

WEST PARK ACADEMY

Mathematics Strategy



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West Park Academy Mathematics Strategy

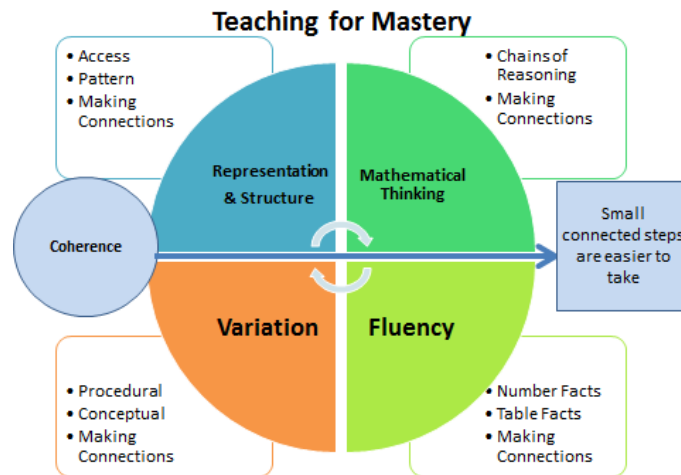
INTRODUCTION

This strategy outlines the learning and teaching, organisation and management of Maths.

AIMS

At West Park Academy, we have high expectations and believe all children can achieve. This has led to us teaching maths through the Mastery approach.

The Mastery approach is defined by five key principles, which are illustrated in the diagram, below:



FLUENCY INVOLVES:

- Quick recall of facts and procedures
- The flexibility and fluidity to move between different contexts and representations of mathematics.
- The ability to recognise relationships and make connections in mathematics

REPRESENTATION & STRUCTURE

Maths concepts are introduced through many different structures and representations to allow depth of understanding for the children. Lessons involve using a mixture of concrete, pictorial and abstract approaches in order to make connections and expose the underlying structure of mathematics.

VARIATION

Procedural variation – This is a deliberate change in the type of examples used and questions set, to draw attention to certain features.

Conceptual variation – This is when a concept is presented in different ways, to show what a concept is, in all of its different forms.

MATHEMATICAL THINKING INVOLVES:

- Looking for patterns and relationships
- Logical Reasoning
- Making Connections

COHERENCE

Teachers should develop detailed knowledge of the curriculum in order to break the mathematics down into small steps to develop mastery and address all aspects in a logical progression. This will ensure deep and sustainable learning for all pupils.

Our maths units are embedded with the three main aims of the curriculum: fluency, reasoning and problem solving. Once children have gained fluency in a subject area, they are given further time to reason with their understanding and develop this with problem solving situations.

TEACHING MATHS

Teaching time

To allow adequate time for Maths it is expected that at least 5 hours teaching time will be allocated to Maths each week however if children are using their mathematical skills in other contexts/ subjects then this is included within those 5 hours.

EYFS – Maths will be taught daily and will include a 15-minute input with the class/ group and then a 15 minute follow up in small groups/1:1. Children will also complete one “Have a go” maths activity every week.

Teaching time across the school

Years 1 – In Autumn One there are four dedicated short carpet sessions for maths with follow up tasks as children still follow continuous provision for the first half term in Year One. Opportunities are carefully planned for children to apply their knowledge through play. In Autumn Two children move to more formal recording in books. From Spring term children begin more formal daily maths lessons with more evidence and recording in books. There are also four additional Mastery Number sessions in the week for children to develop their confidence and fluency in number.

Years 2 – There will be a 1-hour maths lesson each day focusing on the current unit of work. There must also be 10/15 minutes number work built into the day four times a week (Mastering Number Programme) to develop fluency targets within the class. Teachers can use number work to lead into a lesson, or it can be at a separate part of the day.

Years 3, 4 and 5 – There will be a 1-hour maths lesson each day focusing on the current unit of work. There must also be 15 minutes number work built into each day to develop fluency targets within the class. Teachers can use number work to lead into a lesson, or it can be at a separate part of the day. Years 4 and 5 complete Mastering Number KS2 as their fluency sessions.

