

Rationale for Maths at St. Brendan's:

Early Years:

The first few years of a child's life are especially important for mathematics development. Research shows that early mathematical knowledge predicts later reading ability and general education and social progress (Duncan et al, 2007). Research has also shown that children who start behind in mathematics tend to stay behind throughout their whole educational journey (Aubrey, Godfrey, Dahl, 2006).

The objective for those working in Early Years, then, is to ensure that all children develop firm mathematical foundations in a way that is engaging, and appropriate for their age.

Maths at St. Brendan's is taught to the whole class throughout the week with high expectations of each individual. Alongside using key questions to develop their mathematical thinking, each child is expected to use the correct mathematical vocabulary as well. After the teaching of whole class maths, different groups are focussed on depending on their needs to ensure all children are challenged and any misconceptions are addressed. This can be done verbally, practically or sometimes written when appropriate.

The activities and opportunities are developed using the continuous provision areas to consolidate or further their learning. The areas focussed on are:

1. Cardinality and Counting – how many there are of something

2. Comparison – knowing which numbers are more or less than others

3. Composition – knowing that numbers can be made up of more than one number

4. Pattern – looking and spotting repeated design or recurring sequence to understand mathematical relationships

5. Shape and Space – understanding shapes around us to develop mathematical thinking

6. Measures – looking at length, weight and volume of objects.

Key Stage One and Two

Children's chances of success are maximised if they develop deep and lasting understanding of mathematical procedures and concepts. Mastering maths means pupils acquiring a deep, long-term, secure and adaptable understanding of the subject. 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. At St. Brendan's, our aspiration is for every child to reach this level by using a teaching approach using these five key elements.

1. *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.

2. *Representations:* Representations used in lessons expose the mathematical structure being taught through whichever resource they desire starting from using concrete resources, progressing through to pictorial (bar models) to eventually abstract (written method). (Also known as the CPA approach.)

3. *Mathematical Thinking:* Ideas are thought about, reasoned with and discussed with others. Activities used at St. Brendan's to develop these skills are:

- What Is Similar or Different;
- Another and Another;
- Convince Me Why;
- Always, Sometimes, Never;
- What's My Question?

Not only are reasoning skills improved from playing these games but eventually the child will start to make connections with what they see and understand in the subject.

4. *Fluency:* Quick and efficient recall of facts and procedures

5. *Variation:* Variation 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 a deeper understanding.

What does a lesson look like in Key Stage One and Two?

These five key concepts are taught daily through using a Singapore Approach. A daily lesson should be split into two parts as this allows children to visit their learning again to consolidate or deepen by tackling mastery challenges – making sure every pupil is challenged appropriately.

The first part of the lesson focusses on class teaching looking at one problem. Different teaching strategies will be used to enable the children to access/answer the work set. Approaches used may be through the use of think, pair, share time or working in teams to tackle the problem. Key questions will be given to help a child communicate their thinking in the subject. You will also see the use of stem sentences to promote understanding of key mathematical terms/reasoning skills. The children will also talk in full sentences using the conjunction because to explain and develop their mathematical thinking. A child will also communicate with peers/classroom adults to share their thinking. This exposes all children – regardless of ability to mathematical concepts and to address any misconceptions if needed. Another successful way of children being exposed to mathematical ideas is through the use of the teacher asking, 'Who Heard a Good

Answer?' which is an inclusive activity enabling everyone in the class to join in, again regardless of confidence/ability levels.

Not only do these teaching methods help the child develop their subject knowledge, but their language and reading skills improve too. You may also see the chanting of stem sentences/other key terminology to embed key facts and expose children to more higher order language.

By the end of the first part, the teacher should be confident of which group (Reinforcement group and independent/challenge group) each child will go to for the next part of the lesson. This is achieved through the use of live marking.

If a pupil has to work with an adult to consolidate their learning, this will be done by repeating the same idea that have just been taught (reinforcing the same key concepts to build confidence). The other group will be working independently to show their understanding. A third group may also be identified as they have excelled and may therefore have a different activity/ challenge card to develop their mastery skills and conceptual understanding.

At the end of the second part, children will self-assess themselves to see if they need to work on the concept again or to move on. If a child needs to work on the same concept then ideally, they will repeat their work on the same day with an adult or before the next maths lesson. This repetition helps the child to understand what has been taught.

Teaching will move on when the majority of the class have understood the teaching focus.

Finally, one lesson a week will be spent developing fluency skills so time is not taken away from investigative lessons which promote mathematical thinking. Mental Arithmetic and multiplication facts are practised in these sessions.