



Learning, growing, achieving together

An Active Learning Trust Academy

Mathematics Policy

December 2021

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Next Review Date:	December 2023
Version No:	2.0
Ratified by:	Isle of Ely Primary School Local Governing Body
Date Ratified:	14.12.21
Signed :	
Review Timetable:	Bi-annual Review
Review:	The document should be updated bi-annually after ratification or earlier if there is any new local or national guidance, changes in process or legislation.
Purpose of Document:	To comply with legislation & guidance including: National Curriculum (2014)
Links to other policies	<ul style="list-style-type: none"> • Calculation Policy • Assessment Policy • Marking Policy • SEND Policy • Equality Policy
Impact on; Safeguarding Equality & Diversity SEND	<p>Safeguarding: The school will establish and maintain an environment where children feel safe, including in a digital context, and are encouraged to talk and are listened to.</p> <p>E&D: We aim to create a supportive and inclusive environment in which all individuals are able to make best use of their skills.</p> <p>SEND: [We] provide a safe... environment where every member of our community is valued and respected... irrespective of individual differences within the protected categories of the Equality Act of 2010.</p>
Implementation:	The policy can be accessed via the Staff Share and through any mandatory updates.
Dissemination:	The policy will be available to all staff, teaching and non-teaching, and to the wider public via the website.

The Active Learning Trust

Curriculum Statement

Intent

The 2014 National Curriculum for Mathematics aims to ensure that all children:

- Become fluent in the fundamentals of Mathematics
- Are able to reason mathematically
- Can solve problems by applying their Mathematics.

At Isle of Ely Primary School we aim to ensure our Mathematics curriculum is fully inclusive of every child, empowering each one to enjoy and experience success in the subject in order to develop a positive and confident attitude towards mathematics.

Our Mathematics curriculum seeks to ensure that every child becomes confidently numerate as they progress through school. Lesson sequences are planned in 'small steps' so that knowledge is taught in relation to all of our children's cognitive loads and is built cumulatively over time. Time is spent ensuring children understand and develop the correct mathematical vocabulary. This combination enables our children to develop logical thinking in order to solve problems and record in a systematic way; use maths to interpret, predict, explain and solve problems practically and develop skills to explain their thinking or strategies they've used and be able to reason mathematically.

We support children to recognise the importance of mathematics in the wider world and use and apply their mathematical ability by making appropriate choices in real-life situations. In turn, children develop their ability to work both independently and collaboratively preparing them for adult life.

We aim to inspire children to be ambitious with their learning and appreciate the beauty and power of mathematics.