Years 6 – There will be a 1-hour maths lesson each day focusing on unit work. In addition to this, children also have a short fluency session daily (15 minutes) focusing on fluency skills and arithmetic questions. Teachers can use number work to lead into a lesson, or it can be at a separate part of the day.

Maths lessons

Children are taught in their own class groups by their own class teacher unless there are exceptional circumstances where a child requires a personalised curriculum. The majority of children will move through the programmes of study at broadly the same pace. We believe that all children can achieve therefore all children are given the same starting point in objectives. Children who may be less confident with a concept are given support or interventions and children who have grasped concepts rapidly will be challenged by depth of understanding, not acceleration. To support this, teachers must have 'Next Step,' activities prepared in lessons for children who have grasped a concept quickly.

Every lesson should begin with a short recap of what children already know before introducing new knowledge for the lesson and then giving children a chance to apply their understanding. This provides children with an opportunity to make connections across concepts and ideas. A step-by-step approach, with regular short inputs, is used in lessons to enable children to 'journey' through the mathematics involved.

The use of concrete resources and visual models is also essential in helping children fully understand mathematical concepts and so these resources are used regularly in sessions. 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 and applying knowledge across different contexts and situations.

To fully master a subject, we also believe children should be able to explain their thinking and reasoning and confidently teach others. They should be able to investigate mathematics independently, in pairs and in groups. Use of language is therefore a major feature of all maths lessons as it develops children's reasoning and explanation.

Planning

Long term planning is based on the National Curriculum Programmes of Study and includes opportunities to apply across the curriculum.

In order for children to have a deep understanding of different concepts, each topic will be taught thoroughly, giving children opportunities to link new knowledge to prior learning and also giving opportunities to reason and problem solve. Because of this, some units may take longer than others to teach. It is the class teacher's responsibility to assess how long a class should spend on a topic, ensuring that there has been sufficient understanding of a concept before moving on.

Teachers must have an overview of each unit of work (S plan). Teachers need to break the unit down into small achievable steps thinking about how concepts will build upon each other and possible misconceptions which may arise. The overview must state which objectives are being taught on certain days, key questions and support.

Teachers will then create daily plans (in the form of a lesson presentation) which will be used with children, during the lesson. This daily lesson includes the opportunity to revisit previous learning, small steps towards the introduction of new concepts, and opportunities for children to 'go deeper' with their learning. Any additional information such as TA role or differentiation is to be stated on the maths planning sheet.

ASSESSMENT AND RECORD KEEPING

Formative: Assessment is primarily on-going and formative. Staff observe, question, listen and mark children's work regularly/daily, allowing them to build up a picture of children's strengths and areas for development. Follow up work will be planned for if needed.

At the end of every unit teachers must give children a post assessment to assess how well children have mastered a concept. These assessments must include fluency, reasoning and problem-solving questions and will review all previous concepts covered in the year. Useful websites/documents to use to create these assessments include: NCETM, White Rose Mastery Documents and TestBase. The success with which children answer these questions should indicate how deeply they have understood the concept. Teachers must keep records of how well the children have completed the assessment.

Summative: Summative assessments will be carried out termly to support teacher assessment. The questions will validate the teacher's assessment and support teachers in accurate assessment.

MARKING AND FEEDBACK

Marking and feedback (oral and written) will take place throughout the lesson. Teachers and support staff are to assess children's understanding throughout the maths lesson. Immediate feedback will be given to children during the lesson and if any children do not fully understand the subject, teachers should try and work where possible with these children in the lesson.

If children are not secure with a concept at the end of the lesson, it is up to the teacher to decide if whole class teaching is appropriate, or whether small group or 1:1 intervention is required. Where possible, this should take place on the same day as the lesson, so children have a secure understanding in order to take part in the next lesson.

