Subject – Mathematics:

School Vison and motto:

'Making Learning an Adventure'

At Holywell Village First School we have high aspirations for our children to become well-rounded and responsible future citizens. They are happy, independent and have positive self-esteem. Our children have a thirst for learning. They are curious about the world around them and are confident to 'have a go'. They are reflective learners who persevere and demonstrate good communication and social skills. They are thoughtful, caring and kind.

'We want our children to be the best they can be.'

Mathematics Curriculum Intent

Why do we teach maths?

At Holywell Village First School, we strive for our children to be successful and proficient mathematicians. Maths is a skill we use on a daily basis and is an essential part of everyday life. Therefore, mathematics forms an important part of our broad and balanced curriculum where we endeavour to ensure that children develop an enjoyment and enthusiasm for maths that will stay with them throughout their lives and empower them in future life. We believe that unlocking mathematical fluency is an essential life skill for all learners and is a pre-requisite to being able to reason and solve problems mathematically. Our aim is to develop a positive culture of deep understanding, confidence and competence in maths that produces strong, secure learning. As a school, we recognise that the key to unlocking the potential in our children is through the development of basic mathematical skills and the understanding of mathematical concepts. We therefore place great emphasis on the use of concrete resources and pictorial representations at all ages, to enable children to fully understand the concepts and principles, when presented with abstract calculations and questions.

The National Curriculum for Mathematics in England (DfE, 2014) Mathematics Programmes of Study: Key Stages 1 and 2) underpins our vision for the teaching of Mathematics and ensures that all pupils:
• become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
• reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
• can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions

Our curriculum is unique to HVFS

We believe that mathematics lessons should be fully inclusive of every child and reduce inequalities so that everyone can achieve and be successful in mathematics.

Our intent is to fulfil the requirements of the National Curriculum for mathematics but to also:

- Ensure the curriculum from Nursery to Year 4 is coherently sequenced so that all children develop their:
    - Fluency
    - Problem Solving
    - Reasoning (CHALLENGE)
- Ensure children are taught the different types of knowledge in which they can become fluent. This fluency relates to recalling, using and applying their understanding as well as fluency in explaining relationships (CHALLENGE)
- From their very first day in school, ensure children have the appropriate declarative knowledge (the 'I know that' and relates to facts and formula), procedural knowledge (the 'I know how' and relates to methods) and conditional knowledge (the 'I know when' and relates to reasoning and problem solving) by KS 2 (CONFIDENCE)
- Ensure that children are taught mathematics daily so that they can become confident mathematicians (CITIZENSHIP)
- Ensure children have opportunities to apply their mathematics learning into real life contexts and examples (CHALLENGE, CITIZENSHIP, CONFIDNECE)

Implementation

How do we teach Mathematics?

We deliver these through a Mastery Curriculum. At Holywell First School, this means we teach our curriculum in blocks to enable pupils to develop their knowledge and skills. This enables us to support all learners as the length of time provides those children who need it the time to understand the core concept of each area whilst offering opportunities for depth of understanding and creative thinking through finding connections for others.

By following the National Curriculum and NCETM curriculum, we ensure that each year we build on the previous year's learning and as a staff, we have taken time to think about the journey each child takes through our school and ensure they are ready for their next steps.

Our mathematics curriculum and lessons are effective and age appropriate. We implement mathematics in the following ways:

Progression documents such as the NCETM 'Ready to Progress' and our calculation policy identify the skills across each year group, ensuring children learn new skills every year and develop previously taught skills. They are carefully used to ensure that children are not being stretched outside their year group but rather deepened within it.

The curriculum is designed so that depth can be achieved. This allows for lots of opportunities for practice within one context so that children can master the learning intended by the curriculum

The curriculum content is organised and sequenced so that pupils can master the key foundational knowledge. It also maximises the likelihood of pupils making meaningful connections between prior learning and concepts. In order to do this, teachers will ensure that pupils have secure prerequisite knowledge before moving on to concepts and ideas that are more complex.

The different types of knowledge - declarative ('I know that' facts and formula), procedural ('I know how' relating to methods) and conditional ('I know when' relating to problem solving and reasoning) are sequenced together so that pupils become familiar with their reciprocal relationships.

To develop pupils' levels of procedural fluency, time is given within a lesson to rehearse key content in terms of number facts and procedures, as well as the conceptual understanding, which sit alongside these, such as relationships.

We have an inclusive approach to mathematics; all children are included in all sessions and taught the same mathematical concept. We aim to keep the majority of our children on the same journey with resources and questioning used to support and challenge where appropriate. We understand the conceptual journey is key for all children to deeply understand a concept and therefore, we follow the concrete, pictorial, abstract approach. When introducing a new concept we allow children time to explore this with concrete resources, selected specifically to highlight the key features of that concept. We then use pictorial images and stories alongside representations such as part-part whole models and bar models to further support understanding before moving onto the abstract mathematics and ensuring our children are fluent and proficient in each skill. There is careful consideration of the learning trajectory so that a concept is broken down into small steps, which all pupils can access.

In Key Stage 1 and 2, our lessons are carefully planned to build on previous learning with each lesson structured into small steps with opportunities for discussion to ensure children build a deep understanding of the topic. Our planning identifies these 'small steps' and breaks down the teaching sequence into small achievable steps. Where children require additional support, 'scaffolds' are used to support children further to ensure that they have secured the small step before moving on. These 'scaffolds' may be in the form of returning to concrete resources or pictorial representations. Teachers carefully select and use manipulatives to reveal and draw out the mathematical structures and relationships. These are skilfully removed when pupils no longer need them.

