artsNOW
Integrated learning solutions

MUSIC AND ACOUSTICS
Grade Band: 4-5
Content Focus: Music & Science

LEARNING DESCRIPTION

Students will work together creatively to compose a rhythmic piece using cups, demonstrating their ability to identify and understand the relationship between force, size and sound. Throughout the lesson, students will apply musical skills such as improvisation, composition, listening, and playing.

LEARNING TARGETS

Essential Questions	"I Can" Statements
How can music listening and composing support learning in other curricular areas? What is the relationship between size and sound and force and sound?	I can identify high, medium, and low sounds and loud, medium, and soft sounds aurally. I can describe the impact of size and force on sound.

	I can create and perform an 8-beat rhythmic pattern. I can identify the pitch and dynamics of peers' compositions verbally and through notation.

GEORGIA STANDARDS

Curriculum Standards	Arts Standards
Grade 4: S4P2. Obtain, evaluate, and communicate information about how sound is produced and changed and how sound and/or light can be used to communicate. a. Plan and carry out an investigation utilizing everyday objects to produce sound and predict the effects of changing the strength or speed of vibrations.	**Grade 4:** ESGM4.CR.1 Improvise melodies, variations, and accompaniments. ESGM4.CR.2 Compose and arrange music within specified guidelines. ESGM4.PR.2 Perform a varied repertoire of music on instruments, alone and with others. ESGM4.RE.1 Listen to, analyze, and describe music. ESGM4.CN.1 Connect music to the other fine arts and disciplines outside the arts.

SOUTH CAROLINA STANDARDS

Curriculum Standards	Arts Standards
Grade 4: 4-PS4-3. Generate and compare multiple solutions that use patterns to transmit information.	**Anchor Standard 1:** I can arrange and compose music. **Anchor Standard 2:** I can improvise music. **Anchor Standard 4:** I can play instruments alone and with others. **Anchor Standard 6:** I can analyze music. **Anchor Standard 9:** I can relate music to other arts disciplines, other subjects, and career paths.

KEY VOCABULARY

Content Vocabulary	Arts Vocabulary

• Sound wave - A vibration that travels through a medium (such as air, water, or solid materials) as a result of oscillating particles • Pattern - A repeated arrangement of elements or events, often following a specific order or sequence • Transmit - To send or pass something	• Acoustics - The branch of physics that deals with sound and sound waves • Body percussion - Sounds produced by striking or scraping parts of the body; typically includes snapping, clapping, patting, and stamping • Dynamics - Volume of sound (loudness, quietness) • Texture - The thickness or thinness of sound • Pitch - The highness or lowness of sound

MATERIALS

- Audio recording of drum composition (examples can be found on iTunes, Spotify, YouTube, etc.)
- Sound source (computer and speakers)
- Drums of three different sizes (improvise with other objects, such as buckets or pots, that can be used in place of a drum if you do not have drums available)
- Plastic cups of three different sizes
- 8-beat visual (numbers 1-8 spaced evenly)
- Pencils
- "Pitch detective" charts for each student
- "Pitch detective" visual on board

INSTRUCTIONAL DESIGN

Opening/Activating Strategy

Classroom Tips: *Arrange student groups throughout the room so that they can move far enough apart during the creating process to enable careful listening and minimize distraction from other groups. Perform compositions out of sight of "audience," so students rely on listening rather than sight to identify sounds heard.*

- Play a recording of drums as students enter the room.
- Have students listen and then discuss with a partner what they heard.
- Introduce musical terms (e.g., instrument names, dynamics, pitch, texture, etc.) as students make observations.

Work Session

- Take out three different sized drums (or buckets turned over). Demonstrate different pitches (high, medium, low) of various size drums (using the same relative force when you hit each drum).

- Ask students if they can determine the relationship between sound and drum size.
- Now change the force used on one drum–soft, medium, and hard. Ask students to determine the relationship between force and sound.
- Now, transfer these acoustical principles to various size plastic cups.
- Play a listening game with students. Out of students' sight, perform 4- or 8-beat rhythmic patterns (or beats) on different drums and/or cups.
- Challenge students to identify what was heard (e.g., three sounds on a small drum and one sound on a medium drum).
- Have students echo the pattern, using body percussion (e.g., clap for high drum, pat for medium drum, stamp for large drum).
- Perform an 8-beat rhythmic pattern using low, medium, and/or high sounds, and have students identify what they heard (high, medium, and low).
    - Keep the patterns simple by using quarter notes (one sound for each beat) and eighth notes (two sounds on each beat only).
    - Using an 8-beat visual (see below) may be helpful to guide student responses.
      1 2 3 4 5 6 7 8
- Vary the performance by changing the dynamics (loud, medium and soft). Have students identify the dynamics and how changing the dynamics changed the composition.
- Divide students into groups of four to six students, with each student having a cup. Have students create an 8-beat pattern using cups.
    - Remind them to include everyone in the composing and performing process.
    - Have students try changing the dynamics of their performances as they rehearse.
- Distribute pencils and "pitch detective" charts. While each group performs (out of the sight of their classmates), the other students will be "pitch detectives" and notate what they hear on their charts.
    - For example, using a blank 8x3 table (such as appears below), students could write an "X" in the appropriate boxes based on what they hear. The boxes below would demonstrate four high sounds, two medium sounds, and two low sounds.

X	X	X	X				
				X	X		
						X	X

    - Have groups perform again; this time students will use a key to indicate the dynamics of the sound–loud, medium or soft. For example, students could circle the X's for loud, draw a triangle around the X's for medium, and underline the X's for soft.

Closing/Reflection

- Compare and contrast student compositions, discussing the differences in pitches, dynamics and rhythms.
- Finally, have students complete a written reflection on the relationships between force and sound and size and sound.

ASSESSMENTS

Formative

Teachers will assess students' understanding of the content throughout the lesson by observing students' participation in the activator; ability to use musical vocabulary to describe music; ability to identify high, medium, and low sounds and loud, medium, and soft sounds; and collaboration with group members to create an 8-beat pattern using cups.

Summative

CHECKLIST

- Students can identify high, medium, and low sounds and loud, medium, and soft sounds aurally.
- Students can describe the impact of size and force on sound.
- Students can create and perform an 8-beat rhythmic pattern.
- Students can identify pitch and dynamics of peers' compositions verbally and through notation.

DIFFERENTIATION

Acceleration:

- Provide students with a variety of materials (including but not limited to cardboard boxes, plastic hangers, foil, rubber bands in different sizes, etc). Ask students to build (or design) new instruments that play different pitches. Allow students to research and explore how instruments are made. Having different students research different instruments will allow for discussion on how they make different sounds.
- Combine two student compositions into a 16-beat phrase.
- Combine two student compositions simultaneously, producing a thicker texture.
- Alter dynamics and/or tempo of student compositions.
- Have students write compositions for others to perform using various notational systems.
    - Write 1-2 Xs in each cell of a 3x8 table.
    - Use other symbols (triangle, square, circle) to represent high, medium, and low sounds.
- Have students write sequential steps for generating new compositions.

Remediation:

- When performing rhythmic patterns, have students perform a four beat pattern.
- Group students into pairs as they complete their "pitch detective" charts.
- Make the "pitch detective" charts 4x3.

ESOL Modifications and Adaptations:

- Ensure that students have a clear understanding of the concepts of steady beat and pitch, along with the music vocabulary words texture, dynamics, acoustics, and body percussion prior to teaching this lesson.

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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