Newquay Primary Academy

Mathematics Policy

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Purpose of Policy

The purpose of this policy is to provide a secure framework for all staff in the teaching and learning of mathematics.

Policy Statement

Intent

Mathematics is a creative and highly interconnected 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. (**National curriculum in England: mathematics programmes of study -** Updated 16 July 2014)

The whole point of learning maths is to be able to solve problems. Learning rules and facts is of course important, but they are the tools with which we learn to do maths fluently, they aren't maths itself. It's similar to the way that learning scales is an important part of learning to playing music fluently, but there's far more to making music than playing scales.

Our target is that all children can and will achieve mastery of the maths curriculum.

SEND

Pupils with special educational needs may receive additional support through:

- Additional teaching time both in and outside the classroom
- Carefully targeted and planned teaching
- Additional practice provided by non-teaching assistants.

Equal opportunities

Teachers ensure that all pupils have equal access to the full mathematics curriculum.

Implementation

In order to achieve this, we have two strands to our daily maths

- **Big Maths** is a teaching programme we have implemented at Newquay Junior Academy to ensure children have a solid foundation of Basic Skills. Ben Harding, the creator of Big Maths, embraced the challenge of creating a framework of progression for the primary maths curriculum. Ben's research in Cognitive Load Theory and brain development (how children learn) informed the production of a carefully sequenced maths learning journey.

  Problem solving and word problems cannot be confidently attempted until children can manipulate and understand how numbers work.

  Big Maths is taught through daily 'CLIC'. This stands for 'Counting', 'Learn Its', 'It's Nothing New' and 'Calculation'. Sessions last for approximately 20 minutes to focus solely on these skills in a fun and engaging way. They are taught in addition to the maths hour.

  Once a week the children complete a CLIC challenge which covers the steps that have been learnt during that week. This allows us to identify any learning gaps.

- Our **daily maths lesson** has 4 elements**: teach, learn, challenge,** and **understand**. The first element is where we **teach** the main objective for the lesson i.e. what do we want the children to master by the end of the lesson using a variety of concepts, images, conjectures, missing numbers and active arguments around the key skill we are focusing on. Secondly, the children will attempt a task which is differentiated to **learn** and consolidate the teaching part of the lesson and may include further examples of those in the previous part of the lesson. After the children have attempted a task, the teacher will move their learning forwards again by providing a **challenge** at a deeper level or addressing any misconceptions the children may have. The final part of the lesson is where we ensure that the children **understand** the objective covered by discussing what learning has taken place either orally or in writing. Our medium term plans demonstrate how children are guided through a natural chronology of learning, supporting the Cognitive Load Theory.

Impact

Newquay Primary Academy aims to**:**

- Ensure all pupils become fluent in the fundamentals of mathematics
- Ensure all pupils reason mathematically
- Ensure all pupils can solve problems by applying their mathematics to a variety of problems
- Ensure all pupils develop a thirst and enjoyment for mathematics
- Ensure all pupils are confident to approach new mathematical challenges throughout school life

Ensure all pupils become fluent in the fundamentals of mathematics

Fluency consists of 3 elements:

Efficiency – An efficient strategy is one that the child can carry out easily, keeping track of sub-problems and making use of intermediate results to solve the problem.

Accuracy – Accuracy entails careful recording, knowledge of number facts and other important number relationships. Pupils need to develop confidence and competence with numbers and the number system.

Flexibility – Flexibility requires the knowledge of more than one approach to solving a particular kind of question or problem. Pupils need to be flexible in order to choose the appropriate strategy for the numbers involved, and also be able to use one method to solve a problem and another method to check results.

Ensure all pupils reason mathematically

Reasoning is fundamental to knowing and doing mathematics. Some would call it systematic thinking. Reasoning enables pupils to make use of all their other mathematical skills and so reasoning could be thought of as the ‘glue’ that helps mathematics makes sense.

Reasoning consists of:

- Evaluating situations
- Selecting problem-solving strategies
- Drawing logical conclusions
- Developing solutions
- Describing solutions
- Reflecting on solutions

Ensure all pupils can solve problems by applying their mathematics to a variety of problems

Problem solving consists of:

- Seeking solutions not just memorising procedures
- Exploring patterns not just memorising formulas
- Formulating conjectures, not just doing exercises

Ensure all pupils develop a thirst and enjoyment for mathematics

Staff enable pupils to develop a positive attitude to mathematics by delivering it through enjoyable, interesting and stimulating lessons

Ensure all pupils are confident to approach new mathematical challenges throughout school life

Staff develop pupils’ resilience and confidence when tackling mathematical questions. Pupils are encouraged to become risk takers within a supportive and structured learning environment, enabling them to develop their own ability to think clearly and logically with independence of thought and flexibility of mind.

Assessment and Recording

Using the 2014 curriculum materials, teachers are expected to make regular assessments of each pupil's progress and to record these systematically. The data should then be used to inform planning and identify and address any misconceptions. Assessment in mathematics is formative and summative and allows teachers to track each pupil's learning journey, throughout their time at Newquay Primary Academy.

Pupil conferencing is used across all of the year groups to assess the pupils' knowledge and skills.

The Maths Lead will analyse data throughout the year to ensure progress is being made.

National Curriculum

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 other subjects.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils 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. (**National curriculum in England: mathematics programmes of study -** Updated 16 July 2014)

Useful Links and Websites

- NPA calculation policy
- https://www.gov.uk/government/publications/national-curriculum-in-england-mathematics-programmes-of-study/national-curriculum-in-england-mathematics-programmes-of-study