



'The sky is not the limit. It is only the beginning'

Introduction

Mathematics is important in everyday life and therefore, the purpose of Mathematics at Kinderley is to develop an ability to solve problems, to reason, to think logically and to work systematically and accurately to prepare children to use maths throughout their lives. All children are challenged and encouraged to excel in Maths, using the White Rose Hub scheme as a basis. New mathematical concepts are introduced using a 'Concrete, Pictorial and Abstract' approach; enabling all children to use manipulatives to enhance their learning when discovering new mathematical topics, and allows them to have clear models and images to aid their understanding. Arithmetic and basic mathematical skills are practised daily to ensure key mathematical concepts are embedded and children can recall this information to see the links between topics in Maths.

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject (DfE, 2014).

It is vital that a positive attitude towards mathematics is encouraged amongst all of our pupils in order to foster confidence and achievement in a skill that is essential in our society. At Kinderley Primary School, we use the National Curriculum for Mathematics (2014) as the basis of our mathematics programme, teaching this through the White Rose Hub scheme of work. We are committed to ensuring that all pupils achieve confidence and competence in the key concepts of mathematics, appropriate for their age group, in order that they make progress and avoid gaps in their understanding to ensure barriers to learning are overcome. Assessment for Learning, an emphasis on reasoning and

problem solving and the development of mathematical thinking are vital parts of maths at Kinderley.

Aims and objectives

We want to teach Maths in a way that:

- delivers Maths in line with new National Curriculum guidelines
- ensures the delivery of Maths is consistent and links to real life.
- creates a lively, exciting and stimulating environment, where children like to challenge each other and staff by explaining their reasoning.
- promotes the concept that acquiring Maths knowledge and skills provides the foundation for understanding the world around the children
- develops mental strategies
- encourages children to use mathematical vocabulary to reason and explain their thinking
- allows time for partner talk in order to stimulate and develop a curiosity for Maths
- challenges children to stretch themselves and take risks in their learning allowing them to become more resilient with their problem solving skills.
- creates a sense of awe and wonder surrounding Maths
- ensures children in Key Stage 1 are secure in their understanding of number and number relationships.

Approach

Mathematics within the EYFS is developed through purposeful, play based experiences and will be represented throughout the indoor and outdoor provision. The learning will be based on pupil's interests and current themes and will focus on the expectations from Development Matters / Early Years Outcomes. Mathematical understanding can be developed through stories, songs, games, imaginative play, child initiated learning and structured teaching. As pupils progress, they will be encouraged to record their mathematical thinking in a more formal way.

We primarily use the White Rose Maths programme of study to ensure progressive and concise small step teaching for all pupils. This programme works

in line with the National Curriculum and will be used to ensure children get the learning experience that is required. Although we use White Rose Maths as our main programme, we use a range of problem solving opportunities to provide Mathematical experience tailored to their own individual and specific needs whilst ensuring every child receives high quality teaching.

Throughout lessons our teachers will ensure all relevant concrete resources are openly available for all pupils to independently select and use to reinforce and support their learning. Our class teachers will ensure out in every classroom all of the time are the relevant concrete resources required for the teaching of the strand of focus along with generic resources.

At Kinderley, we appreciate and value the importance of the classroom environment and in all classrooms our working walls read 'We are Mathematicians' and these are used to model calculations and workings, using worked examples from both the staff and the children. The boards also display the vocabulary required for the strand being taught as well as good examples of the children's reasoning and mathematical thinking, which can be displayed for all children to use. We feel this opportunity for exposure to subject specific vocabulary reinforces our pupil's learning and understanding.

We support our pupils to gain fluency of Mathematical facts with ICT resources and subscriptions for SumDog and Times Table Rockstars. This is used both in lessons and as homework tasks to be set for the children to complete at home. It is important that parents and carers are actively involved in their children's education and pupils are urged to practise their Maths facts recall at home.

Teaching staff at Kinderley Primary School attend staff meetings that regularly have a Maths focus, and which provide information on current thinking, introducing staff to new teaching methodologies and ideas. They also have support from the Local Authority Maths Advisor, who is in school half termly, monitoring the teaching of maths, imparting a wealth of knowledge, in order to upskill teachers.

