



MOVEMENT BY CHANCE: EXPLORING DANCE AND DATA PATTERNS
Grade Band: 6-8
Content Focus: Dance & Math



LEARNING DESCRIPTION

Students will explore the concept of chance dance, inspired by Merce Cunningham, while simultaneously developing data interpretation skills. Students will begin by learning about Cunningham's innovative approach, where movements are determined randomly using dice, coins, or digital tools. Working in small groups, they will create short dance sequences by assigning movements to numbers and rolling dice to determine the movements in their choreography. After performing their sequences, students will record data on movement frequency, patterns, and transitions. They will then analyze this data using charts or graphs, discussing trends and drawing conclusions about how randomness influences artistic composition. This lesson merges creative expression with mathematical thinking, encouraging students to see patterns in both dance and data.

LEARNING TARGETS

Essential Questions	"I Can" Statements
How can we use data interpretation to analyze and understand patterns created through chance dance?	I can create a chance dance sequence using randomization. I can analyze movement patterns by collecting and interpreting data.

GEORGIA STANDARDS

Curriculum Standards	Arts Standards
Grade 6: 6.NR.2.2 Summarize categorical and quantitative (numerical) data sets in relation to the context: display the distributions of quantitative (numerical) data in plots on a number line, including dot plots, histograms, and box plots and display the distribution of categorical data using bar graphs. 6.NR.2.3 Interpret numerical data to answer a statistical investigative question created. Describe the distribution of a quantitative (numerical) variable collected, including its center, variability, and overall shape. 6.NR.2.4 Design simple experiments and collect data. Use data gathered from realistic scenarios and simulations to determine quantitative measures of center (median and/or mean) and variability (interquartile range and range). Use these quantities to draw conclusions about the data, compare different numerical data sets, and make predictions. Grade 7: 7.PR.6 Using mathematical reasoning, investigate chance processes and develop, evaluate, and use probability models to find probabilities of simple events presented in authentic situations. 7.PAR.4 Recognize proportional relationships in relevant, mathematical problems; represent, solve, and explain these relationships with tables, graphs, and equations. Grade 8: 8.PAR.3 Create and interpret expressions within relevant situations. Create, interpret, and solve linear equations and linear inequalities in one variable to model and explain real phenomena.	MSD.CR.1 Demonstrate an understanding of the choreographic process. MSD.CR.2 Demonstrate an understanding of dance as a form of communication. MSD.RE.1 Demonstrate critical and creative thinking in dance. MSD.CN.3 Demonstrate an understanding of dance as it relates to other areas of knowledge.

SOUTH CAROLINA STANDARDS

Curriculum Standards	Arts Standards
Grade 6: 6.DS.4 Select and create an appropriate display for numerical data, including dot plots,	Anchor Standard 1: I can use movement exploration to discover and create artistic ideas and works.

histograms, and box plots. Grade 7: 7.DSP.5 Investigate the concept of probability of chance events. a. Determine probabilities of simple events. b. Understand that probability measures likelihood of a chance event occurring. c. Understand that the probability of a chance event is a number between 0 and 1. d. Understand that a probability closer to 1 indicates a likely chance event. e. Understand that a probability close to $\frac{1}{2}$ indicates that a chance event is neither likely nor unlikely. f. Understand that a probability closer to 0 indicates an unlikely chance event. Grade 8: 8.DSP.2 Draw an approximate line of best fit on a scatter plot that appears to have a linear association and informally assess the fit of the line to the data points.	Anchor Standard 2: I can choreograph a dance. Anchor Standard 3: I can perform movements using the dance elements. Anchor Standard 5: I can describe, analyze, and evaluate a dance.
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KEY VOCABULARY

Content Vocabulary	Arts Vocabulary
• <u>Data</u> - Facts and statistics collected together for reference or analysis • <u>Analyze</u> - Examine methodically and in detail the constitution or structure of something, especially information, typically for purposes of explanation and interpretation • <u>Interpret</u> - Explain the meaning of information, words, or actions • <u>Charts</u> - A sheet of information in the form of a table, graph, or diagram • <u>Graphs</u> - A diagram showing the relationship between variable quantities, typically of two variables, each measured along one of a pair of axes at right angles • <u>Fraction</u> - A numerical quantity that is not a whole number	• <u>Merce Cunningham</u> - American modern dancer and choreographer who developed new forms of abstract dance movement • <u>Chance Dance</u> - Chance dance is a choreography technique that uses chance to determine the order of a sequence of movements. It can also refer to a movement activity where participants create a dance using a random method like rolling dice. • <u>Choreography</u> - The art of designing and arranging sequences of movements, steps, and gestures to create a dance piece • <u>Choreographer</u> - The person who designs or creates a dance piece • <u>Form</u> - How a dance/choreography is structured (put together)

- Level - One of the aspects of movement (there are three basic levels in dance: high, middle, and low)

MATERIALS

- Dice
- Movement cards with sample movements on them
- Merce Cunningham video [The Six Sides of Merce Cunningham](#)
- Data chart
- Paper
- Pencil/pens/markers
- Music

INSTRUCTIONAL DESIGN

Opening/Activating Strategy

- Create a short dance with students using a movement list to select from.
 - Example movement list:
 - Jump
 - Hop
 - Clap
 - Turn
 - Slide
 - Change levels
 - Change directions
- Explain to the students that a piece of choreography is a collection of data.
- Using the data/choreography, create a chart/graph to represent all the steps in the dance.
- Explore various types of charts/graphs that can be used to display the data/choreography.

Work Session

- Watch the video, [The Six Sides of Merce Cunningham](#). Discuss who Merce Cunningham is and how he used the concept of chance to create dances.
- Discuss how this applies to dancers and choreographers.
- Break class into groups.
- Give each group a set of movement cards (each group's cards should be the same) and one die.
- Choose one of the two methods:
 - 1) Tell the students to randomly select a card then roll the die to indicate the number of times that movement will be done.
 - Students should continue until they have used all the cards.
 - 2) Give students a set number of movements that they must include in their choreography. Have students assign a numerical value (one to six) to each movement. Have students roll their dice to determine what each movement in their choreography will be.
- Have the students create a graph/chart (ex. histograms, dot plot, box plot) to represent all the data in their choreography.
- Students will then create choreography for the data they have.
- Each group will share their choreography with the whole class.

Closing/Reflection

- Facilitate a discussion around the following questions:
 - How was each group's dance different even though each group had the same data to start with?
 - How did chance impact the outcome?

ASSESSMENTS

Formative

- The teacher will assess student learning throughout the lesson by observing students' ability to use various movements in dance and their ability to use chance to create a unique piece of choreography.

Summative

- The teacher will assess student learning using the data charts students create about their choreography
- Create a list of questions to ask about the students choreography/data—Examples:
 - How many total movements were in your dance?
 - What was the mean/median/mode of your data?
 - Compare all data charts.
 - What is the probability that all dances would contain a jump?
 - What is the mean/median/mode of all dances?

DIFFERENTIATION

Accelerated: Have the students collect the data from all groups' choreography and create various types of charts/graphs representing all the data or comparing the data of different groups.

Remedial:

- Limit the data set.
- Give the students a chart/graph that is already created and have them create choreography from the data.

ADDITIONAL RESOURCES

This integrated lesson provides differentiated ideas and activities for educators that are aligned to a sampling of standards. Standards referenced at the time of publishing may differ based on each state's adoption of new standards.

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