

Mathematics Policy

Evergreen Pupil Referral Unit

2023

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Evergreen Mathematics Policy

1. Intent

The 2014 National Curriculum for Maths aims to ensure that all children:

- Become fluent in the fundamentals of Mathematics
- Are able to reason mathematically
- Can solve problems by applying their Mathematics

Our mathematics curriculum is designed with the children, who arrive at Evergreen, firmly in mind. Unfortunately, our children, join us from a wide range of schools, academies and settings and many may already come with a significant negative view and experience of themselves, the curriculum and wider education. Our children come to Evergreen from across the city, with some from beyond its boundaries with varied experiences of different and diverse curriculums and expectations.

As Evergreen provides short-term placements for children who are either excluded at risk of exclusion, or with us for a limited period of time as they transfer into the city. The work at Evergreen may first focus upon specific improvements for the individual regarding their attitudes, behaviour and/or attendance. As a result Evergreen, in the first instance will set objectives and provide support, related first to the reasons why the child is placed at Evergreen, the needs of the pupil, the duration of placements and if on transition, the proportion of time that pupils stay with the provider each week.

To support our children, it is important that the teaching and learning of our curriculum is flexible, personalised and adapted, especially if we are to meet the wide range of needs that arrive at Evergreen. It is also important as after they spend time with us, many children will move on to new schools and again experience further differences and expectations.

Staff at Evergreen are committed to ensuring that children can recognise the importance of Maths in the wider world and that they are also able to use their mathematical skills and knowledge confidently in their lives in a range of different contexts.

We want all children to enjoy Mathematics and to experience success in the subject, with the ability to reason mathematically. We are committed to developing children's curiosity about the subject, as well as an appreciation of the beauty and power of Mathematics.

Therefore, our mathematics curriculum has to:

- Engage and inspire children who have in all probability lost the love and joy of learning and reengage those who have disengaged, through effective teaching and learning for children who enter at different times of the year, at different academic levels, at different curriculum starting points and areas of study.
- Develop, reinforce and maintain positive behaviours and personal dispositions by showing children new ways of progressing in learning and relationships and by breaking old habits and behaviours, so that children who do return to mainstream provision or move onto the next stage of their learning journey, do so with sufficient skills and dispositions that enable them to engage and infer with whatever, new challenge they face.
- Enable children to explore their world through an accessible, fulfilling, and exciting, experiential curriculum, one that supports a change in children's self-perception as learners and enables progress from their starting point with a focus on facilitating the development of Mathematics.

- To assess and identify gaps in knowledge, skills, behaviours and dispositions, then inspire and motivate and support children to bridge gaps and re-engage learning by building on the talents and skills children already have.
- Provide effective teaching and learning opportunities for children who enter, leave and remain at the unit for significantly variable amounts of time, some from 12 weeks to 12 months and more.

To support all our children and to support their eventual reintegration, whether that is back to mainstream or onwards to specialist provision, it is important that our curriculum is based on and aligned with the objectives and outcomes of the National Curriculum.

2. Implementation of the Curriculum

Children, who arrive at Evergreen, join us from a wide range of schools and academies and do so after experiencing a range of different curriculums and expectations. Many of our children enter Evergreen working below age-related expectations. To support our children, it is important that teaching and learning is adapted, flexible and delivered according to the diverse needs of our pupils,

At Evergreen staff are mindful that most children enter Evergreen with very different starting points and may have a negative view and low self-esteem in mathematics and previous experiences may have impacted their engagement in mathematics. The teaching of maths at Evergreen is adapted to ensure accessibility and engagement.

In line with the National Curriculum, staff at Evergreen, teach maths so that it is accessible for all. Staff provide support to those who need it and stretch and challenge those whose grasp of maths is more advanced. At Evergreen, staff work with children to develop and re-ignite a joy of maths so that they can build the strong mathematical connections needed to become fluent, reasoned, and resolute mathematicians.

Evergreen is dedicated to delivering a broad and balanced curriculum, even though we are very aware that the majority of our children will be not able to follow it in its full entirety, either due to their bespoke academic level and need, attitudes to learning, attendance or according to transition expectations. Our curriculum is implemented and adapted to re-engage learning, motivate and inspire and reignite the joy of learning and ensure that children make the most of their time at Evergreen.

Staff at Evergreen support children to understand the importance of maths and the essential role it plays in their future learning and progress and everyday life. Evergreen's approach to maths is further outlined in a separate maths policy.

