



The teaching of Mathematics at Doubletrees school



The teaching of Maths is of paramount importance to our learners and equips them with the skills they need for life after Doubletrees. We aim to provide a Mastery approach to the teaching of Maths, where skills are taught and then depth of learning is sought by providing a range of contexts for learners to apply their learning, allowing them to generalise and embed skills before extending the learning to the next steps.



We apply the 5 core ideas to the Mastery approach:

- Coherence—concepts are taught via small connected steps and allow learners to make connections and apply the concepts to a range of contexts
- Representation & Structure—how to represent mathematical ideas, concepts and thinking
- Mathematical thinking—reasoning and problem solving skills to learning is active not passive
- Fluency—Quick recalls of facts, representations and procedures
- Variation—understanding concepts that are taught through a variety of representations and contexts to allow generalisation and application of skills and concepts.

Our aim is to ensure that our learners are able to confidently apply their learning to a range of situations and adapt their approach, where needed, with resilience and reasoning. We aim for our learners to leave us equipped with a range of mathematical and problem solving skills that they can use to access the world around them enabling them to have as much success and independence as they are able.

Learning to Learn—pre-formal pathway

Prerequisites to Maths

Why?

Our intent is that all pupils in the EYFS and L2L pathway are taught pre-mathematical skills. These include understanding of sequences, through routines and schedules, matching of items, exploration and differentiation between shapes and colours and cause and effect. The aim is to develop early cognitive skills that allow investigation, exploration and awareness of the world around them and develop early problem solving abilities.

How?

Mathematics ensures that learner's pre-requisites to learning are developed. It focuses primarily on developing thinking and reasoning skills and therefore takes place all the time and is never separated from other key areas of learning. It underpins all areas of learning. There is an interactive, learner centred and adapted approach that takes into account any impairments.

Three basic principles:

Interactive – Our L2L pupils learn through interaction with other people and through active experimentation with objects. This learning style encourages a young child or adolescent with multiple learning needs to actively lead and direct their own learning. This enables our learners to discover and expand upon what they are all capable of achieving. Interaction, of course, implies that we must respond to whatever the child offers us, just as much as we expect them to respond to us. This understanding of cause and effect is an important aspect of Mathematical understanding.

Learner centred – We believe that in order to help children to make sense of the often confusing world around them, we must first attempt to enter their world and to see things from their point of view. In other words we must try to “make sense of their world”. This immediately shifts the burden of responsibility on to the adult and we stress the importance of the adult role in observing, reflecting

Bridging to Learn—Semi-formal learning pathway.

In introduction to Number & Counting, Shape, Space and Measures.

Why?

Our intent for pupils who follow the Bridging to Learn pathway is that they have both immersive and discrete access to Mathematics. This pathway builds upon the skills acquired from the pre-formal pathway experienced in their Early Years learning. It will continue to develop the 5 Counting Principles. The focus here will be on early counting skills, matching and sorting and a deeper understanding of cause and effect. They will learn to identify sequences and patterns and build knowledge of simple problem solving skills, whilst developing more resilience when facing challenges.

How?

The learners will receive equivalent to an hour's Maths lessons, though these will be a mixture of short, discrete adult led lessons and other opportunities for exploration, rehearsal and generalisation through out the day. We will continue the interactive, child centred and adapted approach, used by the EYFS/L2L pathways, whilst delivering sessions that introduce learners to the basic principles of counting. They will firstly explore how to count using the following 3 principles:

- The one-to-one principle
- The stable order principle
- The cardinal order principle

Then develop their application of counting using:

- The abstract order principle
- The order irrelevance principle.

They will also develop their symbolic representation of number, either pictorially, iconically or symbolically. They will explore sequences and patterns and learn to overcome

Ready to Learn—Formal learning pathway.

The structured teaching of Mathematics

Why?

Pupils who are able to access the national curriculum will follow the Ready to learn pathway and therefore it is our intent that they undertake more structured teaching, enabling them to acquire a range of Mathematical skills that will lead to qualifications at the end of their school journey and the skills they need to gain employment or independence in their life after school.

How?

Mathematics will be formally taught using the National Curriculum, through the basic areas of Number (including Calculations), Geometry, Measures and Statistics & Probability. In Key Stages 1 & 2 there is a strong emphasis on the understanding of number, place value and the principles of counting, as these skills are fundamental to accessing further aspects of Maths. In Key Stage 3 the breadth of Mathematics is greater, allowing learners to begin to apply their learning to practical contexts to generalise their learning. The Post 14 offer develops this practical application further by practicing skills within discrete core lessons, then applying these skills to their life skills and qualification subjects throughout the week. The aim is to move learners from the use of concrete objects, to pictorial representation, to abstract concepts when they are ready.

What will you see?

Maths will be taught as formal structured lessons in all Ready to Learn classes. There will be a personalised approach taken to our learners, where they are supported in their learning by resources and equipment that is appropriate and adapted to their learning needs.

The learning continues to build on the 5 counting principles of the Early Years approach, ensuring a robust and in depth understanding of number, extending this to greater values. This understanding of number and counting is prioritised in the early phases of learning, as it is the foundation upon which other learning is built. When counting is secure, learners will be

and responding to the activities of the child '*in the moment*'. Motivating activities and objects encourage the exploration and inquisitiveness that forms the foundation of early thinking skills, therefore Mathematical reasoning.

