TVED Mathematics Policy

"No employment can be managed without arithmetic, no mechanical invention without geometry."
Benjamin Franklin

Trust Intent
At TVEd, we recognise that mathematics 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, and a sense of enjoyment and curiosity about the subject.

Learning maths and the language of mathematics is a little like learning a foreign language. All the pieces need to connect and fit together for something to make sense as a whole. As children become fluent in the language of mathematics and become increasingly able to reason and explain their thinking mathematically they become increasingly able to solve problems in a range of contexts, noting connections between areas of maths and proving their answers by using a wide range of mathematical thinking.

Aims of policy:

- To create a lively, exciting and stimulating environment in which the children can learn maths,
- To promote the concept that acquiring maths knowledge and skills provides the foundation for understanding the world around the children,
- To develop mental strategies through the implementation of Schofield and Sims,
- To encourage children to use mathematical vocabulary to reason and explain,
- To allow time for partner talk in order to stimulate and develop a curiosity for maths,
- To challenge children to stretch themselves and take risks in their learning,
- To create a sense of awe and wonder surrounding maths,
- To ensure children in Key Stage 1 are secure in their understanding of number and number relationships and
- To deliver maths in line with new National Curriculum guidelines.

Objectives
Children at TVEd will leave Year 6:

- fluent in mathematics and 'number happy';
- able to reason and explain mathematically using metacognitive strategies to support them;
- able to solve problems which allow them to apply their maths knowledge.

Statutory requirements
Statutory requirements for the teaching and learning of mathematics are laid out in the National Curriculum in England: Mathematics Programmes of Study – Key Stages 1 and 2 (2014) and in the Number and Numerical patterns sections of the Revised Framework for the Early Years Foundation Stage (2021). The Mathematics programme of study is based on four areas: Number, Measurement, Geometry and Statistics.

In the Foundation Stage
Mathematics involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers up to 10, calculating simple addition and subtraction problems; and to describe shape, spaces and measures.

When planning to support mathematics, leaders, managers and practitioners need to reflect on the ways in which children learn and ensure both provision and practice are informed by this. The revised framework emphasises the three characteristics of effective teaching and learning first identified in the principles into practice cards 4.1- 4.3 of the Statutory Framework (2008):

● playing and exploring - children investigate and experience things, and 'have a go'
● active learning - children concentrate and keep on trying if they encounter difficulties, and enjoy achievements
● creating and thinking critically - children have and develop their own ideas, make links between ideas, and develop strategies for doing things.

At Key Stage 1
The principal focus of mathematics teaching in Key Stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources (e.g. concrete objects and measuring tools).

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of Year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency. Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at Key Stage 1.

In lower Key Stage 2
The principal focus of mathematics teaching in lower Key Stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of Year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work. Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

In upper Key Stage 2
The principal focus of mathematics teaching in upper Key Stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient

written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of Year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages. Pupils should read, spell and pronounce mathematical vocabulary correctly.

Curriculum delivery

At TVEd, children are taught mathematics within their classes. Through well-planned, differentiated and well-resourced lessons, all pupils receive high quality teaching and appropriate support in order for them to reach their full potential. All lessons have clear learning objectives and success criteria that make it explicit to the children what the new knowledge or skill is that they are learning about. Working walls and challenge areas are a key feature in every classroom; they are used as an effective resource to support the learning during lessons.

Teachers will utilise the principles of the science of learning to plan effective mathematical sequences of learning at both individual and group level, based on prior knowledge, identifying misconceptions, removing barriers to learning and planning with the end in mind.

Cross-Curricular Opportunities for Mathematics

Throughout the whole curriculum, opportunities to extend and promote Mathematics should be sought. Within every Science topic, children will also develop their mathematical skills. This will help children appreciate how to *Work Scientifically* but also practise discrete mathematical skills. Nevertheless the prime focus should be on ensuring *mathematical progress* delivered discretely or otherwise.

Assessment and Target Setting

Work will be assessed in line with Trust's assessment policy for mathematics. TVEd have developed mathematic assessment frameworks, based on the demands of the new curriculum, to assess progress in mathematics. Moderation of mathematics and teacher judgements takes place termly. Assessment for learning is ongoing and is used to ensure every child reaches his or her potential. Focused marking ensures relevant feedback is given to children and new areas for development are targeted. Early Years assessment of mathematics is based on ongoing observation and assessment. Assessments are based primarily on observations of daily number and shape, space and measures in which staff particularly note the learning the children demonstrate spontaneously, independently and consistently in a range of contexts.

Inclusion

We aim to provide for all children so that they achieve as highly as they can in mathematics according to their individual abilities. We will identify which children or groups of children are under-achieving and take steps to improve their progress. Children with SEND will have targets appropriate to their ability and learning will be tailored to meet their individual needs. Gifted and talented children will be identified and suitable learning challenges will be provided. Progress of all groups of children will be carefully tracked and monitored.

Learning environment
Our classrooms and displays are seen as learning tools; we encourage our children to use the working walls and challenge areas as an effective resource to support them in their learning. Using the learning environment, all skills are transferrable and learning is applied across a range of contexts, ensuring intrinsic links between mathematical strands are made and pupils are regularly given time to consolidate learning. Through the learning environment, children are empowered and supported to build independence when working.

Role of the Mathematics subject leader
The Subject Leader is responsible for improving the standards of teaching and learning in mathematics through:

- monitoring and evaluating mathematics - pupil progress and analysis of data, provision of mathematics and Schofield and Sims, ensuring the breadth and balance of the curriculum; mathematics across the curriculum, the quality of the learning environment; taking the lead in policy development;
- auditing and supporting colleagues in their CPD;
- purchasing and organising resources;
- communicating with the Senior Leadership Team, teaching staff and support staff;
- guidance, support and training for parents and carers;
- keeping up to date with recent mathematical developments.

Staff development
At TVEd, staff development is undertaken in the following ways:

- Identifying areas for development during Performance Management reviews (personal development)
- In the academy Review and Development Plan or the Trust Review and Development Plan
- Discussion with the Head Teacher, Trust Mathematics Leader or the academy Mathematics Leader
- Making staff aware of relevant courses
- Observation and feedback
- Whole academy or Trust INSET
- Ensure that CPD applies the theory of the science of learning in order to effectively meet the needs of individuals, groups and whole academy driving both academy and Trust priorities
- Visits to leading mathematics teachers when appropriate

Parental involvement
We aim to involve parents directly in the life of their children's academy, and thus in the development of children's skills, knowledge and understanding in mathematics.

- parents are encouraged to help children in learning mathematical facts, times tables and skills linked to homework;
- there are opportunities each term when parents can discuss their children's progress with their teacher;
- trust curriculum newsletters provide information about the mathematics curriculum and how parents can support their children;
- parental workshops are delivered to inform parents about calculation methods in mathematics.