

Framing Dance Residency Teacher Handout:
Space Exercises using Geometry:
Shapes and Levels

Karen Stokes Dance (KSD) is committed to bringing dance and movement into the classroom to enhance comprehension of material. Students gain a concrete learning experience by merging audio, spatial, kinetic, and visual modes of learning. In the following handout and accompanying videos, KSD uses exercises in dance, creative movement, and partnering techniques to demonstrate rules of Science, Math, and Language Arts.

Geometry

Geometry is one of the most noticeable academic subjects represented in dance. Dance incorporates shapes, patterns, angles, and symmetry, which can all be seen in the video: *Space: Static and Dynamic Shapes*.

Video: Space 1: Static and Dynamic Shapes. These exercises focus on how to create Static Shapes through Positive and Negative Space, and Dynamic Shapes through angular and curved transitions and level changes. These exercises incorporate locomotor skills with concepts of Geometry: two and three dimensional shapes, angles, curves, lines, and rays.

Exercises 1 and 2: Positive and Negative Space.

Positive Space is defined as the creation of shapes that focus the eye on the body is making, rather than the area surrounding the body. *Negative Space* is defined as the creation of shapes that focus the eye on the space surrounding the body by creating an enclosed space that draws the eye to that enclosed space. Students are directed to create shapes using the concepts of Positive and Negative Space in a freeze frame format across the floor, problem-solving in the moment through improvisational dance. As students create one shape, they must think ahead to their next movement.

Exercises 3 and 4: Dynamic Shapes using Angular and Curved Transitions.

Students explore moving through shapes with angular and circular movement while traveling across the floor. Students are directed to create dynamic shapes across the floor, using angular or curved/circular movements. These movements serve as a transition from one shape to the next.

Exercise 5: Level Changes.

Students expand on the idea of dynamic shape changing by adding a Level Change. Levels refer to the height at which the dancer is performing: low is close to the ground, middle is standing, and high is reaching into the space above their normal height. The teacher encourages diversity in shapes by posing problems for them to solve as they are moving across the floor:

Can you move low/high?

Can you move angular/circular?

Can you make your shape symmetrical/asymmetrical?

Feedback: Students reiterate verbally back to the teacher the concepts of Static Shapes through Positive and Negative Space, and Dynamic Shapes through angular and curved transitions and level changes.

Research:

<http://archive.bridgesmathart.org/2012/bridges2012-453.pdf>

Why we should care

Dance can be used to teach the fundamentals of mathematics and provide the students with basic intuition about the abstract concepts involved. Actually getting to experience math at work might be more exciting to students than “Two trains leave cities A and B going at 60mph...” Applying mathematics to more familiar ‘real life’ situations would certainly remove the stigma of the field being dry and inaccessible.

Math concepts can be used consciously to create dance. Many choreographers create pieces based on their intuition; being explicitly aware of the principles they are applying could help speed up the creative process.

Finally, the awareness of how mathematics and dance interact and draw from each other can help us understand both areas on a whole new level and keep the inquiry exciting.

Geometry in Dance

Geometry is perhaps the most apparent subfield of mathematics present in dance. We can consider the shapes, patterns, angles and symmetry of many different aspects of dance within a variety of scopes. The analysis could concern anything from one dancer frozen in a position to a whole ensemble actively moving in space. In the first case, we would look at the lines of the body and their relation to each other and to the space in which the dancer exists. In the latter, we would consider not only the lines and shapes created by the collective and the way in which they change with the music, but also the patterns of beats bringing on those changes.

<http://educationcloset.com/2012/11/15/the-geometry-of-dance/>

Symmetrical/Asymmetrical Dance

When watching a beautifully choreographed dance, one of the things you’ll notice is the use of symmetry of motion, both of an individual dancer, and in that of a group. You’ll also notice the use of asymmetry as a method to break the eye from the scene, or to demonstrate dissent within the piece. Of course, symmetry is a geometric concept and this can be deeply and intentionally taught through the use of motion.

<http://artsintegration.com/portal/geometry-in-dance-2/>

Understanding these geometric concepts will be supported by exploring the relevance of geometry in relation to movement, specifically through the use of their own bodies. They will create a small piece of dance/movement that will model their understanding of these geometric concepts and be able to explain their process with the class.