

Learning Mathematics Through Movement: A North Macedonian Perspective on Sport-Based Education for Children Aged 6–9

For children aged 6 to 9, the first years of mathematics education are critical. During this period, pupils begin to develop their understanding of numbers, basic arithmetic operations, grouping and other concepts that form the foundation for later mathematical learning. Yet children do not all learn in the same way or at the same pace. While some pupils respond well to explanation, written exercises and repetition, others may understand a mathematical concept more effectively when they can see it, experience it and apply it in a practical situation.

In North Macedonia, the Let's PLAY Maths project introduces an innovative approach that explores how sport and movement can become additional educational tools for mathematics learning. Implemented within the Erasmus+ programme, Let's PLAY Maths develops sport-based pedagogical activities designed specifically to reinforce mathematics learning among children aged 6 to 9. In North Macedonia, the project is implemented by Together Advancing Common Trust – TAKT, drawing on the organisation's experience in Education through Sport and Play and its commitment to inclusive, participatory and child-centred learning.

Bringing mathematics beyond the desk

Mathematics is often associated with textbooks, notebooks, exercises and the classroom board. These remain important parts of the learning process, but Let's PLAY Maths demonstrates that mathematical learning can also take place through movement. Through carefully designed sport games, children can practise mathematical concepts while moving, interacting and solving challenges together. A number can become something a child physically represents. Grouping can become an activity children organise together. Addition can form part of reaching a goal in a game. Mathematical reasoning can therefore move from an abstract exercise on paper to an experience that children can actively explore. The project does not aim to replace conventional mathematics teaching. Instead, it provides teachers with an additional pedagogical approach that can complement classroom instruction and give children another way to engage with fundamental mathematical concepts. The project methodology deliberately connects play, movement and learning. Rather than treating mathematics and physical activity as completely separate areas, Let's PLAY Maths uses the motivational and participatory characteristics of play to support mathematical learning.

Four sport games adapted to the North Macedonian context

A central result of Let's PLAY Maths is the development of a pedagogical set consisting of four sport-based mathematics games. The activities focus on fundamental mathematical areas including number construction, addition and grouping, including work with tens. The games are accompanied by pedagogical guidance explaining their educational objectives, how they should be organised and how teachers can adapt them according to the needs of their pupils. Explanatory videos are also part of the methodology, supporting teachers in understanding the

pedagogical principles behind each game. Importantly, the project does not simply transfer identical activities from one country to another. For North Macedonia, the four games are specifically adapted to the local educational context and mathematics learning framework for children aged 6 to 9. TAKT contributes local knowledge and works with education professionals so that the materials respond to the realities of North Macedonian classrooms. This local adaptation is essential. An effective educational methodology must be flexible enough to respond to the number of pupils in a class, their age, their starting level and the specific learning difficulties that may be present. The project therefore treats the games as adaptable pedagogical tools rather than rigid activities that must always be implemented in exactly the same way.

Sport as a tool for understanding mathematics

For TAKT, sport has educational value when it is connected to a clear purpose. Children participating in an educational sport game are not only moving. They are observing, communicating, counting, comparing, deciding, cooperating and solving problems. When mathematical objectives are deliberately embedded into these activities, movement becomes part of the learning process. This approach is closely connected with TAKT's broader experience in Education through Sport and Play, where sport is used as a tool for learning, inclusion, participation and personal development. TAKT works with schools, municipalities and other local actors to create educational environments in which children can develop knowledge and skills through active participation. Within Let's PLAY Maths, this expertise is applied directly to mathematics education. The value of the approach lies not simply in making lessons more entertaining. Its purpose is to offer children another pathway to understanding. For some pupils, physically experiencing a concept may help make an abstract mathematical idea easier to understand. For others, working together within a game may encourage participation in a subject they previously found difficult.

Supporting children who experience difficulties in mathematics

One of the particularly important aspects of Let's PLAY Maths is its relevance to remedial learning strategies. When a child does not understand a mathematical concept through one approach, repeating exactly the same method may not always solve the difficulty. Teachers therefore benefit from having alternative ways of presenting and reinforcing knowledge. Sport-based activities can provide one such alternative. The Let's PLAY Maths methodology is designed to provide general support for mathematics learning while also offering remedial possibilities for children who experience greater difficulties. Through interactive and playful activities, teachers can reinforce mathematical concepts in a different format and provide pupils with additional opportunities to practise and understand them. The approach can also give teachers a different perspective on how children learn. During a written exercise, a teacher may primarily see whether a pupil has produced a correct or incorrect answer. During an interactive activity, the teacher can also observe how the child approaches the problem: how they count, organise information, respond to instructions, make decisions, correct mistakes or change their strategy.

The project specifically recognises that these approaches can help teachers identify pupils who experience greater difficulty and provide alternative remedial strategies that complement traditional mathematics lessons.

Inclusion through different ways of learning

This principle is strongly aligned with TAKT's values. Inclusive education is not only about ensuring that all children are present in the same classroom. It also requires creating learning environments in which children with different abilities and starting points have meaningful opportunities to participate and progress. Let's PLAY Maths is designed around equal participation. The methodology foresees activities in which girls and boys participate together, regardless of their initial school level, with each child given an opportunity to take part and develop mathematical skills. Because the activities can be adapted, teachers can modify them to respond to the specific group of children they are working with. This flexibility is important in North Macedonian classrooms, where teachers may work with pupils who have different levels of confidence, prior knowledge and learning needs. Providing several pathways towards the same learning objective can therefore contribute to a more inclusive educational environment.

From teacher training to mathematics sessions with children

For the methodology to have a practical impact, teachers must be able to use it confidently in their own classrooms. In North Macedonia, Let's PLAY Maths therefore includes the training and support of 30 school teachers in using the sport-based mathematics activities with children aged 6 to 9. TAKT is responsible for identifying and mobilising teachers, delivering training, supporting implementation and providing the pedagogical and sport materials required to organise the sessions. Following the training, teachers are expected to implement the activities during school hours, integrating them into the learning process rather than creating an additional workload for children. The project framework foresees that 750 children aged 6 to 9 in North Macedonia will benefit from sport-based pedagogical mathematics sessions delivered by trained teachers. Each teacher is also provided with the resources needed to organise the activities, including pedagogical materials and the sport equipment required for the games. This is important for sustainability. Once teachers understand the methodology and have the necessary materials, the activities can continue to be used, adapted and repeated with other groups of children.

Building stronger foundations through active learning

Let's PLAY Maths reflects an important idea for the future of education in North Macedonia: innovation does not necessarily mean replacing existing teaching practices. It can also mean enriching them. Traditional mathematics teaching remains essential. But teachers can be stronger when they have access to a wider range of pedagogical tools. For a child who understands numbers through written exercises, those exercises remain valuable. For a child who needs to see a concept in practice, an active game may provide another opportunity.

For a child who initially struggles, a different learning experience may create another route towards understanding. Through Let's PLAY Maths, TAKT is contributing to an educational approach in North Macedonia where sport, movement and play are recognised as potential tools for learning, particularly when they are connected to clear pedagogical objectives. The aim is not simply to make mathematics more enjoyable. The aim is to help create learning environments in which more children aged 6 to 9 have the opportunity to participate, understand, practise and progress. Because when children are moving, counting, cooperating, thinking and solving problems together, they are not stepping away from education. They are learning mathematics through movement.