Adapted – pupils with any impairment will have different ways of understanding their surroundings from a typical developing child. Our adaptations and our methods reflect this. The adaptations include ensuring that the whole environment – the physical surroundings, the people in that environment and the language they use – are always consistent and as accessible as possible for all learners. We consider the significance of the multi-sensory experiences available to each learner.

What will you see?

We will implement this through our environment where **cognition and learning opportunities** support the development of problem solving and reasoning skills, alongside an understanding of cause and effect, both by their own actions and agency, and that of others.

Learners at a very early stage of development need people around them who can help them to explore and interpret the world. They have difficulty in making sense of that world and need many opportunities to handle and test out objects, look for patterns and sequences in experiences and generally extend their focus from the immediate to explore learning further away.

Four areas of learning are developed:

- awareness
- exploration
- control and early problem solving
- sequence and pattern.

There will be regular repetition of, and opportunities to consolidate and generalise their Mathematical skills across different contexts, places, topics and with a variety of people.

Some examples you will see:

- Embedded daily routines
- Rhythm based songs and stories
- Positive touch activities such as massage and sensory touch, to promote awareness of rhythm and repetition
- Switch activated cause and effect opportunities
- Hiding/revealing activities to extend understanding of object permanence
- Burst/pause activities that encourage anticipation

What will the impact of this be?

The learners will demonstrate enjoyment and engagement through the exploration of experiences and objects, relating to Mathematics. They will have developed simple problem solving skills and resilience when attempting these. There will be independent and guided opportunities to develop the 5 areas of engagement, as described in the Engagement Model (exploration, anticipation, realisation, persistence and initiation.)

Progress and attainment are measured for each individual, using personalised PLGs linked to their EHCP outcomes, supported by Routes for Learning to identify next steps.

challenges to develop their problem solving and reasoning skills. Communication remains a central part of this and the use of the environment is key in supporting all Mathematical development.

Learners on this pathway will experience early Mathematical concepts and skills as part of discrete Maths sessions, alongside continual opportunities throughout the school day to rehearse, embed and generalise these concepts.

As learners progress on their journey through our school, and enter the secondary phase of learning, the focus shifts and there is a greater development of practical skills through real life opportunities, such as cooking and preparing food, application of sharing and sorting skills, all through undertaking roles and responsibilities within the classes/phases, using and following schedules.

A personalised learning approach is fundamental to the ethos of our school, and adaptations continue to be made to support individuals with sensory impairments or those with no or limited verbal communication.

What will you see?

We will implement this through classroom environments that offer an immersive Maths experience and the opportunity to explore and investigate a variety of concepts. The learning will be delivered in short adult directed activities over the course of a lesson, with the opportunity to explore and investigate through self led, play based activities that are age appropriate and relevant to the individual learners.

Some examples you will see:

- Matching activities
- Sorting activities
- Counting and turn taking games
- Wet and sand play
- Number rhymes and songs
- Comparing amounts
- Finding more or less
- Making comparisons (longer, shorter, faster, slower, bigger, smaller)
- Interactive screen games
- Sharing between friends
- Number/shape/colour hunts

Opportunities are found to rehearse and embed skills, at snack, lunch and play times as well as through other areas of the curriculum wherever relevant and possible.

What will the impact of this be?

Learners will become increasingly fluent and accurate in their early counting skills. They will be able to sort and categorise objects according to their properties and demonstrate understanding of Mathematical concepts to support basic independence skills such as sharing, measuring, ordering and sequencing.

Progress and attainment is measured using the B-Squared Progression Steps assessment system and IEP targets linked to their individual EHCPs.

able to use this to complete calculations, explore and describe the properties of shape, make measurements in a range of standard and non-standard units.

There is a Scheme of Work that demonstrates coverage of the National curriculum between phases of the school to ensure that there is breadth and balance in the topics covered. Later concepts such as statistics and probability are introduced when the learners are ready and able to access this. There is a sequence of skills that guides teachers as to the next appropriate step once a concept has been mastered.

What will you see?

We will implement this through structured Maths sessions, an hour in length with a variety of sections within each lesson, including:

- Warm up sessions where learnt core skills are continually rehearsed and applied, including representations of numbers and concepts
- Teacher led activities which revisit and build upon prior learning
- Opportunities to explore and develop learning following taught sessions through a variety of activities which allow the learner to experience the concepts in a variety of forms, independent or supported, practical, formal written or through play
- Recaps and feedback on progress towards learning outcomes with misconceptions address and successes celebrated.

Opportunities to generalise their learning through games, play and through independence and life skill based activities are sought wherever possible. Links with other curriculum subjects are also utilised where relevant to affirm the importance of Maths and its all encompassing nature.

At the end of Key stages 4 and 5 our learners will have the opportunity to gain qualifications or accreditations, according to our accreditation pathway.

What will the impact of this be?

Learners will be increasingly fluent in their understanding of numbers, counting accurately and understanding relative values. They will demonstrate increasing confidence in their use and manipulation of numbers within calculations. They are able to apply these to allow them to carry out practical and real life tasks, such as dealing with money and finding change, following recipes by measuring and weighing ingredients, accessing timetables and schedules. They will have a range of problem solving strategies to support their resilience and reasoning when faced with challenges.

Progress and attainment is measured using the B-squared Progression Steps assessment system and IEP targets linked to their individual EHCPs.