

# **St. Joseph's Catholic Infant and Junior Schools**

## **Mathematics Policy**

This Mathematics Policy sets out a framework within which teaching and non-teaching staff can operate. It should be read in conjunction with the attached Calculation Policy. We follow the Maths Mastery approach supported by White Rose Maths Materials.

### **RATIONALE:**

At St. Joseph's Infant and Junior School, Mathematics is a vital part of the curriculum. Competence in Mathematics will provide children with essential life-long skills. It is not an isolated subject, but should be used to facilitate further learning throughout the whole curriculum in areas such as Science, Computing, Geography and D&T. There is a focus on depth of understanding, making connections and problem solving.

### **AIMS:**

Mathematics teaches children how to make sense of the world around them by developing their ability to calculate, reason and problem solve. It enables children to understand relationships and patterns in both number and space in their everyday lives.

Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of Mathematics.

Our objectives in the teaching of Mathematics are:

1. To promote enjoyment of learning through practical activity, exploration and discussion.
2. To become fluent in the fundamentals of Mathematics, in the areas of Number and Place Value, Addition and Subtraction, Multiplication and Division, Fractions, Ratio and Proportion, Measures, Statistics, Algebra and Geometry, through varied and frequent practice with increasingly complex problems over time.
3. To introduce all new Mathematical concepts using practical resources then proceeding onto pictorial representations before moving onto abstract thinking (CPA). Children must be provided with concrete experiences before being able to handle abstract concepts. This objective should continue throughout all the years of primary education whenever new concepts are introduced and should not be confined only to early year's practice.
4. To encourage pupils to develop their own mental Mathematics strategies and fluency, such as number bonds, times tables, estimating and approximating, and to become confident in this area. These skills should be built upon in each year group.
5. To show that communication is an essential part of Mathematics. Pupils should be given opportunity to describe, interpret, predict and explain using mathematical

language and conventions. They will reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.

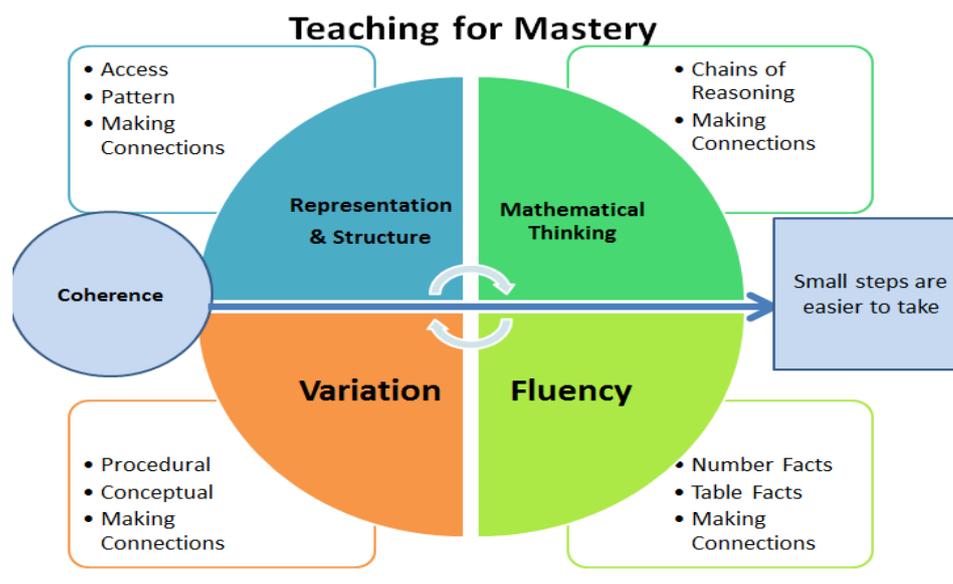
6. To present Mathematics as a creative and fascinating process in which children are encouraged to use their imagination, initiative and flexibility of mind.
7. To develop an appreciation within pupils of the relationships within Mathematics itself.

## TEACHING AND LEARNING STYLES

Children have a wide range of learning styles. We recognise this fact and provide suitable learning opportunities in all areas of the curriculum by presenting new concepts in a variety of ways. We allow children to work individually, in pairs and in groups and use a range of open and closed ended questions when teaching. We offer opportunities to participate in various audio, visual, practical and written activities and use ICT and interactive games to embed knowledge further all supported by White Rose Maths (WRM) mastery materials. We also use classroom assistants to support children and ensure all work is matched to the needs of the individuals.

