Reaside Academy

Mathematics Policy

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1. Curriculum Statement

Intent

At Reaside Academy, we strive towards shaping happy, confident and resilient mathematicians who relish the challenge of Maths. We want the children to become independent thinkers whose skills not only support them in Maths but be fluent in order to support them across the curriculum and beyond. Mathematics is an integral part of every day life, and with this in mind, we endeavour to ensure that our pupils develop a positive and enthusiastic attitude towards Mathematics that will stay with them throughout their lives. The Mathematics curriculum provides pupils with a powerful set of tools to help them build their knowledge and gain skills that will prepare them for later life and the world of work. These tools include making connections, solving problems, logical reasoning and the ability to think in abstract ways.

Implementation

The Maths curriculum at Reaside Academy is underpinned by the content and principles outlined in the 2014 Mathematic curriculum. In addition to this, it is influenced by the principles of Teaching for Mastery. 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
- The large majority of children progress through the curriculum content at the same pace. Differentiation is achieved by emphasising deep knowledge and through individual support, use of resources and intervention.
- Teaching is underpinned by methodical curriculum design and supported by carefully crafted lessons and resources to foster deep conceptual and procedural knowledge.
- Teachers use precise questioning in class to test conceptual and procedural knowledge and assess children regularly to identify those requiring intervention, so that all children can keep up. Children's explanations and their proficiency on articulating mathematical

reasoning, with the precise use of mathematical vocabulary, are supported through the use of stem sentences provided by the teacher.

To ensure whole school consistency and progression, the school uses DfE approved White Rose Maths scheme.

Each lesson begins by revisiting and practising previously taught content to ensure children continue to 'remember' prior learning.

At the beginning of each lesson, to encourage the use of mathematical vocabulary from the very start of each lesson, an anchor task is shared. This encourages mathematical talk with the opportunity to share their understanding. Children are then introduced to a concept by addressing fluency needs required for problem solving and reasoning in that area. Once basic fluency is secured children move on to varied fluency practice. Children are introduced to reasoning and problem solving questions so that newly acquired knowledge can be applied. Mathematical topics are taught in a spiral curriculum so that learning can be revisited and built on to help the children to retain their learning.

Impact

The school has a supportive ethos and our school approach enables the children to develop collaborative and independent skills, as well as empathy and the need to recognise the achievement of others. Children can underperform in Mathematics because they think they cannot do it or are not naturally good at it. This is addressed through the culture of the school and its approach to 'learning behaviour'. The focus is on recognising and celebrating positive learning behaviours demonstrated by children in order to build confidence, resilience and empathy.

Regular and ongoing assessment informs teaching, as well as interventions, to support the success of each child. With the aim to stay in line, if not exceed, national average at the end of KS2.

The impact of teaching can also be demonstrated through the collection of arithmetic data on a regular basis to ensure that the children's successes are being maintained.

2. Teaching and Learning

A typical maths lesson lasts 1 hour. Maths is usually taught daily during the morning. Children begin each lesson with Retrieval Practice (RP) to revisit previously taught content to ensure better retention and learning. Revisitation and practice are key counterparts to children having developed fluency, which in turn enable children to access the knowledge needed to reason and problem solve.

Following the RP, children are shown an anchor task linked to the learning for the day, to encourage mathematical talk and draw on previous learning.

Children have the opportunity to use manipulatives, in all lessons, along with the use of pictorial representations to further support their conceptual understanding. Once confident in this, children can move onto varied fluency practise and then on to reasoning questions. This allows children to demonstrate a secure understanding of a specific concept. Children will be given opportunities to then apply this procedural knowledge to problem solving questions. Teachers model how to problem solve and 'think aloud' showing the thinking process as well as how to physically record this on paper. Teachers use careful questioning to draw out children's discussions and explanations and the children learn from misconceptions through whole class reasoning. Vocabulary is important in our Maths lessons, and teachers encourage the children to use the correct mathematical vocabulary consistently throughout all lessons. Talk partners are used effectively to share their understanding and solve problems before moving on to working independently. Children's needs are catered for by considering the speed and pace as to which they move through the learning journey. Differentiation is considered by scaffolding the learning carefully for the 'slower graspers' and the learning is deepened for those that show a good understanding.

For any children working far below ARE, gaps in learning are planned for and delivered in an appropriate way that meets the needs of the individual.

Any whole class gaps are addressed throughout the current lesson, or the lesson the following day. Individual misconceptions are addressed on the same day, in a 1:1 or small group intervention. For those children that struggle in a lesson, or didn't produce enough work to show a good understanding of the learning, 'keep up not catch up' sessions are completed in the afternoons so that learning can move forward in the next lesson.

3. Arithmetic

Arithmetic sessions are also taught daily in 15 minutes sessions to give the children the opportunity to recall and answer questions quickly and efficiently, building on skills that have been taught during our hourly lessons. This is to help improve the children's mental recall of number facts and to apply them in different ways. To ensure this knowledge and understood and secure, short arithmetic tests are carried out weekly and these scores are tracked and monitored to show progression.