These principles and features characterise this approach and convey how our curriculum is implemented:

- Teachers reinforce an expectation that all children are capable of achieving high standards in Mathematics.
- Significant time is spent adapting learning intentions to develop positive learning behaviours, dispositions and confidence to support and develop key ideas, knowledge and skills that are needed to underpin future learning.
- Ensure that gaps are bridged before moving to the next part of the curriculum sequence, allowing children to build confidence and skill.
- If a child fails to grasp a concept or procedure, this is identified quickly and early and intervention ensures the child is supported to move forward ☑
- The structure and connections within mathematics are emphasised so that children develop a greater understanding of their learning.

- Teachers adapt lessons and design lessons that identify the new mathematics that is to be taught, the key points, the difficult points and a carefully sequenced journey through the learning according to needs and behaviours.
- In a typical lesson, children sit facing the teacher and the teacher leads back-and-forth interaction, including questioning, short tasks, explanation, demonstration, and discussion.
- Practice and consolidation play a central role. Carefully designed variation within this builds fluency and understanding of underlying mathematical concepts.
- Teachers use precise questioning in class to test conceptual and procedural knowledge and assess children regularly to identify those requiring intervention.
- Children are supported with explanations to support their proficiency in articulating mathematical reasoning and to develop the use of mathematical vocabulary.
- Key facts such as multiplication tables and addition facts within 10 are learnt automatically to avoid cognitive overload in the working memory and enable pupils to focus on new concepts.

To ensure whole consistency and progression, the school uses and adapts the nationally recognised White Rose Maths scheme. The White Rose curriculum is cumulative so that once a topic is covered, it is met many times again in other contexts. For example, place value is revisited in addition and subtraction and multiplication and division. The curriculum is designed to have an emphasis on number, with a large proportion of time spent reinforcing number to build competency.

Lessons are planned to provide plenty of opportunities to build reasoning and problem-solving elements into the curriculum. When introduced to a new concept, children have the opportunity to use concrete objects and manipulatives to help them understand what they are doing. Alongside this, children are encouraged to use pictorial representations. These representations can then be used to help reason and solve problems. Both concrete and pictorial representations support children's understanding of abstract methods.

Mathematical topics are taught in blocks, to enable the achievement of 'mastery' over time. These teaching blocks are broken down into smaller steps, to help children understand concepts better. This approach means that children do not cover too many concepts at once, which can lead to cognitive overload and impact the development of positive dispositions towards maths.

3. Impact

Often as a result of previous experience, many of our children can underperform in Mathematics because they think they cannot do it or are not naturally good at it. Evergreen's use of White Rose Maths addresses these preconceptions by ensuring that all children experience challenge and success in Mathematics by developing their confidence and positive learning behaviour towards maths.

Regular and ongoing assessment informs teaching, as well as intervention, to support and enable the success of each child. On arrival into the PRU, children are taken through detailed baseline assessments, which provide us with insight into the child's ability in maths. We assess children's prior and current dispositions towards wider learning, their behaviour and social interactions. This is further outlined in Evergreen's Assessment Policy.

Once baselined, personalised objectives are identified and prioritised, and assessed against a skills continuum using Mapping and Assessing Personal Progress or MAPPS. Children are set three targets for Maths. The personal objectives are directly aligned with National Curriculum Outcomes and reviewed at 5 and 10 weeks. Should children extend their placement at the PRU or remain at the PRU longer than their original period children are re-baselined and further objectives are set.