## THE CURRICULUM:

Children follow the Maths Mastery curriculum in KS1 and KS2. It champions the five big ideas illustrated below.



### **Coherence**

Lessons are broken down into small connected steps that gradually unfold the concept, providing access for all children and leading to a generalisation of the concept and the ability to apply the concept to a range of contexts.

### **Representation and Structure**

Representations used in lessons expose the mathematical structure being taught, the aim being that students can do the maths without recourse to the representation

### **Mathematical Thinking**

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

### **Fluency**

Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics

### **Variation**

Variation is twofold. It is firstly about how the teacher represents the concept being taught, often in more than one way, to draw attention to critical aspects, and to develop deep and holistic understanding. It is also about the sequencing of the episodes, activities and exercises used within a lesson and follow up practice, paying attention to what is kept the same and what changes, to connect the mathematics and draw attention to mathematical relationships and structure.

### **The Essence of Maths Teaching for Mastery:**

- Maths teaching for mastery rejects the idea that a large proportion of people 'just can't do maths'.
- All pupils are encouraged by the belief that by working hard at maths they can succeed.
- If a pupil fails to grasp a concept or procedure, this is identified quickly and early intervention ensures the pupil is ready to move forward with the whole class in the next lesson.
- Lesson design identifies the new mathematics that is to be taught, the key points, the difficult points and a carefully sequenced journey through the learning.
- Procedural fluency and conceptual understanding are developed in tandem because each supports the development of the other.
- It is recognised that practice is a vital part of learning, but the practice used is intelligent practice that both reinforces pupils' procedural fluency and develops their conceptual understanding.
- If a pupil fails to grasp a concept or procedure, this is identified quickly and early intervention ensures the pupil is ready to move forward with the whole class in the next lesson.

- Lesson design identifies the new mathematics that is to be taught, the key points, the difficult points and a carefully sequenced journey through the learning. In a typical lesson pupils sit facing the teacher and the teacher leads back and forth interaction, including questioning, short tasks, explanation, demonstration, and discussion.
- Procedural fluency and conceptual understanding are developed in tandem because each supports the development of the other.
- It is recognised that practice is a vital part of learning, but the practice used is intelligent practice that both reinforces pupils' procedural fluency and develops their conceptual understanding.
- Significant time is spent developing deep knowledge of the key ideas that are needed to underpin future learning. The structure and connections within the mathematics are emphasised, so that pupils develop deep learning that can be sustained.
- Key facts such as multiplication tables and addition facts within 10 are learnt to automaticity to avoid cognitive overload in the working memory and enable pupils to focus on new concepts.

The National Curriculum Programmes of Study offer a broad mathematics curriculum. We carry out the curriculum planning in Mathematics in three stages - long term, medium term and short term. Year groups follow the WRM long term and medium term plans to ensure the integrity of the Mastery approach and all objectives are covered.

### **DIFFERENTIATION**

Where grouping is by ability, the group will be flexible and reviewed regularly to ensure equal opportunity for all pupils. Pupils are placed in ability groups for part of their maths teaching so that work is better matched to their ability. This depends on the topic covered; different groupings may be formed for different activities but pupils may also be working as a class, especially in Problem Solving activities where they can share their knowledge and understanding, and therefore learn from each other in a mixed ability situation.

### **EQUAL OPPORTUNITY**

All pupils are to have access to the Mathematics curriculum, regardless of ability, gender, race, cultural background or any physical or sensory disability. In cases of physical or sensory disability, the school will endeavour to provide specialist apparatus, or, if applicable, computer software so that the pupil may have full access.

## **INCLUSION**

The introduction of the Mastery approach supports this idea that all children are encouraged by the belief that by working hard at maths they can succeed.

At St. Joseph's Infant and Junior School, we strive to ensure that pupils with special educational needs have access to the same broad and varied Mathematics curriculum as their peers. Maths lessons are planned based on sound knowledge of the pupil's abilities and, where appropriate, linked to IEPs. This may involve breaking down an activity into a series of small achievable steps. The pupil should make gradual progress at each stage to achieve overall success as the whole concept is taught.

Conversely, pupils of higher ability may be given tasks and resources that enable them to be stretched in order to reach their full potential. Children who are deemed 'Gifted and Talented' will be encouraged to delve deeper into mathematics with challenges that require a much more advanced conceptual understanding of the concepts studied within their year group. All children, however will be provided with depth and challenge activities as this an integral element of the Maths Mastery approach to develop conceptual understanding.

