Graph-a-Dance

Sixth Grade + Math and Dance

Adapted by llang@mpsdconnect.org

CORE SUBJECT AREA
Math

ART FORM + ELEMENTS
Dance
Space
Time
Energy

DURATION
1 class period

MSCCR STANDARDS
6.NS.C.6 - Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with the negative number coordinates.

6. NS.C.7 - Understand ordering and absolute value of rational numbers.

6.NS.C.8 - Solve real world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or same second coordinate.

MSCCR CREATIVE ARTS STANDARDS
DA:Re.7.1.6 - . Describe or demonstrate recurring patterns of movement and their relationships in dance.

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OBJECTIVES
Represent the pathways of a dance by graphing points in the first quadrant of the coordinate plane. Discuss and graph the use of the element of space in dance. Discuss the interrelationship between dance and visual art in terms of shape and pathways.

MATERIALS NEEDED
Graph paper, Graph-a-Dance handout. Resource in link.

VOCABULARY
Coordinate, Coordinate plane, y-axis, x-axis, Origin, Distance, Movement, Dance, Geometric

RECOMMENDED RESOURCES
YouTube

LESSON SEQUENCE
Ask students if they have ever seen a quilt. Many quilters plot out their designs on graph paper because they need to be sure their measurements and angles are precise. Ask the students if they know anyone who makes quilts. Tell students they are going to watch a video of a dance that has a very geometric pattern. It's called "Grand Square," and it is a traditional American square dance. In general, square dances begin with four couples standing on the sides of a square and facing the center. The basic movement in square dancing is walking. Dancers walk forward or backward following pathways and making turns. As their pathways bring them face-to-face with another dancer, they might bow, slap hands, or even link arms and twirl about. Sometimes they might join hands and move together in a new direction.

Show the video "Grand Square." https://www.youtube.com/watch?v=mA7udMujSkc

Explain that one element of the dance is "space." In this dance, shape, direction, and pathways are especially important.

As the students watch the video, explain to them that a series of movements that is repeated is called a figure. Ask the students to watch closely at what figure is being repeated throughout the chorus of this dance. Show the first figure of the dance again. Ask the students if they notice what angles the dancers are forming with their feet? (right angles). What did the dancers do when they met another dancer along their pathway?

Pass out the "Graph a Dance" handout. Project it on the board and lead the students in identifying the points where the dancers were standing and the center point of the formation (4,4). Ask students to complete Section 1 of their handout on their own.

Point out that the dancers who stand at (0, 4) and (8,4) also move in a square pathway, moving four points in each direction. Look at the points you drew on your coordinate plane. Ask, “If we plotted the other two pairs of dancers’ movements, do you think you would have to draw more points?” (You would not—they follow the same lines in a different order—but allow students to figure this out with minimal direction if possible.) Play the beginning (chorus) figure of the video again to see how the dance relates to the students’ graphs.

Now, divide the class into groups with eight or fewer students per group. Each group is going to invent a new figure, practice dancing it, graph it, and then perform it. Each figure will begin with four couples standing in the same position as the dancers in the figure you graphed.

1. Two dancers are standing at (4, 8).

2. Two dancers are standing at (4, 0).

3. Two dancers are standing at (0, 4).

4. Two dancers are standing at (8, 4).

The couples can move together or the partners can separate, but every dancer must walk in at least two directions and must turn at least once. The dancers can walk along the perimeter of the square or they can walk into and/or cross the center. (Tape the floor if necessary). All of the movements must happen within the square defined by the four points.

SOURCES

https://mpb.pbslearningmedia.org/resource/geometric/quilts

TIPS + FREQUENTLY ASKED QUESTIONS

Any instrumental music can be used.