Marking Strategy

To allow for same day intervention to take place, marking is to take place as much as possible within the maths lesson using the following features:

* For each recorded piece of work questions will be marked with a tick if they are correct and a dot if they are incorrect. Areas for development or questions which need correcting should be underlined in orange, so it is clear for children to see.

* Pupils should respond to the areas that are underlined in orange. This should be addressed on the same day or morning after and should be completed before the next lesson. Children complete this work in a sharp pencil.

*Children's responses should be re-marked daily with a tick and 'c' to show it has been corrected and acknowledged by the teacher.

*The best marking and feedback is the dialogue that takes place between teacher and pupil while the task is being completed. Verbal feedback should be signposted with (v/f) and a short annotation or modelling to demonstrate the conversation.

*Any significant support provided to a child in a lesson is marked with an (s).

For further detail see Marking and Feedback Strategy.

BRITISH VALUES

The fundamental British Values are threaded throughout the maths curriculum, and these are reinforced in our Teaching for Mastery approach in the belief all children can achieve

well in maths. As part of the maths curriculum, children learn about the importance of applying rules in units such as calculation and geometry and how following rules during maths games is crucial. In maths, language and discussion is a huge part of lessons and children are encouraged to share their ideas and opinions, and these are respected. Children learn in a safe environment where mistakes are valued and discussed. Making mistakes is an important part of learning and children are aware that there can still be great thinking behind these mistakes. Lessons are also designed to explore learning through a range of different contexts so that children are aware of the purpose of maths and its importance in the world around us.

CROSS CURRICULAR LINKS

The using and applying aspect of mathematics allows children the opportunity to utilise their skills within other subjects and is of huge importance. However, teachers must ensure that if an aspect of maths is being taught through other subject areas, that the teaching of the skills of maths are not lost. There must be time for children to gain understanding of a skill before applying it across the curriculum. Teachers need to particularly focus on making links between mathematics and science. In addition to this, speaking and listening opportunities and ICT links need to be made within the daily teaching and learning of mathematics. There are opportunities for the children to develop and apply their mathematical skills and knowledge in every curriculum area.

HOMEWORK

Homework is set by class teachers and is given out weekly focusing on developing children's fluency. The units of work will be on curriculum newsletters every half term to inform parents of the units being covered. Teachers may give additional homework (linked to the units) to the class/ particular children if appropriate.

VISITS AND VISITORS

Where possible, teachers will look for and exploit opportunities for children to complete 'real life' mathematics, utilising the school grounds, local area and businesses to help bring maths to life.

REPORTING TO PARENTS

Parent Evenings are held termly, in which parents have the opportunity to discuss their child's progress within mathematics with the class teacher. Areas of achievement and concern can be discussed and parents can be made aware of how they can further support their child outside of school with their development. During the summer term, parents receive a written report outlining their child's mathematical achievements including whether they are in line with age related expectations, and a target for the child to focus on within their forthcoming year of study. Those children, who are identified to have Special Educational Needs in mathematics, will meet with the class teacher once every half term to review their progress, set targets and add support mechanisms.

Parents are also provided with booklets as necessary, including an approach to calculation, developing fluency skills, maths homework and suggested apps and websites to support learning. All these documents are available on the website for parents to access.

Maths in the Early Years Foundation Stage

Mathematics is one of the seven areas of learning covered in the Early Years Foundation Stage Curriculum. Mathematics involves 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 Nursery, mathematics is brought to life through play, number recognition and opportunities for counting. Learning is made real through numerals in the environment and

children have the ability for cognitive development at their own pace and through connection of head, heart and hands!

This is extended in Reception as we take on the Mastery Maths approach, combining children's interests, fascinations and early number skills as well as deepening children's knowledge of number and numerical patterns. We deliver carefully structured teaching that is complimented by planned time for the children to embed learning through a wide range of experiences.