4. Assessment

Children may receive oral or written feedback from teaching staff. This may take place within a lesson or after the event. Teachers complete a 'teacher feedback sheet' after each lesson which documents any whole class/individual misconceptions that need to be addressed, as well as alterations to the next lesson. This feedback sheet also identifies children to be praised, children who need further support and children who are making basic skill errors. Children are then given time to address anything outlined by the teacher, during the afternoon interventions or 'keep up not catch up'.

Within lessons there may be opportunities for children to peer/self-assess work as outlined in the school's 'Marking and Feedback Policy'. This enables children to develop independence when reflecting on their learning.

At the end of each block of work, the children 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. This information helps teacher to form judgements on the child's performance in Mathematics.

Teachers administer 3 NFER test papers termly. The results of these papers are used to inform teacher judgements of individual's performance in Mathematics. Gaps can also be identified and addressed in interventions for individuals or whole class teaching.

End of term assessment data is used by the Mathematics Lead and the Senior Leadership Team to inform whole school and subject development priorities for the next term/year.

5. Planning and Resources

The use of Mathematical resources is integral to the concrete-pictorial-abstract approach and thus planned into teaching. The school has a wide variety of good quality equipment and resources both tangible and ICT based, to support teaching and learning. Standard resources such as number lines, multi-link cubes, dienes, hundred squares and counters are located within individual classrooms. These are accessible to all children who should be encouraged to be responsible for their use. Further resources (often larger items shared by the whole school) are available as part of a central supply, such as clocks, measuring tapes, coins, 3D/2D shapes protractors, dice amongst other things.

An interactive teaching tool for the purpose of modelling strategies is available to all teachers via the White Rose Maths resources. Teachers are also directed to used resources from the NCETM website to aid modelling and explaining of Mathematical concepts.

6. Organisation

The school has spiral curriculum to enable the children to return to their previous learning and build and deepen it. This approach enables to children to recall and retain their learning from previous terms. The small blocks continue to consolidate previous learning. This is so children can continually practise key skills and are able to recognise how different aspects of Maths are linked. For example, when children have completed their learning enabling them to master 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 two-digit length and width dimensions.

7. KS2 Lower KS2 (year 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 KS2 (year 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.

8. Equal Opportunities

The school is committed to ensuring the active participation and progress of all children and their learning. All children will be given equal opportunities to achieve their best possible standard, what ever their current attainment and irrespective of gender, ethnic, social or cultural background, home language or any other aspect that could affect their participation of the progress of which they are capable.

9. Inclusion

By taking a mastery approach, differentiation occurs in the support and intervention provided to different children. The National Curriculum states: 'Children who grasp concepts rapidly should be

challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.' There is little differentiation in the content taught but the questioning and scaffolding individual children receive in class as they work through problems will differ, with 'faster-graspers' challenged through more demanding problems, which deepen their knowledge of the same content before acceleration onto new content. 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. A range of inclusion strategies, are embedded in practice and teachers are aware of the special educational needs of the children in their Maths class, as well as those who have English as an additional language. Although the expectation is that the majority of children will move through the programmes of study at broadly the same pace, the 2014 National Curriculum states: 'Decisions about when to progress should always be based on the security of children's understanding and their readiness to progress to the next stage.' If a child's needs are best met by following an alternative plan, including coverage of the content from a previous year, this will be overseen by the SENDCo, in collaboration with the class teacher and with the knowledge of SLT. Specific arrangements for the provision of children with SEND will be communicated to parents and carers during SEND reviews.

10. Role of the Subject Leader

The subject leader will raise the profile of Maths at Reaside Academy through best practice. They will model lessons, as appropriate to new staff, ECT's and peers to support continued professional development. They will present certificates of achievement during weekly assemblies and involve the school in 'celebrations' of Maths through data from TTRockstars. The subject leader will support staff in providing opportunities for learning outside the classroom in Maths and will identify and organise opportunities which enable this, as appropriate.

- The subject leader will monitor progression and continuity of Maths throughout the school through lesson visits and regular monitoring of outcomes of work in Maths exercise books.

- The subject leader will ensure that all staff have access to year group plans and the relevant resources which accompany them.

- The subject leader will monitor children's progress through the analysis of whole school data. They will use this data to inform the subject development plan which will detail how standards in the subject are to be maintained and developed further.

- The subject leader will, on a regular basis, organise, audit and purchase central and class-based Maths resources.

- Through ongoing involvement in the Greenheart learning Maths Hubs, NCETM and the DfE funded 'Maths Hub' the subject leader will keep up to date on current developments in Maths education and disseminate information to colleagues.

- The subject leader will extend relationships and make contacts beyond the school.

- The subject leader will develop opportunities for parents/carers to become more involved in Maths education.

- The subject leader will ensure that all staff have access to professional development including observations of outstanding practice in the subject.

II. Parents

The involvement of families and the wider community, to help support the teaching of Mathematics, is widely encouraged. Enquiries from parents and members of the school community with specialist expertise and knowledge in relation to supporting the Mathematics curriculum are warmly welcomed. The school will actively seek to establish collaboration with parents and carers who are able to support the teaching and learning of Mathematics at Reaside. The support that parents and carers provide in supporting their children at home with their learning is recognised and valued. Parent workshops provide opportunities for the parents to have a clear insight of their child's learning which is vital when it comes to supporting them at home.