

## Course 2: Using Creative Movement to Teach Maths

Dance is vital for emotional expression and cultural identity, connecting people across diverse societies. Its cognitive benefits include improved memory and problem-solving skills, while also serving as a powerful stress-reduction tool. Socially, dance fosters connections and a sense of belonging, and it plays a significant role in education, enhancing academic achievement and cognitive development. As a form of creative expression, dance offers a universal language for conveying unique ideas and emotions.

Therefore, integrating dance into the curriculum for teaching mathematics is beneficial for students. Specifically, dance enhances engagement and comprehension by leveraging the inherent connections between rhythm, physical pattern recognition, and mathematical concepts. Utilizing dance as an educational tool fosters a multisensory learning experience, promoting a deeper understanding of mathematical principles and creating a dynamic classroom environment that inspires creativity and critical thinking. Therefore, by the end of this course, participants will not only gain insights into the theoretical foundations of dance as an educational tool but will also emerge with tangible resources and strategies for incorporating music into their mathematics curriculum. This journey aims to open a gateway to a vast field of possibilities where the power of dance becomes a dynamic means for learning and teaching mathematics.

### Objectives

**Enhance Understanding:** Gain a profound grasp of why integrating dance into the curriculum is crucial, recognizing its potential as a pedagogical tool for enhancing comprehension of mathematical concepts.

**Collaborative Exploration:** Participate in a virtual collaborative environment to explore diverse ideas for integrating dance practice and creating dance into the teaching of core mathematical subjects. Highlight the participatory nature of this engaging learning process.

**Lesson Planning:** Concentrate on the practical aspect of lesson planning by crafting a dance integration lesson plan tailored to specific curricular objectives. Understand how to seamlessly weave dance into the fabric of mathematics education.

**Assessment Tools:** Develop effective assessment tools to measure the impact of dance integration on students' mathematical comprehension. Explore innovative ways to evaluate the success of incorporating dance into the learning environment.

Integrating dance into mathematics education can make learning more engaging. Concepts like patterns, symmetry, and even numerical operations can be demonstrated through movement. For example, choreographing routines that involve counting steps, creating geometric shapes, or showcasing mathematical sequences can help students visualize and understand mathematical principles in a unique way.

Using dance as a dynamic tool for teaching mathematics taps into multiple learning modalities. It combines kinesthetic and visual elements, reinforcing mathematical concepts through physical movement and spatial awareness. This approach can enhance engagement, improve retention, and make abstract mathematical ideas more tangible for students. Additionally, it fosters creativity and allows for a holistic understanding of mathematical principles in a lively and memorable way.

Integrating dance into the curriculum is crucial as it caters to diverse learning styles, providing a kinesthetic and visual approach to understanding concepts. It enhances engagement, encourages creativity, and promotes a deeper understanding of subjects like mathematics. Moreover, incorporating arts like dance fosters holistic development, helping students build not only academic skills but also social, emotional, and physical abilities. It makes learning a more enjoyable and memorable experience, fostering a lifelong love for education.

## Contributors

### **Torill Kolsrud**

Torill was born 10/09 – 1995. Her academic education includes an internship at Nationaltheater Mannheim, Germany and a three year education at The Ballet Academy in Stockholm 2015-2018. She was a guest teacher for Nedre Follo Kulturskole and organized workshops to promote «Skapa Dans» in Sweden 2022. She was also a guest teacher for Viksjöforsballetten, Bergen Kultuskole Elite Program and Bergen Dansesenter. She has experience with work as a choreographer, teacher and workshop holder for a great variety of ages and levels. As a dancer, she worked for ilYoung, junior Company, 2017, Nagelhus Schia Productions, Panta Rei Dance Theater, Riva Dance Company, Byström/Källblad, Yaniv Cohen, Daniel Proietto, Sita Ostheimer, Jon Ole Olstad, Hege Haagenrud, Stephan Thoss and more. Torill also has experience with the role as producer.

### Lesson Title: Visualization of easy mathematical formulas.

**Objective:** Students will understand and apply mathematical concepts through physical movement and collaboration. The emphasis for the start up version of this game is on simple equations. However, it can be developed further.

**Materials:** Open space for movement. Music player with a diverse selection of rhythms. **Optional:** Large sheets of paper and markers for creating visual aids introduction. Have the students wear clothes they can comfortably move in.

**Introduction (5 minutes)** Explain the rules of the game. Engage the students in this by having them assist showing the different shapes correlating with the umbers.

**Main activity part one(10 minutes) numbers only**

Play the game with numbers only, establishing the shapes. Have the students problem solve and collaborating by together reaching the goal of establishing the shapes as quickly as possible.

**Main activity part two (10 mintues) with addition and subtraction**

Introduce the use of equations, where they have to solve the equation before establishing the corresponding shape. This will lead to an increased need for collaboration, communication and quick thinking.

**Closure (5 minutes)** Have the students reflect on the game, how this helps their understanding of mathematical concepts. This is a great opportunity to evaluate, with the students, the potential for further development of the game. What do they imagine and which tasks are they ready for?

Optional: Introducing new shapes and numbers to the game, thus increasing the potential for advanced mathematical equations. Already with the numbers 1-4, some multiplication can be introduced. But with more numbers, it holds even more potential.

Assessment: Observe student participation, creativity, and understanding during the activities. Review any visual aids or reflections created by students.

Extension (Optional): Connect the movements to real-world applications of numbers, addition and subtraction.

Note: This lesson plan is adaptable based on grade level and can be integrated into existing mathematics curricula, providing a practical and engaging approach to learning.

### Lesson Title: Mathematical Movement Exploration, Geometry

Objective: Students will understand and apply mathematical concepts related to geometry and patterns through dance movements.

Materials: Open space for movement. Music player with a selection of diverse rhythms. Large sheets of paper and markers for creating visual aids. Have the students wear clothes they can comfortably move in.

Introduction (10 minutes) Briefly discuss geometric shapes and patterns in mathematics. Explain how dance can be a tool for learning and understanding these concepts.

Warm-up (5 minutes): Engage students in a physical warm-up to prepare for movement. Introduce basic dance steps and encourage creativity in movement.

Main Activity - Shape Dance (30 minutes): Assign each student or group a geometric shape (circle, square, triangle, lines etc.). Play music and have students create dance movements that mimic their assigned shape. Encourage exploration of variations within each shape, emphasizing angles and symmetry. Assist the students with obstacles such as communication or movement barriers. Help them put the dance together with, emphasizing on the practice of going through the movements without verbal communication. Help them create a clear beginning and end to their phrase.

Transition (5 minutes): Discuss observations and connections between the dance movements and geometric shapes.

Closure (10 minutes): Have students reflect on how dance helped them understand geometric shapes and patterns. Connect the dance experience to the mathematical concepts discussed earlier.

Optional: showing dance material with music. The teacher will put on music, and help counting them in as the groups show two or one at a time. This is a great opportunity to have the students observe and reflect together on what they saw in the material.

Assessment: Observe student participation, creativity, and understanding during the activities. Review any visual aids or reflections created by students.

Extension (Optional): Connect the dance movements to real-world applications of geometry and patterns.

Note: This lesson plan is adaptable based on grade level and can be integrated into existing mathematics curricula, providing a practical and engaging approach to learning.