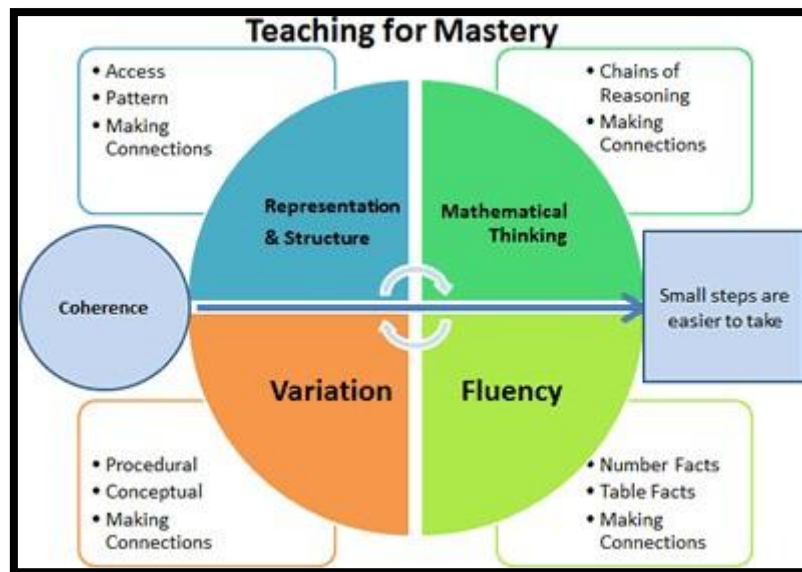
Through this approach, staff can directly meet the specific learning needs of the children and begin to bridge or narrow gaps, more supportively so that any gaps that may have prevented them from

progressing and accessing more of the curriculum previously, are reduced. Keeping in line with the National Curriculum outcomes, the teacher can ensure that children are fully supported so that they can become better placed to re-enter either mainstream education or successfully move on to other destinations, a much stronger way than they did as they entered the PRU.

Impact	
<p>The key measure of impact will be the progress made by pupils from their individual starting points. Methods for assessment are outlined in our assessment policy.</p> <p>We will further evaluate the impact of our curriculum by using the methods outlined in the table below.</p>	
Intent	Measure
<p>Develop, maintain and reinforce positive behaviours and personal dispositions by showing children new ways of getting on in learning and relationships and by breaking old habits and behaviours.</p>	<p>Observations, moderation and review Head Reports Pupil Progress Meetings MAPPS/Data PASS/ Pupil Voice Attendance Destinations Governor visits Work scrutiny Attendance</p>
<p>To inspire and motivate and support children to bridge gaps in learning and re-engage children by building on the talents and skills children already have.</p>	<p>Observations, moderation and review Head Reports Pupil Progress Meetings MAPPS/Data PASS/ Pupil Voice Attendance Destinations Governor visits Work scrutiny Attendance</p>
<p>Enable children to explore their world through an accessible, fulfilling and exciting, experiential curriculum.</p>	<p>Curriculum opportunities and experiences Observations, moderation and review Head Reports Pupil Progress Meetings MAPPS/Data PASS/ Pupil Voice Attendance Destinations Governor visits Work scrutiny Attendance</p>
<p>To support a change in children's self-perception as learners and enable progress from their individual starting point with a focus on facilitating the development of English and Mathematics.</p>	<p>Curriculum opportunities and experiences Observations, moderation and review Head Reports Pupil Progress Meetings MAPPS/Data PASS/ Pupil Voice Attendance Destinations Work scrutiny Attendance</p>

4. Teaching and Learning

Effective teaching for mastery is underpinned by five big ideas, first published by the National Centre for Excellence (NCEM) in mathematics in 2017.



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.

Maths is taught daily during the morning. A typical maths lesson lasts approximately 1 hour and begins with a short engagement activity. Teachers use engagement activities to enthuse learning and gauge whether understanding is secure. Once children have built some recall, teachers then provide regular practice to build fluency.

The small step for the lesson is then shared with the children and they revisit key concepts from previous learning that support the key learning of the lesson. Children then solve contextual problems as a class, with the teacher that expose the structure of the mathematical concept. In this part of the lesson, teachers use careful questions to draw out children's discussions and their reasoning and the children learn from misconceptions through whole class reasoning. To support this, the teacher will often use a stem sentence (See Stem Question Policy) to scaffold children's articulation of mathematical ideas and reasoning, and/or a generalisation that supports the application of the concept. The variation in this part of the lesson enables a deeper understanding of the concept and may include the use of related concrete resources, as well as representations of the problem to provide a secure base of understanding.

Children will then complete the start of their practice task. The teacher will review responses and then share answers and strategies, addressing any misconceptions, before children continue with their practice. This practice uses a conceptual and procedural variation to build fluency and develop a greater understanding of underlying mathematical concepts. This 'intelligent practice' supports mathematical thinking and enables children to:

- Recognise and use connections among mathematical ideas
- Understand how mathematical ideas interconnect and build on one another to produce a coherent whole
- Recognise and apply mathematics in contexts outside of mathematics.

