



Arley Primary School



Numeracy Policy

Subject Leader: Mr J. Elmer

Definition

Numeracy is a life skill. It is a proficiency that is developed not just in Mathematics but also across the whole curriculum. Numeracy involves learners having the confidence and competence to use numbers and measures. It requires an understanding of the number system, recalling Mathematical techniques and an ability to solve problems in a variety of contexts. A practical understanding of graphs, charts, tables and diagrams is an important part of numeracy.

We believe that every child can become a numerate adult - with skillful teaching in school and encouragement at home. (Mathematics made to measure, Ofsted 2012)

At Arley Primary, we are committed to developing the numeracy skills of our learners, in the belief that it will support their learning, enabling them to access the whole curriculum and, in turn, raise standards for all.

It is important to recognise that **all teachers** are teachers of **numeracy**. It is the key for academic success and the long-term sustainable improvement in pupil attainment.

National Curriculum Aims

The national curriculum for mathematics aims to ensure 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

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

The purpose of Mathematics in our school is to develop:

- positive attitudes towards the subject and awareness of the relevance of mathematics in the real world
- competence and confidence in using and applying mathematical knowledge, concepts and skills
- an ability to solve problems, to reason, to think logically and to work systematically and accurately
- initiative and motivation to work both independently and in cooperation with others
- confident communication of maths where pupils ask and answer questions, openly share work and learn from mistakes
- an ability to use and apply mathematics across the curriculum and in real life
- an understanding of mathematics through a process of enquiry and investigation
- We aim to provide a stimulating and exciting learning environment that takes account of different learning styles and uses appropriate resources to maximise teaching & learning.

Strategies for ensuring progress against these aims

- Teachers in all subjects have a responsibility for identifying aspects of their schemes of work that contribute to raising standards of Numeracy and highlighting these aspects, in their planning and making them explicit to learners.
- All staff should encourage and promote the use of reasoning and problem solving.
- Raise the profile of Mathematics throughout the school promoting the use of numbers and measures whenever possible.
- Learners identified as gifted and talented will be provided with opportunities to extend and develop their understanding.
- Learners will be assessed to identify low levels of Numeracy these pupils will then take part in an intervention program to raise standards.
- Teachers use the 'Maths Mastery' approach to teaching and learning.
Mastering maths means pupils of all ages acquiring a deep, long-term, secure and adaptable understanding of the subject. The phrase 'teaching for mastery' describes the elements of classroom practice and school organisation that combine to give pupils the best chances of mastering maths. Achieving mastery means acquiring a solid enough understanding of the maths

that's been taught to enable pupils to move on to more advanced material. Mastery relies on the following 5 big ideas:

Coherence

Lessons are broken down into small connected steps that gradually unfold the concept, providing access for all children and leading to a generalisation of the concept and the ability to apply the concept to a range of contexts.

Representation and Structure

Representations used in lessons expose the mathematical structure being taught, the aim being that students can do the maths without recourse to the representation

Mathematical Thinking

If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the student: thought about, reasoned with and discussed with others

Fluency

Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics

Variation

Variation is twofold. It is firstly about how the teacher represents the concept being taught, often in more than one way, to draw attention to critical aspects, and to develop deep and holistic understanding. It is also about the sequencing of the episodes, activities and exercises used within a lesson and follow up practice, paying attention to what is kept the same and what changes, to connect the mathematics and draw attention to mathematical relationships and structure.

All Staff

- Adopt a consistent approach to teaching numeracy skills in accordance with the calculation policy including using the CPA approach (Concrete, Pictorial, Abstract).
- Be familiar with and use strategies to equip students with numeracy skills for life.
- Indicate in schemes of work where numeracy skills are taught.

Teachers of Mathematics

- Encourage the use of mental work in the classroom and frequently ask learners to explain their answers. Providing opportunities for learners to discuss enabling them to share and compare ideas.
- Question learners on strategies undertaken and promote the use of problems solving. Discuss efficiency of calculations encouraging learners to develop their own methods.
- Regularly ask learners to consider 'rough' answers and invite them to estimate using these to provide a suitable check for their answers.
- Encourage the learning of facts and skills providing learners with opportunities to practice times tables.
- Use diagrams and equipment to aid understanding when possible.
- Use Mathematical words often to familiarise learners with their meanings and to develop their understanding.
- Support and encourage the use of the Numeracy policy throughout.

Mathematics curriculum planning

Mathematics is a core subject in the National Curriculum and we use the DfE National Curriculum for England 2014 as the basis for implementing the statutory requirements of the programme of study for mathematics.

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Long Term Planning

The National Curriculum for Mathematics 2014, Development Matters and the Early Learning Goals (Number, Space, Shape & Measure) provide the long term planning for Mathematics taught in the school.

Medium Term Planning

All years use the White Rose Maths Hub scheme of learning as their medium term planning documents.

Short Term Planning

EYFS planning is based on the medium/long term plans and delivered as appropriate to individual children and small groups with thought to where the children are now and what steps they need to take next.

Years 1-6 are planned using a common planning format and are monitored at intervals by the subject leader.

Planning must include:

- ✓ main lesson objectives and differentiated outcomes for all ability groups.
- ✓ All vulnerable groups identified and appropriate support given.
- ✓ Evidence where 'Ready to Progress' criteria are being covered
- ✓ Opportunities and examples of reasoning should also be evident on STPs.
- ✓ Specific reference to which times tables are being taught in TTRS
- ✓ Specific reference to which 'Fluent in Five' sessions are being used i.e. which week and day.

These plans are kept visible in the classroom in case of supply cover and must be uploaded to the staff documents section on the WeLearn portal so the subject leader can access and monitor planning.

