. Half termly class targets should be set based upon the teacher's ongoing review of the medium term plan. This will enable teachers to revisit learning objectives that require further practice.

Summative assessments are made at least once per term, using the standardised NFER, in order to provide further understanding of the level at which a child is working, as well as to inform a more rounded judgement of their abilities and to inform future planning.

Tracking and Intervention

Tracking is used in order that children who are not making good progress over time can be targeted for support. The form and intensity of that support will depend upon the child's needs, and it may be a simple strategy within whole class teaching that is needed. Where further support is deemed necessary, interventions are planned.

At St Michael's we aim to provide children who are not making good progress with extra support through interventions. Interventions in Maths should be based on developing key number skills that are appropriate for the children involved.

Intervention provided to boost children's progression in Maths should be tightly planned on the agreed sheets, with success criteria set and assessments made frequently to ensure progress is being made. Whilst interventions may be carried out by Teaching Assistants, what is being taught and how it is delivered is the class teacher's responsibility, and communication is essential. Teacher meetings with TAs are planned as regularly as is possible.

From tracking we identify group issues that may exist, and plan initiatives that would address these as part of teacher performance review meetings, where children's performance is evaluated with class teachers. We also examine the progress of gender, ability, EAL, Pupil Premium and SEN groups. Where data indicates a whole school issue, it will form part of the **School Action Plan** which runs alongside the School Development Plan. Sometimes it will influence the School Development Plan itself.

Monitoring

Monitoring of children's progress begins with performance review meetings but continues with the subject leader evaluating further evidence to ensure children are making progress. This monitoring happens through examination of work in books, pupil interviews, analysis of assessment results and the assessments used, and through other means depending on what information needs to be gleaned.

Following monitoring activities feedback is given to staff about how they can strengthen their practice and CPD (professional development) opportunities built in where it is deemed valuable. These might take the shape of inputs during staff meetings or by a variety of other means.

Where specific initiatives have been put in place through action planning for school development, these are monitored by the subject leader in order to evaluate their impact. Findings are reported to the head teacher and governors through use of the '**Subject Leader's Ongoing Report**'. The success of interventions is also monitored and this informs future planning of intervention.

Appendix A

RUCSAC

Read the question carefully

Understand the question

Choose a calculation (one of the four operations)

Solve that calculation

Answer the question in context (eg. use given units)

Check your answer with the inverse calculation

Appendix B

Display

In the classrooms there should be, either on display or easily accessible to children, level appropriate resources, particularly concrete and pictorial apparatus to support children to grasp concepts.

Mathematical vocabulary should be displayed so that children use this in the communication of their understanding.

There should be Maths work on display in classrooms and in other areas of the school in order to encourage a positive attitude and enthusiasm towards mathematics for all groups of children.

Appendix C

Other relevant policies and documents to be read in conjunction with the Maths Policy:

- Calculation policy
- National Curriculum 2014
- Teaching and Learning Policy
- Marking Policy
- SEN Policy
- Homework Policy

Appendix D

Parents and Homework

We recognise that parents make a significant difference to children's progress in Maths and encourage this partnership. The homework policy and individual class homework information outline how parents can support.