Teaching and planning

Teachers use a range of teaching strategies to engage the children in maths and ensure progress is made by all children within a class; no set formula is used. A typical lesson would include:

- Both teaching input and pupil activities,

- A balance between whole class, guided grouped and independent work, (groups, pairs and individual work)
- effectively differentiated activities/objectives and appropriate challenge.

Sometimes the focus for the session is new learning, at other times pupils may be practising, to master the application of a concept they have learned earlier. The focus of the session may vary for different children depending on their learning needs.

We do not advocate a, "one size fits all" approach, and recognise that "White Rose Maths" is a starting point for maths lessons. We use pre-block assessments to identify gaps in learning for both the pupil's current year and the year previous to ensure that we are spending quality time on the most important parts of the Maths curriculum for every child. It is the teacher's detailed knowledge of the child which modifies the lesson to ensure that all children access learning at their own ability. Hence all children need to be able to work independently in lessons, as well as accessing support to move them on in their learning. We are careful not to support the same children all the time, as they too need the opportunity to explore, and approach challenges independently.

Similarly, more able children need opportunities to deepen their understanding in maths. The level of practice and consolidation should not be at too low a level, and it needs to be appropriately balanced with a deeper level of challenge. These children will need support with this to access more complex mathematical ideas.

Problem solving and reasoning should run through every lesson and be evident both in the practice and consolidation as well as in the challenge part of the lesson.

It is important that children are allowed to explore Maths and present their findings not only in a written form but also visually and verbally; to that end the school will adopt the CPA approach: concrete, pictorial, abstract. This will allow the children to experience the physical aspects of Maths before finding a way to present their findings and understandings in a visual form before relying on the abstract numbers.

Teachers endeavour to adapt learning appropriately for high attaining, middle attaining and low attaining pupils - possibly with individual work for an SEN pupil

at one end of the achievement spectrum, to individual work for a gifted pupil at the other.

Teachers carry out a formative assessment when marking each pupil's work from every lesson. For pupils who have not gained the understanding required to secure the knowledge from the lesson, a catch up will be planned in a smaller group or 1:1 to offer every pupil targeted opportunities to succeed in Maths.

Assessment

Summative assessment is carried out termly by teachers as well as formative assessment daily after every Maths lesson.

Further formative assessment using the White Rose assessment system is carried out termly and used alongside the teacher's summative assessments to make an overall assessment of a pupil's progress against the end of year National Curriculum objectives.

Our pupils complete the National assessments set out by the Department for Education which includes Statutory Assessment Tests (also known as SATs) in the Summer term of Year 2 and 6 as well as the Multiplication Times tables Check in the Summer term of Year 4. The Multiplication Times tables Check assesses the pupil's ability to recall all of their times tables up to and including the 12 times tables with 6 seconds to answer accurately. We prepare our pupils for this by completing weekly times tables tests in class from Year 1 upwards. In the Spring and Summer terms of Year 4, pupils are regularly exposed to the mixture of times tables featured in the Multiplication Times table Check on a similar system to the one in which the test is administered.

Further parental information is given by the individual class teacher to parents whose children are in the relevant year groups.

Interventions

Our aim is to make all of our pupils capable and able Mathematicians however there are times when they may need a little extra support to narrow the attainment gap. In this instance we have several intervention groups which take place based on the successful intervention FirstClass@Number in Key Stage 1 and Success@Arithmetic in Key Stage 2. We use this successful intervention as

a model and adapt it to our pupil's individual needs to accelerate the pupil's learning in line with age related expectations.

Inclusion

In line with the School's Inclusion Policy, each child will have an equal entitlement to all aspects of the Maths curriculum and to experience the full range of Maths activities. Therefore, in delivering Maths, care will be taken to ensure that a variety of learning styles are accessed and teaching methods adopted.

Intervention groups will take place both within the Maths lesson and outside; these sessions may be delivered by the teacher or teaching assistant and may involve individual or small group work, accessing both ends of the learning spectrum.