It is the class teacher who completes the weekly plans for the teaching of mathematics. The class teacher keeps these individual plans, and the class teacher and subject leader can discuss these on an informal basis.

All classes have a daily mathematics lesson where possible. In key stage one lessons are 45-60 minutes and in key stage two at least 60 minutes.

Teachers of the EYFS ensure the children learn through a mixture of adult led activities and child initiated activities both inside and outside of the classroom. Mathematics is taught through an integrated approach.

Special educational needs & disabilities (SEND) Daily mathematics lessons are inclusive to pupils with special educational needs and disabilities. Where required, children's IEP's incorporate suitable objectives from the National Curriculum for Mathematics or development Matters and teachers keep these in mind when planning work. These targets may be worked upon within the lesson as well as on a 1:1 basis outside the mathematics lesson. Maths focused intervention in school helps children with gaps in their learning and mathematical understanding. These are delivered by trained support staff and overseen by the SENCO and/or the class teacher.

Within the daily mathematics lesson teachers have a responsibility to not only provide differentiated activities to support children with SEND but also activities that provide sufficient

challenge for children who are high achievers. It is the teachers' responsibility to ensure that all children are challenged at a level appropriate to their ability.

Contribution of mathematics to teaching in other curriculum areas

English

Mathematics contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. For example, we encourage children to read and interpret problems in order to identify the mathematics involved. The children explain and present their work to others during plenary sessions.

Younger children enjoy stories and rhyme that rely on counting and sequencing. Older children encounter mathematical vocabulary, graphs and charts when using non-fiction texts.

Science

During science lessons, children are able to use and apply their data handling skills when creating tables and graphs of scientific measurements. Whole class discussion of data also highlights the importance of clear recording of information. Children are also able to use a wide range of measuring devices in a real-life context. Children are required to read the scales on Newton meters, measuring cylinders, weighing scales and a variety of other instruments.

Computing

Children use and apply mathematics in a variety of ways when solving problems using ICT. Younger children use ICT to communicate results with appropriate mathematical symbols. Older children use it to produce graphs and tables when explaining their results or when creating repeating patterns, such as tessellations. When working on control, children use standard and non-standard measures for distance and angle. They use simulations to identify patterns and relationships. From Autumn 2015 pupils will be encouraged to use a web based program, MyMaths, to further their learning in school and at home. Teachers will also use this programme to provide stimulating and pitch appropriate resources for teaching.

Personal, social and health education (PSHE) and citizenship

Mathematics contributes to the teaching of personal, social and health education and citizenship. The work that children do outside their normal lessons encourages independent study and helps them to become increasingly responsible for their own learning. The planned activities that children do within the classroom encourage them to work together and respect each other's views. We present older children with real-life situations in their work on the spending of money.

Spiritual, moral, social and cultural development

The teaching of mathematics supports the social development of our children through the way we expect them to work with each other in lessons. We group children so that they work together, and we give them the chance to discuss their ideas and results. The study of famous mathematicians around the world contributes to the cultural development of our children.

Marking

The main purpose of our marking policy is to ensure that as children progress through the school they benefit from constructive guidance and next step questioning to challenge and consolidate their learning. Each age phase has a clear marking scheme, which is shared with the children verbally. (See Whole School Marking Policy for more information)

Assessment

Short Term assessment

Assessment is regarded as an integral part of teaching and learning and is a continuous process. It is the responsibility of the class teacher to assess all pupils in their class. This is mainly achieved through mini-plenaries, questioning, marking, TA feedback and pupil self-assessment. The use of 'Red Pen Questions' to provide the teacher with 'not at the point of teaching' feedback is a mandatory form of assessment.

Medium Term assessment

White Rose End of Unit Maths Assessments should be used to help inform teacher assessment teachers are required to use banded ITAF assessment documents which are then used to update 'Target Tracker' to record pupils' attainment against national standards and their personal progress within school.

Long Term Assessment

Y2 and Y6 complete the national tests (SATs) in May. Years 3, 4 and 5 complete NTS Termly assessments which inform teacher summative judgements in the summer term. Interventions will be identified from the 'Shine' intervention tool and completed before moving on to the next phase of learning.

This evidence will be monitored by the mathematics coordinator, assessment coordinator and other members of SLT and will follow the children through the school so short term as well as long term progress is evidenced and tracked.



Standardised SATs-style termly progress tests to measure and predict progress against the national curriculum.

Resources

Resources are stored centrally in the learning street for all pupils and staff to use. E.g. 2 sided counters, 10 frames, Base 10, etc

'Times Tables Rock Stars' online resource available to all staff and pupils and used in regular weekly sessions to promote the fluency and rapid recall of multiplication and division facts.

'Fluent in 5' resources available to all staff on the 'Shared Area' of the school network to promote fluency in mental and written calculation skills.

White Rose materials are available to all staff and should be used to support daily classroom lessons.

'Deepening Understanding' materials (in association with Nrich - an innovative collaboration between the Faculties of Mathematics and Education at the University of Cambridge which focuses on problem solving and on creating opportunities for students to learn mathematics through exploration and discussion.) are used to support the teaching of the RtP criteria and supplement WR materials.

Role of the Maths Subject Leader

- ✓ To lead in the development of maths throughout the school.
- ✓ To monitor the planning, teaching and learning of mathematics throughout the school.
- ✓ To help raise standards in maths.
- ✓ To provide teachers with support in the teaching of mathematics.
- ✓ To provide staff with CPD opportunities in relation to maths within the confines of the budget and the School Improvement Plan
- ✓ To monitor and maintain high quality resources.
- ✓ To keep up to date with new developments in the area of mathematics

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Signature of Chair of Governors	
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