Maths

Intent

Our main aim at Byley Primary School and Nursery is for all children to enjoy mathematics and have a secure and deep understanding of fundamental mathematical concepts and procedures when they leave us. We want children to see the mathematics that surrounds them every day and enjoy developing vital life skills in this subject. At Byley Primary School and Nursery, we are committed to providing our children with a curriculum that has a clear intention and impacts positively upon their needs.

In line with the requirements of the National Curriculum for England, we intend to deliver an ambitious curriculum that gives the children the opportunity to:

- become competent in a wide range of mathematical skills, knowledge and concepts
- be able to recall and apply mathematical knowledge rapidly and accurately
- become confident and proficient with number, including showing fluency with mental and written calculations through varied and frequent practice
- be able to look for connections and patterns between numbers
- be confident and resilient to tackle increasingly complex mathematical tasks
- have the ability to apply understanding and skills to a variety of tasks
- engage in problem-solving and investigations, by working systematically and logically, using trial and improvement, making and testing conjectures, and generalising
- apply their mathematics to a range of routine word problems and non-routine problems
- able to learn both independently and in respectful collaboration with others and to communicate using mathematical language
- show a positive attitude towards mathematics, valuing the subject and approaching it with enthusiasm, using real-life contexts and appropriate cross-curricular links where possible

When teaching mathematics at Byley Primary School and Nursery, we intend to provide a curriculum, which caters for the needs of all individuals and sets them up with the necessary skills and knowledge for them to become successful when they leave us to go to secondary school and in their future adventures. We aim to prepare them for a successful working life too. We incorporate sustained levels of challenge through varied and high quality activities with a focus on fluency, reasoning and problem solving. We want all our children to develop a confidence in their own mathematical ability and to develop a love for mathematics and a curiosity for reasoning and problem solving.

Pupils are required to explore maths in depth, using mathematical vocabulary to reason and explain their work. Wide ranges of mathematical resources are used and pupils are taught to show their workings in a concrete, pictorial and abstract form wherever suitable. They are taught to describe and explain their choice of methods and develop their mathematical reasoning skills as well as justifying and proving their answers. We encourage resilience, adaptability and acceptance that 'finding things challenging' is often a necessary step in learning. Our curriculum allows children to make sense of the world around them relating mathematics to aspects of everyday life and to see that it is everywhere around us. We encourage a lifelong love of mathematics and aim for children not to have that 'I'm no good at maths' feeling.

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Implementation

At Byley we do not follow a prescribed scheme of work for mathematics, rather teachers have access to a variety of quality resources to support the planning of units of work and a series of lessons. This enables teachers to tailor their lessons to their classes' needs and to pull the most effective resources from a range materials we have access to.

In EYFS the children are following the NCETM Mastering Number Programme the content of which covers:
Subitising Cardinality, Ordinality and Counting, Composition, Comparison, Addition and Subtraction, and Number Facts. The Mastering Number input is usually the main body of directed teaching for maths for four days a week. The fifth day is used to cover other aspects of mathematics not included in Mastering Number, including shape and measures. Our Key stage one children are also taking part in the maths mastery programme, providing them with extra daily quick, sharp, numeracy sessions.

In years one to six teachers follow a mixed age planning model to suit the requirements of our classes. These plans from 'the Fist for Maths' company, are fully based on the National Curriculum, and support mixed age planning. Teachers use this 'scheme' as overview for coverage of the maths curriculum as it gives a sequenced order of topics and suggested timeframe for the teaching of maths topics. However, teachers will plan according to the class needs, addressing gaps or revisiting previous work where required so flexibility is built into our sequencing and timing plans.

We use a wide range of planning resources to support these units of work including those suggested by the 'Fist for Maths' which include the NCETM, especially the 'teaching for mastery' materials, and NRICH. Twinkl, Classroom secrets, Hamilton trust and CGP are also used in school and teachers in year groups 3-6 have access to Target maths too. The NCTEM mastery materials are used when planning every series of lessons to enable teachers to know the mastery and working at depth expectations. We also use the 'Ready to Progress' documents to support planning and assessment within each unit of work and to support the 'recovery curriculum' in maths.

Daily lessons
We usually start the daily lesson in with quick maths tasks to ensure general maths knowledge and fluency are maintained and developed; these may take many forms, for example: 'fluent in five' arithmetic, specific number bond or times tables practice or several questions about a mixture of maths topics, enabling children to revisit previous work and 'interrupting their forgetting'. While the class are solving the questions, the teachers and teaching assistants are able to support targeted children with consolidation or pre-teaching activities. Following this, the children are introduced to the 'I can' statement, which highlights the work/topic to be covered in the main lesson.

In our lessons children are taught to understand that:

1. Everyone can learn mathematics to the highest levels.
2. If you 'can't do it', you 'can't do it yet'.
3. Mistakes are valuable.
4. Questions are important.
5. Mathematics is about creativity and problem solving.
6. Mathematics is about making connections and communicating what we think.
7. Depth is much more important than speed or the size of the numbers
8. Mathematics lessons are about learning, not performing
9. It's okay to get 'stuck' and knowing what to do if you are stuck

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We implement our approach through high quality teaching delivering appropriately challenging work for all individuals. To support us, we have a range of mathematical resources in classrooms including Numicon, Base10 and counters (concrete equipment). When children have grasped a concept using concrete equipment, images and diagrams are used (pictorial) prior to moving to abstract questions to answer and solve maths without equipment or images. Teachers confidently use the language of mathematics during their lessons, appropriate to their year groups, as outlined in the calculation policy. Work is marked by the teacher, the pupil or in some cases by a peer following the school's marking policy.