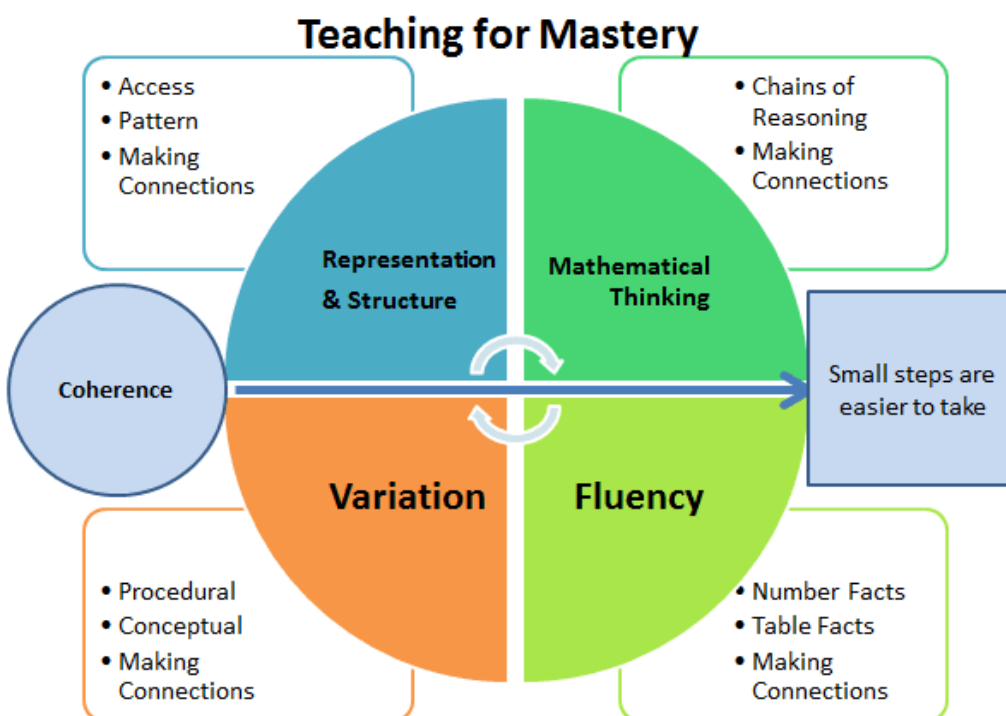
Implementation

The content and principles underpinning the 2014 Mathematics curriculum and the Maths curriculum at Isle of Ely Primary School reflect those found in high-performing education systems internationally, particularly those of east and south-east Asian countries such as Singapore, Japan, South Korea and China. These principles and features characterise this approach and convey how our curriculum is implemented:

- Teachers reinforce an expectation that all children are capable of achieving high standards in Mathematics.
- The large majority of children progress through the curriculum content at the same pace. Differentiation is achieved by emphasising deep knowledge and through individual support and intervention.
- Teaching is underpinned by methodical curriculum design and supported by carefully crafted lessons and resources to foster deep conceptual and procedural knowledge.
- Practice and consolidation play a central role. Carefully designed variation within this builds fluency and understanding of underlying mathematical concepts.
- Teachers use precise questioning in class to test conceptual and procedural knowledge and assess children regularly to identify those requiring intervention, so that all children keep up.

To ensure whole consistency and progression, the school uses the DfE approved 'Power Maths scheme. This is fully aligned with the White Rose Maths Hub scheme. This ensures that there is a detailed, structured curriculum mapped out across all phases, ensuring continuity and supporting transition. The curriculum is designed in relatively small carefully sequenced steps, which must each be mastered before pupils move to the next stage. Fundamental skills and knowledge are secured first. This often entails focusing on curriculum content in considerable depth at early stages.

Our maths mastery curriculum is underpinned by the five big ideas as illustrated below:



Teaching and Learning

A typical lesson using Power Maths lasts approximately 1 hour. Maths is taught daily during the morning. Children begin with a short 'Power Up' activity which supports fluency in and recall of number facts. Following this, the main lesson begins with a 'Discover' task in which a contextual problem is shared for the children to discuss in partners. This helps promote discussion and reasoning and ensures that mathematical ideas are introduced in a logical way to support conceptual understanding. In KS1 and when a new concept is introduced in KS2 these problems are almost always presented with concrete manipulatives for children to use. Teachers use careful questions to draw out children's discussions and their reasoning and the children learn from misconceptions through whole class reasoning. The teacher leads children through strategies to solve the problem during the 'Share' part of the lesson. Following this, the children are presented with varied similar problems which they might discuss with a partner or within a small group. At this point, scaffolding is carefully reduced to prepare children for independent practice. This is the 'Think together' part of the lesson and the children might record some of their working out in their maths books or on a mini whiteboard. The teacher uses this part of the lesson to address any initial errors and confirm the different methods and strategies that can be used. The children are then shown a 'challenge' which promotes a greater depth of thinking. The class then progress to the 'Practice' part of the lesson, which is designed to be completed independently. This practice uses conceptual and procedural variation to build fluency and develop greater understanding of underlying mathematical concepts. A challenge question and links to other areas of maths encourages children to take their understanding to a greater level of depth. The final part of the lesson sequence is a 'reflect' task. This is an opportunity for children to review, reason and reflect on learning and enables the teacher to gauge their depth of understanding.

In KS1 and KS2, children record their work into their own Power Maths Practice book. Teachers mark outcomes of work in the practice books and assess whether children have achieved the small step taught in that lesson in line with the school's marking and feedback policy. Where appropriate, children will record their responses to the 'think together' part of the lesson in their maths books. Strengthen and deepen activities and any same day interventions or next steps children have been given as a result of teacher marking to support, consolidate or extend learning are also recorded in the children's own maths books. This provides further evidence of differentiated learning.

