Blofield Primary School

Mathematics Policy

Reviewed by: Lawrence Dibden

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Why we teach mathematics at Blofield Primary

Purpose of study
Mathematics is a creative and highly inter-connected discipline that has been developed over millennia, 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.

Aims
Blofield Primary School agrees with the core aims of the National Curriculum and believes that all children should be able to:

- 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.

Further, we would like all children to leave Blofield Primary school confident mathematicians who feel able to answer unfamiliar questions and challenging problems. This is built on a solid understanding of key arithmetic principles.

Curriculum
Foundation Stage focuses on Numerical Pattern and Number. They work towards the Early Learning Goals in these areas.
In KS1 and KS2, we follow the National Curriculum for Mathematics 2014. The EYFS and KS1 and 2 curriculum for study is attached. The National Curriculum is a statutory requirement for LEA schools. Further, following the National Curriculum ensures that children have been taught the key concepts of mathematics which enables them to progress further and alongside their peers in high school.

How we teach mathematics at Blofield Primary

Planning
At Blofield Primary, we use the White Rose scheme of learning across all year groups. The planning of White Rose includes a long-term overview of the areas taught, medium-term plans listing the specific mathematical concepts and step-by-step guides which provide detailed examples of teaching for the topics to study (see sample appendix of White Rose planning). Planning should be for the benefit of the children and White Rose allows teachers the ability to adapt and change their plans to be suited to the children.

Why White Rose is beneficial for children:

- It embeds learning with equal weight on concrete-pictorial-abstract (c-p-a) methods of learning so all children are able to access the content.



- It focuses on the key principles of the National Curriculum being fluency, reasoning mathematically and solving problems.
- It provides a flexible framework so planning can be based around the needs of the children and not arbitrarily moving onto the next unit so not to fall behind the scheme.
- As it is taught across all groups, National Curriculum coverage is ensured so there are no gaps in children's learning.
- The content of White Rose is aimed at achieving a high level of knowledge and as such the content is rigorous and aims to a high standard.

Why White Rose is beneficial for staff:

- The c-p-a method ensures that consistency across year groups is achieved and taught in every class.
- The step-by-step guides are topics to be taught and not allocated specific amounts of time so planning remains autonomous and allows for teaching to be planned based on prior assessment.
- The bar model and c-p-a will be more familiar to new members of staff and those who have recently completed teacher (e.g. PGCE/SCITT) training which will mean that they can adapt to the school quicker and the children will therefore benefit.

What a mathematics lesson at Blofield will include

- Daily Calculation. At the beginning of a mathematics lesson, the children complete a task called Daily Calculation. This is 10 questions in KS2 and 5 questions in KS1 that the children answer. The questions are a mixture of arithmetic calculations, open-ended reasoning problems and also prior learning. The intention is to embed prior learning and develop the children's retrieval skills to they then re-remember their learning deeper through repeated practice.
- Pre-teach. For some children, pre-teach is taught instead of Daily Calculation. Using prior assessment on those who may find the Learning Objective difficult to achieve, the teacher will pre-teach children the main objective of the lesson before the main teaching input. This allows children who may not have understood the lesson otherwise to have targeted intervention for them to achieve it and not miss any learning time within the lesson.
- Adaptations. The main method of adaptation is through 'Chilli Challenges' which adapts the work set and is based on the prior knowledge of teachers. Mild is work below the expected standard for the year group, medium is at the expected standard and hot is for greater depth questioning. When modeling to the class, examples by the teacher are pitched at medium challenge as a gauge for the class. We encourage children to develop strategies of independence and to choose their own challenges (although teacher assessment will be used if children do not choose appropriately).
- Resources. Resources are readily available and using a wide range of resources is an example of good teaching practice as well as being essential to the c-p-a cycle. Children are taught with a variety of resources including Numicon, Base 10, Cuisenaire rods, bead strings, number lines/ tracks and counters depending on the topic. Every class has their own resource set (shared between each pair) which includes dice, playing cards, bead strings and number cards. The shared resources are in the maths area in the main corridor.
- Post-teach. Children who have not achieve the learning objective to have a quick, targeted intervention that day so they do not miss further learning of the objective.