Where appropriate and depending on the topic, children will continue to have access to concrete resources which they can use to complete the practice task. Some children might be supported through additional scaffolding provided by the teacher. This may include:

- Provided models of the calculation method that the children will need to use.
- Copies of the worded question, with key aspects and vocabulary, are highlighted.

Children who complete this are provided with further 'rich and sophisticated' problems from the White Rose Maths Small Steps guidance, which they complete in their maths book.

The final part of the sequence is a 'True or False' question, which requires the children to use mathematical reasoning to prove or disprove a related statement or mathematical problem related to the key learning.

4. Assessment

Assessment for Learning:

Children receive effective feedback through teacher assessment, both orally and through written feedback, and AfL is integral to the design of each lesson;

The structure of the teaching sequence ensures that children know how to be successful in their independent work. A daily fluency activity supports children's recall of key number facts, which frees working memory. Teachers will make informed choices as to when they should progress to new content according to the degree of fluency that children can demonstrate.

- a) The engagement task provides the means for the teacher to assess, review and revisit previous related content so that all children are well-prepared for new content.
- b) The 'Get Ready' part of the lesson is when a new mathematical concept is introduced and the guided practice aspect of this part of the lesson means that children are well prepared to be able to apply the skills, knowledge and strategies taught they have learnt the 'Your turn' task (which is often the first two questions of the practice task).
- c) Common misconceptions are identified and addressed within the teaching sequence and key understanding within each 'small step' is reviewed and checked by the teacher and the children before progression to further depth.
- d) The final phase of the lesson is a whole class 'True or False' statement. Teachers use the children's responses as a means to assess the depth of their understanding.
- e) At the end of the lesson, the children review their work and self and peer assessment are used consistently as outlined by the school's 'Marking and Feedback Policy'.

The teacher, as appropriate, provides opportunities for additional practice and correction during marking, with a focus on promoting confidence and achievement in maths.

Formative Assessment:

Short-term assessment is a feature of each lesson. Observations and careful questioning enable teachers to adjust lessons and brief other adults in the class if necessary.

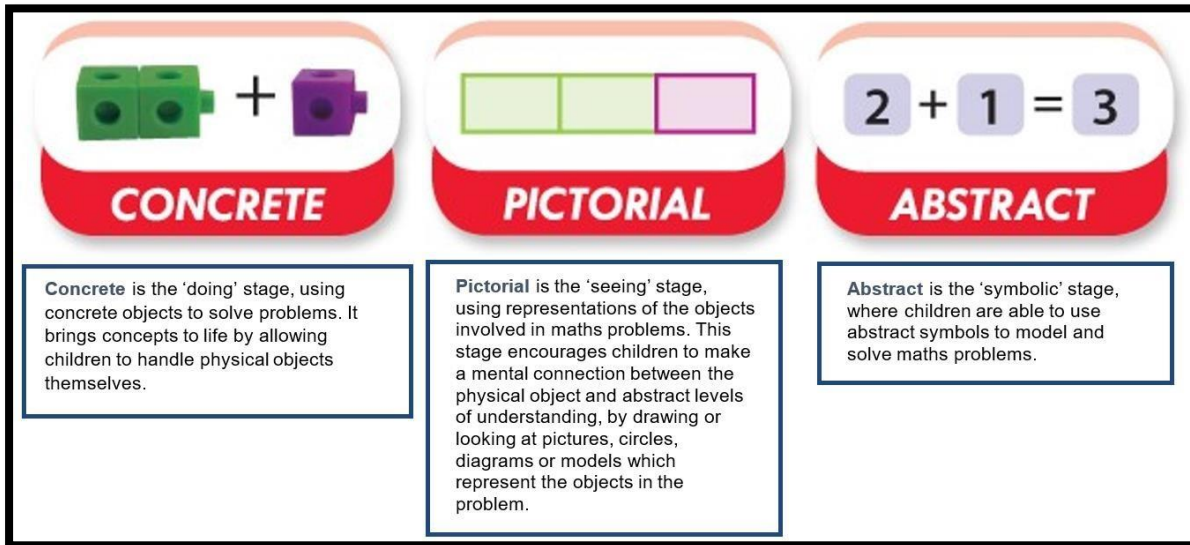
The lesson structure of a White Rose Maths lesson is designed to support this process and the 'True or False' statement at the end of each lesson also allows for misconceptions to be addressed.