EYFS

Children in Nursery have a short daily Maths teaching session, during which time they begin to develop their understanding of simple mathematical concepts such as counting to 20, maintaining 1 to 1 correspondence, simple addition and subtraction facts, to recognise and describe simple 2d and 3d shapes. Children are taught these concepts using physical resources, pictorial resources, songs, games and role-play. There is no focus activity linked to these sessions. In Reception, the Power Maths scheme for EYFS is followed which follows the same structure as KS1 and KS2 but over a longer period of time. For example, children might do the 'discover' and 'share' aspect one day and the 'practise' aspect the next. Children are encouraged to record their learning practically and in their maths journals. In both Nursery and Reception, the independent activities at the maths table link to the focus for the week. For example, if the focus for the week is addition, then activities on the Maths table will often link to this. In addition to these planned independent activities, children also have the opportunity to self-select Maths resources to consolidate their learning during child initiated activities. We recognise the importance of play-based learning and therefore encourage children to develop their understanding during their play. Such opportunities are

Isle of Ely Primary School Mathematics Policy	Date
Version: 2.0	Page 4 of 7

provided in both the inside and outside environment. Regular observations and assessments help to ensure that children that need additional intervention to consolidate their mathematical understanding are identified and supported by appropriate interventions.

Curriculum Organisation and Planning

Mathematical topics are taught in blocks, to enable the achievement of 'mastery' over time. Each lesson phase provides the means to achieve greater depth, with more able children being offered rich and sophisticated problems, as well as exploratory, investigative tasks, within the lesson as appropriate. There are five dedicated maths sessions per week. As the school follows the Power Maths scheme, teachers follow the planning set out in the teacher guides. However, to ensure that planning is adapted to suit the needs of individual classes, teachers complete a maths planning proforma each week with notes about which resources they will use for different parts of the lesson, how they plan to adapt any activities for children, questions to support/consolidate/extend and any next step questions to use when marking. Teachers should ensure planning is saved in their year group folder on the server before the end of Friday each week with the following week's plans.

As well as daily maths lessons, teachers should also practise key number facts such as number bonds and times tables throughout the day e.g. when lining up for lunch or as an early morning activity. Teachers can also use the White Rose 'Flashback Four' questions to revise previously taught concepts. Mathematical skills should also be applied in other areas of the curriculum.

Assessment

Formative Assessment:

Children receive effective feedback through teacher assessment, both verbally and through written feedback in line with the school's marking and feedback policy. Formative assessment is an ongoing process which teachers are responsible for within their class. Plans should be adapted as needed as a result of ongoing formative assessment. At the end of each blocked unit of work, the children complete a short end of unit check. This consists of varied questions and an opportunity to demonstrate greater depth. There is a subsequent related task which allows for more open ended outcomes to give further indication of the depth of each child's understanding. The outcome of this mini assessment is in the children's maths books. Marking and verbal feedback ensure that gaps in understanding can be addressed before the next unit is taught. For children who can achieve greater depth there are deepen activities for each unit and for children who are not meeting expected standard for each unit there are strengthen activities.

Summative Assessment:

At Isle of Ely Primary School we use PiXL tests and Target Tracker to assess the children against age related expectations. Teachers administer a termly PiXL arithmetic paper and reasoning and problem solving paper. The results of these papers and teacher's tracking on Target Tracker are used to identify children's ongoing target areas, which are communicated to the children, as well as to parents and carers at Parents Evening. They are also used to inform the whole school tracking of attainment and progress for each child and compared against data nationally. This is used to assess proficiency against the yearly objectives. The results of this are compared with the outcome of the previous year's assessment to verify the extent to which attainment gaps for individuals and identified groups of learners are being closed. This data will inform whole school and subject development priorities for the next school year.

