

## Dance Mathematics - Enhancing Learning in Schools and the Community

We all know that Community Dance Practitioners are well versed in communicating and motivating children and young people. Whether these are students who excel within the traditional school setting, or are those that are at average or lower learning levels, the likelihood is that they will enjoy dance in some shape or form.

So how can we, as professionals committed to improving lives and society through our love of this beautiful art form, fulfil our responsibility in helping schools and teachers educate the young of our society? It's simple. We use dance to help teach the principles and concepts of National Curriculum subjects.

### **Dance? I Can't. Maths? I Can't. Dance Maths? Yes, I-CandU**

Traditional teaching methods for subjects like maths, often do not take into account issues such as language barriers and cultural differences. In a primary school class with one teacher to thirty students, catering and developing teaching methods that fit the very different needs of each student is bound to be difficult. Dance Mathematics, a part of the U-CandU Education approach, helps to bridge these gaps in learning and children's backgrounds. Not everybody can speak English, but we can all move our bodies and learn to dance!

Some call it "guerrilla learning", some learning-by-doing, but all it involves is simply getting kids to learn maths without realising they are *learning* maths, and getting them dancing choreographed routines without them realising they are even dancing.

So of course, now you must be wondering, how does this work?

An integrated mix of performing arts strategies and techniques, particularly dance, are used to teach and deepen understanding of mathematical concepts. Throughout the workshop, children have to think, explore, experiment and put their findings into practice. Games develop their number skills, problem-solving capabilities and understanding of shapes. Choreography reinforces their understanding of numbers – odd, even, subtraction, multiplication etc. Drama-based techniques, such as life pictures and living cubes, stimulate sequential appreciation, while progressive movement sequences build their understanding of geometric shapes.

Some examples of the activities that may be used to engage and enable primary school children to learn include:

### **Shaping Up**

- The trainer provides two sets of A4 cards with geometric shapes printed on them.
- 30 sheets with different two-dimensional shapes (rectangle, square, triangle etc) are spread around the room. The children mould their bodies to each shape in turn. When they have tried each shape once or twice, the sheets are collected and the trainer calls out the shape for them to mould themselves to (obviously so they remember the names and associate them with the shapes).
- 6-8 cards with three-dimensional shapes (cubes, pyramids etc.) are then spread out around the room and the children work together in groups to create the shapes. Again, the sheets are collected and they take it in turns to watch groups create the three-dimensional shapes when the trainer calls them out.

- Finally, music (or simply clapping) produces rhythmic versions – they are doing maths and dancing without realising it!

### **Human Calculation**

- The children are divided into groups of different numbers – 2s, 3s, 4s, 5s – which they must stay in (coloured tags can help with some groups)
- The trainer calls out numbers and calculation patterns: e.g. “5+3+2” and when the right groups have found each other, they call out their total (“10”).
- Likewise, subtraction e.g. 10-3 can then be used and depending on the group abilities, the children can either just take away a group of 3, or may be required to create three separate groups e.g. 10, 3 and the answer, 7.
- This can be developed endlessly according to the abilities of the children, involving addition, subtraction, multiplication and division with the children increasingly calling out the sums as well as the results.
- Again, by introducing rhythms and patterns of movement and choreographing them, we create a performance that can be performed for other children, teachers and parents.

Through practical participation, the school subjects become “real” not abstract, solvable not fear-inducing. Equally important, the workshop helps to make maths accessible to children from any background and of any language. Of course, the activities can be adapted to meet the age and level of the participants. Here, using movement to teach and build understanding of mathematical concepts is more effective than relying on traditional written methods.

### **Just dance - it does work!**

The concept for Dance Mathematics was initially commissioned and piloted with funding from Creative Partnerships London West during 2007 and 2008 and then further developed by Culture and Arts. However, the idea for it stemmed from my own educational experience growing up in Albania.

Like me, many others in my class at school either struggled with or loathed maths lessons. The lessons were mind boggling and boring. They consisted of having to memorise numerous formulas and concepts that were written on the blackboard at the front of the class. I was not aware that I could experience any joy in learning the concepts of this “awful” subject, until a new geometry teacher arrived.

She made each lesson fun and used live examples to illustrate her points. She also gave each and every one of us an opportunity to be physically active during her lesson, using up a lot of that bottled energy that is often only free in the playground. She used tools such as 3D landscape maps and objects to illustrate topics such as measurement, and encouraged us to physically touch and measure the shapes. She also told us short stories to illustrate geometry being put into practice and suddenly I found myself thinking and being excited about maths and geometry lessons.

Later in life, I realised that this same principal could be applied not only to maths but to any subject. When I arrived in the UK in 1994, I had no understanding of the English language. I could only say, “hello”, “How are you” and “I love You”. Alongside studying for the Professional Diploma in Dance Studies at Laban, I made an effort to attend English lessons. Movement and dance association helped me learn English faster and I am here today writing this article. If dance can help enhance my learning, I believe it can work for any child, young person or even adult struggling with school subjects or learning.

## **Dance Mathematics in the Community**

When Culture and Arts delivers workshops to schools, we always start with a survey to establish the individual and group levels of understanding of the specific subject, and finish with a performance that brings together everything they have learned. This enables the children, us and their teachers to quantify their improvement in understanding and attainment, individually and as a group.

Community dance practitioners teaching classes and workshops can apply similar principals in their sessions. All it requires is a little time to understand the key elements of each subject and to identify which concepts children struggle most with. These can be identified by speaking to children's parents or asking the schools themselves. The idea can also be tailored to meet the needs of older students and adults e.g. new arrivals in the UK with a lack of spoken English.

Culture and Arts can help practitioners train and develop a further understanding of Dance Mathematics principals. If you would like further information on Dance Mathematics and other U-CandU Education projects, please visit [www.cultureandarts.co.uk](http://www.cultureandarts.co.uk) or call us on 0845 539 0014.

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