For children who understand a concept quicker, challenge is used to deepen and challenge learners further within the curriculum area.

Recalling core knowledge with speed and accuracy is fundamental to our mathematics curriculum. In Key Stage 1 and 2, teachers plan daily core fluency knowledge sessions (Hi5), which focus on recalling with speed and accuracy number facts, number bonds, multiplication facts and relationships and laws.

In EYFS and Key Stage 1, the teaching helps children achieve fluency with age appropriate basic numbers and facts. This runs alongside opportunities, which foster and promote mathematical thinking.

In Early Years Foundation Stage, we relate the mathematical aspects of the children's work to the Development Matters statements and the Early Learning Goals, as set out in the EYFS profile document. Mathematics development involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers; calculating simple addition and subtraction problems; and describing shapes, space, and measures. Children will develop their understanding through planned, purposeful play and through a mix of adult-led and child-initiated activity. EYFS combine planning and activity ideas from the NCETM and White Rose Maths.

Lessons in Years 1 to 4 are taught using the NCETM 'Curriculum Prioritisation Document' but also combine this with planning and resources drawn from White Rose Maths Hub.

Times tables play an important part in our maths learning, with children developing their fluency in rapid recall of tables up to 12 x 12 by the end of year 4. While the rapid recall of times tables are being developed, children are also learning how to apply and manipulate their understanding of this to reason and solve problems.

Vocabulary

Mathematics is a vocabulary-rich subject. In each medium-term plan, teachers plan vocabulary development carefully so that pupils benefit from repeated encounters with words. This ensures that pupils have the language required to access a full range of mathematical lessons and concepts.

Pupils are taught the specific meaning of terms and all adults in the classroom will use specific and precise terminology to enable children to make more careful observations and enhance their problem solving and reasoning.

Our mathematics lessons have the following structure:

Fluency Warm up

Recalling core knowledge such as number bonds, number facts and times tables with speed and accuracy is fundamental. Therefore, there is a daily Hi 5 Maths session from Years 1 to 4, which focuses on the practise of basic key skills per session. The session is quick paced and interactive. In Key Stage 1, this lasts between 15- 20 minutes and Key Stage 2 between 20 – 25 minutes. All children should be actively involved in the session and included through personalised questioning, challenge tasks and support.

Pupils in Reception, Year 1 and Year 2 undertake a daily 10 minute 'Number sense' session using the principles of the NCETM 'Mastering Number' programme which aims to develop fluency and flexibility with number facts and relationships. A key representation used in this is the Rekenrek.

Main Teaching

We follow a lesson design of teacher input, fluency activity, then application through a greater depth problem (Problem solving) and/or a captain Challenge problem (conjecturing/reasoning). Where some children are already fluent in a concept, they may begin on the greater depth or Captain Challenge problem, which allows them to reason, make connections and think mathematically. They may work on these activities with the class teacher or independently, whilst the teacher and support staff deliver specific interventions to children. Lessons are designed on the principle of 'concrete, pictorial to abstract' and where applicable, a range of manipulatives is used across the school to support children secure key concepts, and to become fluent in methods of calculation. Careful questioning is used to probe the pupil's understanding throughout a lesson and responses are expected in full sentences, using precise mathematical vocabulary.

In order to develop the children's knowledge and develop deep understanding of the concept/content being taught, they are given clear direction, step-by-step instruction, practice and feedback during the main teaching session. Instructions are broken down into small segments and draw pupils' attention to the concept.

Plenary

All lessons have a 'review and assess ' at the end of the lesson. Here pupils are asked to evaluate their own success against the success criteria/learning objective of the lesson.

Impact

By the end of Year 4 and ready to transition to middle school, we aspire that a Holywell First School mathematician will have developed a bank of efficient and accurate skills that can be used to calculate effectively. These will have been underpinned by the Concrete, Pictorial and Abstract process so children understand rather than just do, which ultimately will allow children to identify when answers do not make mathematical sense. Children will be able to apply these calculation

skills and understanding of other areas to become confident and resilient problem-solvers with the ability to reason and articulate their ideas mathematically. Due to the embedding of fact sentences, children will have the language to be able to justify, reason and explain their answers.

Assessment and Feedback

Ongoing assessment informs the teaching and learning sequence.

Formative assessment within every lesson helps teachers to identify the children who need more support to achieve the intended outcome and who are ready for greater stretch and challenge through planned questioning or additional activities.

The school has introduced the 'Small Steps Progression' document, which they have taken from the White Rose Maths Hub and NCETM curriculum Prioritisation materials and adapted it as an assessment tool for mathematics. Staff use these small steps and assess children's progress against these as they are taught. At the end of each maths unit, teachers indicate which children are not working at the expected level and working at a greater depth. This data is collected in by the SLT (Maths coordinator) and children who have not yet made the expected progress, or children who are working behind the expectations for their year group are identified.

Pupil Progress meetings are then held to review the successes of the term, and to identify next steps for those vulnerable children identified. The information from these meetings is used to plan support timetables and further CPD for staff. The data analysis is supported by lesson observations, planning and book scrutinies and small step progression monitoring which are carried out termly.

Our maths books evidence work of a high standard of which children clearly take pride; the components of the teaching sequences demonstrate good coverage of fluency, reasoning and problem solving. Our feedback and interventions support children to strive to be the best mathematicians they can be, ensuring a high proportion of children are on track or above. Our school standards are high, we moderate our books both internally and externally and children are achieving well.

Mathematics subject leader

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