Isle of Ely Primary School Mathematics Policy	Date
Version: 2.0	Page 5 of 7

Resources and the Learning Environment

As one of the five big ideas, concrete and pictorial representations are integral to the maths mastery approach and are carefully planned to help build procedural and conceptual knowledge together. The school has a wide variety of good quality equipment and resources, both tangible and ICT based, to support our teaching and learning. These resources are used by our teachers and children in a number of ways including:

- Demonstrating or modelling an idea, an operation or method of calculation.
- Enabling children to build deep structural knowledge and make connections in order to ensure what is learnt is remembered and sustained over time.
- Enabling children to use a calculation strategy or method that they couldn't do without help, by using any of the above or other resources as required.

Standard resources, such as number lines, multi-link cubes, dienes, hundred squares and counters are located within individual classrooms. There is an essential resource list for each year group and teachers should take responsibility to ensure they have these resources in their classrooms. Resources within individual classes are easily accessible to all children who should be encouraged to be responsible for their use. Further resources (often larger items shared by the whole school) are located in the small library cupboard. An interactive teaching tool for the purpose of modelling strategies is available to all teachers as part of the Power Maths scheme. Resources to support teachers' own professional development and understanding of new approaches as part of a mastery approach are available on the Power Maths 'ActiveLearn' platform. As well as overviews of learning, these include short videos which demonstrate new methods to ensure accuracy. High quality textbooks and practice books, approved by the DfE, as part of the national approach to teaching for mastery are used in each year group and a digital version of the Power Maths textbooks allows these to be shared with the class, during the main teaching. Teachers are encouraged to use the school playgrounds as an outdoor classroom when possible, for example, when teaching length, area or perimeter.

Working walls should be used to facilitate learning and provide support for children. Key vocabulary for the unit should be displayed and referred to; models of any methods used should be displayed as a guide for children alongside pictorial representations. Key resources children will find useful can also be displayed. Working walls should be added to as the unit is taught with good examples for children to aspire to clearly displayed.

Inclusion

The daily mathematics lessons are inclusive to all pupils including those with special educational needs. Taking a mastery approach, differentiation occurs in the support and intervention provided to different children, not in the topics taught, particularly at earlier stages. The National Curriculum states: 'Children who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.' There is little differentiation in the content taught but the questioning and scaffolding individual children receive in class as they work through problems will differ, with higher attainers challenged through more demanding problems, which deepen their knowledge of the same content before acceleration onto new content. Children's difficulties and misconceptions are identified through immediate formative assessment and addressed with rapid intervention – commonly through individual or small group support later the same day. A range of inclusion strategies, as listed in the school's inclusion policy, are embedded in practice and teachers are aware of the special educational needs of the children in their class, as well as those who have

Isle of Ely Primary School Mathematics Policy	Date
Version: 2.0	Page 6 of 7

English as an additional language. Although the expectation is that the majority of children will move through the programmes of study at broadly the same pace, the 2014 National Curriculum states: ‘Decisions about when to progress should always be based on the security of children’s understanding and their readiness to progress to the next stage.’ If a child’s needs are best met by following an alternative plan, including coverage of the content from a previous year, this will be overseen by the SENDCo, in collaboration with the class teacher. Where required, children’s One Page Profiles incorporate suitable objectives from the New National Curriculum for Mathematics or Development Matters and teachers keep these objectives 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 programmes are available in school to help children with gaps in their learning and mathematical understanding. These are delivered on a 1:1 basis or in small groups by trained support staff and overseen by the class teacher and SENDCo. Specific arrangements for the provision of children with SEND will be communicated to parents and carers during SEND reviews.

Evaluation and Monitoring

Teachers are responsible for the standard of maths teaching and learning within their class. The Maths Lead is responsible for monitoring the standards of maths teaching and learning across the school. Monitoring can take the form of lesson observations, book looks, pupil perceptions and learning walks. Any monitoring is undertaken in line with the school’s development plan. The Maths Lead has responsibility for keeping up to date with curriculum changes, current research and developments within maths education, supporting colleagues with developing their maths teaching and strategic planning of developing maths across the school. The Maths Lead should also extend relationships and make contacts beyond the school.

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Policy to be reviewed on: December 2023

Isle of Ely Primary School Mathematics Policy	Date
Version: 2.0	Page 7 of 7