artsNOW
Integrated learning solutions

USING DANCE TO EXPLORE ELECTRICITY
Grade Band: 4-5
Content Focus: Dance & Science

LEARNING DESCRIPTION

In this lesson, students will analyze various examples of conductors and insulators. They will work in small groups to craft a group dance that depicts an electrical current and how it is affected by the conductor or insulator they are analyzing. Students will present their dances to the class and their classmates will determine whether the movement conveyed an insulator or conductor. Students will reflect on the process and a class discussion will develop around how conductors and insulators affect electrical currents.

LEARNING TARGETS

Essential Questions	"I Can" Statements
How can dance be used to explore the effect that conductors and insulators have on electrical currents?	I can explain the different effects that a conductor and an insulator have on an electrical current. I can demonstrate the different effects that a conductor and an insulator have on an electrical current through movement and choreography.

	I can use the elements of dance to communicate meaning to an audience.

GEORGIA STANDARDS

Curriculum Standards	Arts Standards
Grade 5: S5P2. Obtain, evaluate, and communicate information to investigate electricity. a. Obtain and combine information from multiple sources to explain the difference between naturally occurring electricity (static) and human-harnessed electricity. b. Design a complete, simple electric circuit, and explain all necessary components. c. Plan and carry out investigations on common materials to determine if they are insulators or conductors of electricity.	**Grade 5:** ESD5.CR.1 Demonstrate an understanding of the choreographic process. ESD5.CR.2 Demonstrate an understanding of dance as a form of communication. ESD5.PR.1 Identify and demonstrate movement elements, skills, and terminology in dance ESD5.RE.1 Demonstrate critical and creative thinking in dance.

SOUTH CAROLINA STANDARDS

Curriculum Standards	Arts Standards
Grade 4: 4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	**Anchor Standard 1:** I can use movement exploration to discover and create artistic ideas and works. **Anchor Standard 2:** I can choreograph a dance. **Anchor Standard 3:** I can perform movements using the dance elements. **Anchor Standard 7:** I can relate dance to other arts disciplines, content areas, and careers.

KEY VOCABULARY

Content Vocabulary	Arts Vocabulary
• Electrical current - A flow of electric charges Insulators A material that prevents or blocks the flow of electricity • Circuit - A path that is made from an electrical current	• Movement phrase - A series of movements linked together to make a distinctive pattern • Non-locomotor - This refers to a movement that does not travel through

• Conductor - A material that electricity can flow through easily • Insultator - A material that resists the flow of electric charge	space • Locomotor - This refers to a movement that travels through space • Steady beat - An unchanging, continuous pulse • Pathway - The designs traced on the floor as a dancer travels across space; the designs traced in the air as a dancer moves various body parts • Space - An element of movement involving direction, level, size, focus, and pathway • Level - One of the aspects of the movement element space; in dance, there are three basic levels: high, middle, and low • Choreography - The art of composing dances and planning and arranging the movements, steps, and patterns of dancers • Choreographer - A person who creates dances • Shape - This refers to an interesting and interrelated arrangement of body parts of one dance; the visual makeup or molding of the body parts of a single dancer; the overall visible appearance of a group of dancers *Types of shapes: Curved/Angular*

MATERIALS

- Sound source and music with a steady beat
- Anchor chart paper/poster paper (one per group)
- Markers
- Index cards with scenarios written on them

INSTRUCTIONAL DESIGN

Opening/Activating Strategy

Classroom Tips: Make your expectations for when students work together in groups to craft their dances explicit. Go over the guidelines before the group work begins. Write and post them so that students can refer back to them if they need to during their group working time.

- Begin the lesson by engaging students in movement that introduces students to the Elements of Dance: Body, action, space, time and energy.
    - Have students arrange themselves throughout the room with enough personal space to move freely without touching a neighbor.
    - Turn on instrumental music with a steady beat.
    - First, have students bring awareness to their bodies by leading them through gentle stretches starting from the head and moving to the toes (e.g., head circles, shoulder shrugs, toe touches, etc.).
    - Prompt students to create shapes with their body to music. Encourage students to think about making curved and angular shapes.
    - Next, bring students' awareness to the space in the room by having them march in place to the beat of the music swinging their arms side to side. Select a "leader" who will guide students in a movement as students walk in a circle around the room. This will allow students to explore traveling movements and pathways (straight, zigzag, circular).
        - Tell students that when a dancer moves from one place to another, this is called locomotor movement; when a dancer performs a movement in one place, this is called non-locomotor.
    - Now, direct students to go back to their place; they will explore energy variations with different movement qualities such as sharp movements–quick, precise actions like punches or snaps, and smooth movements–slow, flowing actions like waves or circles with arms.
- Have students return to their seats.

Work Session

- Review electrical currents, circuits, conductors, and insulators. Use visuals to support student understanding.
    - Ask students how pathways in dance and electrical circuits are similar. Ask a student volunteer to demonstrate. This will help students see how movement can be used to communicate a concept.
    - Brainstorm with students examples of conductors and insulators.
- Divide students in small groups.
- Have students divide a piece of chart paper/poster paper into four sections.
    - Students should title each section the following: Electrical current, circuit, conductor and insulator.
    - In each section students should write adjectives that would describe what each would look like. Students should also brainstorm what types of movements would express each term. Ask students to consider things like movement quality, locomotor/non-locomotor, pathways, etc.
    - Allow time for some groups to share. Students can then revise their charts as needed.
- Give each group a scenario written on an index card that demonstrates either a conductor or an insulator that would affect an electrical current.

- Direct students to first determine whether the example is a conductor or insulator.
- Next, ask students to collaborate to create a movement phrase (three movements) that depicts the scenario and how the conductor or insulator provoked or stopped the electrical current.
- Remind students to refer back to their charts to help them choreograph their movement phrases.

Closing/Reflection

- Students will perform their movement phrases for the class. Before students perform their dances, discuss audience participation and etiquette.
- After each performance, the audience should determine whether the piece had a conductor or an insulator in the scenario.
- Facilitate a discussion around how they arrived at their conclusion by asking the following questions:
  - Based on the movement of the group, how did we know there was a conductor/insulator?
  - What did you notice about the electrical current in this dance piece?
  - Who in the group was the conductor or insulator? How did they convey this?
  - How did dance help us understand electrical currents?
- If students use a STEAM journal, have them write a reflection using these questions as a prompt.

ASSESSMENTS

Formative

Teachers will assess students' understanding of the content throughout the lesson by observing students' participation in the activator; discussion of electrical currents, circuits, conductors and insulators as a whole class and in small groups; contributions to group choreography, and explanations to class debrief of each performance.

Summative

CHECKLIST

- Students can explain the different effects that a conductor and an insulator have on an electrical current.
- Students can demonstrate the different effects that a conductor and an insulator have on an electrical current by creating a movement phrase that uses the elements of dance.

DIFFERENTIATION

Acceleration:

- Challenge students to create an eight movement choreography to demonstrate their concept.
- Have students create their own scenarios and choreograph movement phrases to demonstrate them.

Remediation:

- Reduce the number of movements students are required to include in their choreography.
- Choreograph a movement phrase to represent either a conductor or an insulator together as a whole class. Then, have students work in small groups to choreograph a movement phrase to demonstrate whichever concept was not choreographed as a class.

ADDITIONAL RESOURCES

NA

**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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