How and why we assess and monitor children's progress

Assessment
Through formative and summative assessment, teachers are able to identify next steps and those children who need further support. It also enables teachers to accelerate learning by providing opportunities for pupils to deepen their understanding through challenge. Marking and feedback in books enables misconceptions to be addressed. The orange highlighter is used to show any misconceptions and children edit and respond with a purple pen. Achieved learning objectives are highlighted in green. (See Marking and Feedback Policy). Formative assessment is ongoing throughout the lesson and includes Daily Calculations, pre and post-teaching and use of resources.

Summative judgments are made half-termly and recorded on the Pupil Asset system. These judgments are used to track pupil progress and teachers are responsible for, in consultation with the mathematics subject leader and SENDCO, ensuring that measures are put in place for any children making less than expected progress.
Teacher assessment is backed up by end of unit testing in Key Stage 1 and 2 using the White Rose assessments. Summative assessments are used to measure progress of children and to identify areas of development.

Monitoring
The provision of mathematics throughout the school is monitored by the Headteacher, Senior Leadership Team and mathematics subject leader through lesson observation, pupil progress meetings, scrutiny of children's books, learning walks, and the analysis of test results and teacher assessments. Feedback is given to staff and suggestions are given to cater for children's needs and extend learning. A mathematics action plan is produced yearly and regularly adapted with key areas for development identified both in-line with the SIDP and also as a response to the progress of children and quality of teaching. Mathematics is also monitored by the Governing body through termly meetings between the mathematics governor and subject leader.

Responsibilities
Mathematics teaching staff are responsible for:

- Using the White Rose planning scheme to plan lessons in accordance with the National Curriculum and mathematics policy objectives.
- Using ongoing formative and summative assessment to guide future planning and record children's progress in-line with the marking and feedback and assessment policy.
- Attending any relevant INSET or staff meetings regarding the subject for professional development.
- Attending Pupil Progress meetings with the subject lead and discussing attainment and progress of pupils.
- Promoting a high level of challenge and ensuring that lessons are differentiated appropriately.
- Understanding and accurately using the methods taught, emphasising precise language and promoting rigorous and challenging work.

Mathematics subject lead is responsible for:

- Developing and reviewing the school's mathematics policy.
- Creating action plans for the subject and identifying areas of development.
- Monitoring the summative assessments made by staff.



- Conducting regular observations and learning walks, providing feedback and areas of development.
- Using book looks to ensure that content is relevant, challenging and taught accurately.
- Partaking in regular professional development to maintain and share best practice.
- Celebrating mathematics in school environment and website.

How mathematics is promoted outside of the lessons

Mathematics should not be seen as a discreet lesson and is incorporated through a variety of ways including:

- The on-line multiplication table resource Times Tables Rockstars has been purchased and children are able to become fluent in their multiplication table outside the classroom by practising at home.
- Propellor boards are also used to promote fluency at arithmetic.
- Blofield provides children with a stimulating and visual learning environment. Each classroom has a mathematics working wall to show current concepts the class are working on and displays key mathematical vocabulary.
- The Blofield website includes regular updates of mathematical work that the children have produced on the class pages as well as a mathematics section on the website with relevant updates and information.
- Cross-curricular links are embedded and teachers provide opportunities to practise and develop mathematics throughout the Blofield curriculum. Examples include: spreadsheet formulae, graph work and coding in computing, chronology and timelines in history, interpretation and recording of experimental results in science, map co-ordinates and scales in geography and estimation and accurate measuring in technology.

Equal Opportunities
All children should be presented with the opportunity to experience success and enjoyment in mathematics regardless of race, ethnicity, gender, ability and disability. Blofield Primary School welcomes and values all people and caters for everyone to be an active participate in all aspects of school life.

Linked Policies
Assessment Policy, Teaching and Learning Policy, Marking and Feedback policy

Appendices
White Rose calculation guide
White Rose planning example
2014 National Curriculum
EYFS Framework
Daily Calculation planning example