We believe that high quality experiences of mathematics are the entitlement of every child. All children can be successful with mathematics, provided that they have opportunities to explore mathematical ideas in ways that make personal sense to them and opportunities to develop mathematical concepts and understanding. Children need to know that practitioners are interested in their thinking, respect their ideas, are sensitive to their feelings and value their contributions.

In Nursery and Reception teachers plan and resource challenging mathematical environments indoors and outdoors, where children's play can be supported and extended. Practitioners can increase and develop children's mathematical language and communication in their play through sensitive observation and appropriate modelling and intervention. The use of practical resources, every day and real-life situations, offers children contexts that emphasise the role mathematics can play in their own and other's lives.

Baseline assessment takes place in the first few weeks of a child entering school. This information helps practitioners to plan appropriate teaching and learning experiences for children setting targets that reflect their development needs and is updated termly. Summative assessment takes place at the end of the year through the Early Years Foundation Stage Profile (EYFSP).

RESOURCES AND DISPLAYS

- The school is well-resourced for Maths to ensure high quality teaching. The main resources are kept in the large store cupboard in the Year 5 and 6 corridors. These resources must be signed for both when they are collected and returned. Year groups also have their own resources in class, which are used on a regular basis, such as Numicon packs, counters, tens frames, dienes, multilink cubes etc.
- Every class must have a maths display which is used as a working wall. This must be updated regularly and demonstrate the current learning of the children.
- In EYFS and KS1, numberlines must be displayed linked to year group number targets. In KS2 numberlines may be displayed if linked to current learning.
- Key number facts and times tables linked to year group expectations should be displayed.
- Analogue and digital clocks should be displayed in classrooms.

EQUALITY AND EXCELLENCE

How we cater for pupils with SEN

- Most children are included in whole class teaching.
- Provision maps indicate specific targets and are updated half termly.
- If children are unable to access classroom-based maths provision, personalised plans will be produced.

- Additional support is provided to enable children to access differentiated tasks both within the classroom and discrete teaching sessions.

Equal opportunities and Inclusion

(see equal ops strategy)

All children are presented with the same range of opportunities in mathematics and are facilitated to access the curriculum, regardless of their needs. Teachers and teaching assistants work with all groups of children.

Health and Safety

In their planning of activities, teachers will anticipate likely safety issues. They will also explain the reasons for safety measures and discuss any implications with the children. Children will always be encouraged to consider the safety of themselves, others and the environment and the resources they use.

MANAGEMENT OF MATHS

Monitoring and evaluating

Maths co-ordinator to carry out scrutiny of work and planning on a regular basis as directed by the senior leadership team. Co-ordinator will carry out observations of lessons alongside a member of the senior leadership team.

Role of the Maths Manager

- To know the legal requirements of Mathematics
- To keep up to date with any changes to Mathematics, its teaching, learning, assessment, data analysis, recording and reporting through appropriate literature and professional development activities
- To identify resources needed and oversee their maintenance
- To identify training needs and deliver when and where appropriate
- To ensure continuity, progression and challenge in skills, concepts and knowledge
- To monitor weekly planning each term
- To develop an action plan for the forthcoming year using quality evidence and data analysis working closely with the curriculum team
- To promote Maths through quality display, visits, and information/workshops for parents
- Report on the progress of Maths to the Governing body.
- To analyse data with the Senior Leadership Team and create an action plan from the data

Role of the Headteacher

- To monitor the quality of learning and teaching of Maths
- To collect data, analyse and use for continuous improvement and set targets

Role of the class teacher:

- To plan and teach Maths effectively and enthusiastically, on a daily basis
- To assess, keeping up-to-date records, including marking in line with marking guidelines
- To use targets and standardised work to level children's abilities against the National Curriculum and have a good understanding of progression and how to allow children to progress further
- To exploit opportunities for using and applying, both within Maths lessons and across the curriculum
- To report to parents orally and in writing, regarding their child's ability, progress and next steps in Maths.

Role of the Governing Body

- SAT's results are shared with the Governing Body
- Governors are kept up to date at Governing Body meetings on any developments in Maths