At the end of each blocked unit of work, the children also complete the carefully aligned White Rose Maths 'End of Unit Assessment'. The outcome of this is used by the teacher to ensure that any identified gaps in understanding can be addressed before the next unit is taught. Each child's scores provide an overview of achievement in each specific area within the programme of study. This also informs MAPPS and PASS assessments made as to the extent that each child has achieved the expectation.

Assessment data in maths is reviewed throughout the year to inform interventions and to also ensure that provision remains well-informed to enable optimum progress and achievement. End-of-year data is used to measure the extent to which attainment gaps for individuals and identified groups of learners are being closed. This data is used to inform the whole school and subject development priorities for the next school year.

5. Planning and Resources

The use of manipulatives objects is an integral part of the White Rose Maths scheme which incorporates the concrete–pictorial–abstract pedagogy:



Each classroom has its supply of mathematical equipment, in line with the White Rose Maths calculation policies, which the school has adopted.

Teachers also have access to the White Rose Maths Interactive Teaching Resources for the purpose of modelling strategies and demonstrating the use of concrete resources.

The school subscribes to the White Rose Maths Premium Resource Centre. This provides access to visual resources (including lesson slides that teachers can adapt), as well as smallsteps planning guidance and reasoning and problem-solving questions that accompany each small step, to inform and use in lessons.

Teachers are encouraged to use the school playgrounds as an outdoor classroom when possible, for example, when teaching length, area or perimeter.

6. Organisation

The school has implemented a blocked curriculum approach to the teaching of Mathematics. This ensures that children can focus for longer on each specific area of Maths and develop a more secure understanding over time. This approach is also designed to enable children to progress to a greater depth of understanding.

Subsequent blocks continue to consolidate previous learning so that the children continually practice key skills and can recognise how different aspects of Maths are linked. For example, when children have completed a block which has enabled them to master the multiplication of two-digit numbers, a subsequent block on area and shape might provide opportunities to use this understanding when calculating the area of shapes with 2-digit length and width dimensions.

Our base teachers use White Rose Maths, which they adapt accordingly. Children record their work in exercise books and respond to questions accordingly. They might also use their maths book to record key number facts and make representations of mathematical concepts.

Short-term planning is done weekly basis. Teachers also plan, modify and source activities and additional tasks which offer support and scaffolding where appropriate, and provide a further challenge for children who can progress further in their learning.

Lessons in all bases follow the same sequence (see section 2: Teaching and Learning). All base teachers use 'mini-plenaries' to explain each question during the children's completion of the practice book and also to check the children's understanding before they complete the next question. This ensures that all children can complete the task with confidence.

Additional Maths progression documents, available in class curriculum files, provide an overview of how the scheme covers the statutory requirements of the 2014 National Curriculum. The document also shows how concepts build over time and how the teaching blocks are sequenced in each year group

7. Equal Opportunities

The Evergreen is committed to ensuring the active participation and progress of all children in their learning.

All children will be given equal opportunities to achieve their best possible standard, whatever their current attainment and irrespective of gender, ethnic, social or cultural background, home language or any other aspect that could affect their participation or the progress of which they are capable.

8. Inclusion

Evergreen will aim to provide a broad and balanced curriculum for all children so that they achieve and be successful within the curriculum. Staff at Evergreen will adapt the curriculum so that children can achieve according to their abilities. We will identify which children or groups of children are underachieving and take steps to improve their attainment in liaison with the SENCo. Children's difficulties and misconceptions are identified through immediate formative assessment and addressed with rapid intervention – commonly through individual or small group support later the same day or within the lesson.

9. Moderation and Leadership of Maths

The Leadership team and the Academy Council are responsible for monitoring the impact of the school's mathematics curriculum both in terms of social outcomes and academic progress.

The head of the school is responsible for the day-to-day organisation of the curriculum. Due to the very small staff size class, teachers monitor the impact of learning and the coverage of the curriculum in the base for which they are responsible. They monitor curriculum planning for their base, and ensure that all children are taught the full requirements of the National Curriculum, have opportunities to enhance their curiosity and are challenged to apply and deepen their learning.

Senior leaders and teachers work together to inspire learning in each individual base and monitor how their base is taught. Senior Leaders examine long-term and medium-term planning and ensure that appropriate teaching strategies are used. Senior Leaders have the responsibility for monitoring how resources are used. Curriculum monitoring for each base is completed by teachers with the full support of senior leaders who together identify the strengths and actions for further development in that base.