EYFS provision

Early Years Foundation Stage (EYFS) children explore mathematical concepts through active exploration and their everyday play-based learning. Children are taught key concepts and develop number sense using a hands-on practical approach. EYFS practitioners provide opportunities for children to manipulate a variety of objects which supports their understanding of quantity and number. Pupils explore the 'story' of numbers to ten and the development of models and images for numbers as a solid foundation for further progress. The concrete, pictorial, abstract approach is used when teaching children key mathematical skills. Practitioners allow children time for exploration and the use of concrete objects helps to support children's mathematical understanding. Mathematics in the early years provides children with a solid foundation that will enable them to develop skills as they progress through their schooling and ensures children are ready for the National Curriculum.

Inclusion

In our maths lessons, we aim to meet the needs of all, taking into account gender, ethnicity, culture, religion, language, disability, age and social circumstances. SEN pupils may be supported by additional adults, different resources and differentiated activities. They may also complete additional activities outside of the mathematics lesson. We have high expectations of all children and strongly believe that all children are able to achieve in mathematics. Some may take longer to grasp concepts and may need careful scaffolding or extra time/support.

Subject knowledge of staff

Staff work together in school to ensure continuity between classes and take part in training opportunities and regional networking events, such as working alongside colleagues in the Middlewich School Partnership, and courses lead by the 'First for Maths team'. Throughout this year we will be working closely with the 'First for Maths' team on implementing their mixed age planning model and for our teachers to increase mathematical knowledge in new year groups.
Maths is taught across the curriculum ensuring that skills taught in these lessons are applied in other subjects. The subject leader also keeps up to date with relevant training and informs staff of developments through staff meetings. Time is given for the subject leader to spend time in classes talking to staff and children about mathematics provision to ensure continuity between classes and progression.

Resources, location, environment

Most maths lessons will take place in the child's class along with their class teacher and will be between 40 and 60 minutes long. However, some children will have the opportunity to work in groups away from the main class if needed or be targeted for intervention work at other times during the school day. Children will have the opportunity to use the outside environment to support their learning too.

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Every classroom has a Maths Working Wall which displays resources, images, vocabulary etc to support children's learning and understanding. These displays are updated regularly to reflect the current learning objectives and, where suitable, include examples of children's learning. Resources and equipment (such as number squares, counting beads, Numicon) are stored neatly and accessibly in each classroom and children should have access to these as needed. Additional equipment is stored in the centralised storage cupboards in the glass corridor.

Where is pupil's work recorded?
Maths work is mainly recorded in pupil's exercise books. Books contain evidence in the form of written calculations, written explanations, worksheets, drawings, photographs, post its, teacher notes etc. Children in Key stage 2 have a mental arithmetic folder for weekly year group 'tests.' Maths homework is sent home on a regular basis. Children in Key stage two have a published workbook for this. Teachers have 'working walls' in their classrooms and Maths is celebrated through displays around the school in in Friday's celebration assembly book which highlights pupils who are working particularly hard. Cross- curricular maths work is recorded in the relevant subject work book. EYFS pupils record their work on 'Tapestry' and in topic books. A more formal maths exercise book is used at the end of the summer term to support transition into year 1.

Health and Safety considerations
Children are taught to consider their own safety and that of others at all times. They are expected to follow the school rules at all times and be responsible for their own learning. Children have access to quality equipment including ICT. Equipment used in class is regularly checked and replaced when damaged.

Impact

A mathematical concept or skill has been mastered when a child can show it in multiple ways, using the mathematical language to explain their ideas, and can independently apply the concept to new problems in unfamiliar situations.

- Children demonstrate quick recall of facts and procedures. This includes the recollection of the times tables.
- The flexibility and fluidity to move between different contexts and representations of mathematics. The ability to recognise relationships and make connections in mathematics.
- Children show confidence in believing that they will achieve.
- Children show a high level of pride in the presentation and understanding of the work

Assessment
The main purpose of all assessment is to always ensure that we are providing excellent provision for every child so they are able to master a mathematical skill or concept. Assessment for learning is carried out throughout all lessons; teachers regularly check pupils' knowledge and understanding and adjust the lesson accordingly. Gaps in pupils' knowledge and understanding are identified early by in-class questioning and observation. They are addressed as soon as is possible through individual or small group intervention, either on the same day or the next day, which may be separate from the main mathematics lesson, to ensure all pupils are ready for the next lesson. Teachers use pre-learning and post learning assessments where needed.

Teachers mark pupils' learning after each lesson, in accordance with the school's marking and policy. Children will also mark their own work and sometimes it will be marked by a peer. Marking is an essential element in the planning and assessment cycle: it enables us to assess pupils' understanding

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and informs planning of the next lesson. It also provides pupils with feedback on their attainment in the lesson and enables any mistakes to be identified and rectified swiftly.

Through our teaching we monitor pupils' progress against expected attainment for their age, making formative assessments. We talk to the children about their maths and note any concerns they have too. By talking to children about their work informally it gives us a really good insight into how they are performing. At the end of each lesson the children have some time for self-reflection, circling their 'PIGS' and '1,2,3,4,5' or their 'smiley face'. This helps them to think about how well they have understood the lesson content which in turn helps us to plan for them in future lessons.

Teachers use summative assessments, which may be designed by the teacher themselves or a published assessment/set of questions eg. The NCTEM Mastery assessment examples, DfE Ready to progress assessment questions. Timetabled summative assessments are completed at the end of each term; these results form discussions in our termly Pupil Progress Meetings and update our school tracking. The school has recently started using 'Headstart' for maths in year groups 1-6 for this.

Helen Bebbington – September 22