EAL pupils will be supported to develop key vocabulary in order to allow them to access the full curriculum and will be guided as they develop their language skills in all areas of the curriculum.

## **EARLY YEARS FOUNDATION STAGE**

The mathematics curriculum planning is based around children's individual needs interests and stage of development. In the planning and guiding of children's activities at St Joseph's, the three characteristics of learning are addressed. These are:

- playing and exploring - children investigate and experience things and 'have a go',
- active learning - children concentrate and keep on trying if they encounter difficulties, and enjoy achievements; and
- creating and thinking critically - children have and develop their own ideas, make links between ideas, and develop strategies for doing things.

The EYFS will also be introducing Maths Mastery style teaching and learning supported by new resources published by White Rose Maths.

The mathematics curriculum, 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 shape, space and measures.

Assessments are observation based. This involves reaching an understanding of children's learning by watching, listening and interacting as they engage in everyday activities, events and experiences, and demonstrate specific knowledge, skills and understanding. Some will be planned but some will be a spontaneous capture of the moment. From September 2019, all children will be baseline assessed using the pilot scheme provided by the National Foundation for Education Research (NFER). Children are then assessed throughout the year with the support of Development Matters age related statements on classroom monitor. The Early Years Foundation Stage Profile (EYFSP) is used as a summative assessment at the end of year where children are assessed against the Early Learning Goals (ELGs) to see if they are at expected, emerging or exceeding in mathematics. If the ELG is met, pupils are at expected, if they are still working towards the ELG they are emerging and if they are working at ELG+, they are exceeding. In making the decisions, teachers refer to the exemplification descriptors which establish national standards. Moderation takes place internally every half term and externally termly.

### **PUPIL ASSESSMENT, RECORD KEEPING AND REPORTING**

In accordance with our school Assessment Policy, assessment is an integral part of our teaching. In St. Joseph's Infant and Junior Schools all teachers carry out formative and summative assessments in their classes. Classroom monitor is updated each week for the whole class based on the objectives that have been taught. Children that have not achieved a learning objective will be recorded in the GAP analysis book. In addition, each child is assessed at the end of each unit using the WRM unit assessments. All children will complete a termly assessment paper in arithmetic and reasoning. These scores will then be recorded in a class excel grid so data can be analysed by class teachers and the mathematics coordinator and steps can be taken to address any particular areas of weakness or highlight individual pupils. The Mathematics Co-ordinator continually monitors books and planning throughout the year and provide feedback to the Senior Leadership Team where necessary.

### **MANAGEMENT**

Mathematics at St. Joseph's Infant and Junior School is managed by the Maths co-ordinator. The role of the Mathematics co-ordinator is to:-

- take the lead in policy development and the production of schemes of work designed to ensure progression and continuity in Mathematics throughout the school.
- Support colleagues in their development of detailed work plans, their implementation of the scheme of work and in assessment and record keeping activities.

- monitor and analyse progress in Mathematics and advise the head teacher on action needed.
- take responsibility for the purchase and organisation of central resources for Mathematics teaching and learning.
- keep up-to-date with developments in Primary Mathematics and disseminate information to colleagues as appropriate.

### **PARENT INVOLVEMENT**

Throughout our school, we encourage the parents of our pupils to maintain active involvement in their child's education. We endeavour to form positive relationships with our parents and keep them informed about the teaching of Mathematics in St. Joseph's Infant and Junior School through the weekly newsletter and on our school's website where all long and medium term planning can be accessed. Curriculum meetings are also held to notify the parents about updates to the National Curriculum and give brief overviews of yearly content and progression.

Teachers inform parents about their child's progress and targets in Mathematics during one-to-one meetings throughout the academic year. Parents are invited to participate in Parent/Pupil workshops where they participate in a range of interactive mathematic challenges. During these workshops, the Mathematics Co-ordinator and class teachers inform parents about various calculation techniques and procedures implemented in school and provide them with the opportunity to clarify their own misconceptions and improve their subject knowledge. Parents are encouraged to provide support with weekly mathematics homework tasks and are invited to give feedback on their child's progress in their homework diaries (juniors only) when the task has been completed.

### **HEALTH AND SAFETY**

The pupils should have a positive and enthusiastic attitude towards mathematical activities in a safe environment. All of our members of staff have the responsibility to ensure that equipment is safe for use and carefully stored in an appropriate place. It is intended that pupils learn how to take responsibility for their own safe practice, i.e. to use apparatus safely, to work in a limited space being aware of others.