

Lesson Plan Title

Percussion Instruments and Pitch

Grade Level

4th Grade

Subject Area

Science

MSCCRS

P.4.6C.1 - Plan and conduct scientific investigations to test how different variables affect the properties of sound (i.e., pitch and volume).

P.4.6C.2 - In relation to how sound is perceived by humans, analyze and interpret data from observations and measurements to report how changes in vibration affect the pitch and volume of sound.

Art Form

Music

MSCCR Creative Arts Standards

MU: Pr4.2.4 Select, analyze, and interpret artistic work for presentation.

Analyze the structure and context of varied musical works and their implications for performance.

a. Demonstrate understanding of the structure and the elements of music (such as rhythm, pitch, and form) in music selected for performance.

MU: Cr1.1.4 Generate and conceptualize artistic ideas and work.

Generate musical ideas for various purposes and contexts.

a. Improvise rhythmic, melodic, and harmonic ideas, and explain the connection to specific purpose and context (such as social and cultural).

b. Generate musical ideas (such as rhythms, melodies, and simple accompaniment patterns) within related tonalities (such as major and minor) and meters.

Duration

1 hour

Materials

Website: https://artsedge.kennedy-center.org/educators/lessons/grade-3-4/Percussion_Instruments_And_Pitch

Printables below in resources

Handout - Instrument Families Of The Orchestra

Handout - Vocabulary

Handout - Scientific Process Guidelines

Handout - Procedural Guidelines For Creating Percussion Instruments

Assessment Rubric

Required Technology:

1 Computer per Classroom

Speakers

Objectives

Design investigations that determine what factors affect the pitch of percussion instruments

Explore the factors that determine pitch fluctuation of percussion instruments

Create and record a meaningful hypothesis as well as accurate data sets reflecting knowledge gained through their investigation.

Vocabulary

Sound

Analyze

Interpret

Observation

Music Vocabulary

Pitch

Percussion

Instrument

Lesson Description

ENGAGE

1. Review the members of the percussion instrument family. Distribute the Instrument Families of the Orchestra handout that can be found within the Resource Carousel and review the information in the "Percussion" column.

2. Play instrument listening clips for the percussion family from 'Perfect Pitch'.

BUILD KNOWLEDGE

<http://artsalive.ca/en/mus/instrumentlab/percussions.asp> Percussion: here, students can learn more about instruments and play clips

<https://nac-cna.ca/en/orchestra/musicians> Percussion Interviews: students can read interviews with musicians and view demonstration videos

<http://www.playmusic.org/percussion/index.html> Percussion: students can learn about the instruments, play clips, and play a matching game (requires Shockwave)

<http://artsedge.kennedy-center.org/interactives/perfectpitch/> Perfect Pitch: students can learn about the instruments and try out different combinations of instruments and music styles.

2. Refer back to the Instrument Families of the Orchestra handout that can be found within the Resource Carousel. As a class, share any information discovered in the course of the research, and review the relevant information in the "Percussion" column of the handout.

APPLY

1. Review the Scientific Process Guidelines for Percussion and the Vocabulary handouts. The two handouts may be found within the Resource Carousel. Add the following terms to the discussion:

Air column: space within the percussion instrument that determines the pitch.

Percussion: sounds produced by striking the instrument with a mallet or stick, or striking one instrument against another.

2. Review the process of forming a hypothesis and making a prediction. Explain that you'll be making glass xylophones and will need to figure out how to create different pitches.

3. Have students individually create a hypothesis relating the length of the air column to the pitch the instrument will create when played. Have students create a prediction based on this hypothesis, using the following format: "If our hypothesis is true, then the pitch created should be higher /lower when the air column is larger/smaller."

4. Divide students into cooperative groups of four. Assign one student to each of the following duties:

Recorder: note taker

Group leader: decision maker, dispute settler, teacher liaison

Equipment adjuster: makes adjustments to test equipment

Tester: performs the tests (mouthpieces should be sanitized before and after use)

5. Test the hypotheses within the groups. Groups should discuss the hypotheses and predictions students have developed individually and choose one of each to use as they proceed with the experiment. Students will work in small groups completing the experiment, following the Procedural Guidelines for Creating Percussion Instruments handout. Have students fill in the data section of the Scientific Process Guidelines for Percussion handout based on their experiments.

6. Monitor student participation and accuracy in achieving results. When necessary, remind students of their roles within the cooperative group. Have students record their experimental data onto their own Scientific Process Guidelines for Percussion handouts. Each student must complete the analysis section and the conclusion section independently.

REFLECT

1. Discuss the following questions:

What is the relationship between pitch and the size of the air column? A larger air column creates a lower pitch since the sound has more room to travel through and is therefore slower.

What affects pitch for percussion instruments without air columns? Size is still important for pitch since a larger surface still gives the sound a longer distance to travel. Point out the increasing size of lower notes on a xylophone.

What is the name of the branch of science that we have studied? Acoustics.

Recommended Resources

http://artsedge.kennedy-center.org/~media/ArtsEdge/LessonPrintables/grade-3-4/percussion_and_pitch_instrument_families_of_the_orchestra.pdf

<http://artsedge.kennedy-center.org/interactives/perfectpitch/>

<https://artsedge.kennedy-center.org/~media/D58CF02D9A3840A1984DE359952AD892.ashx>

<https://artsedge.kennedy-center.org/~media/3900EB2E50F242B491DC1DB8D30AFAEB.ashx>
<https://artsedge.kennedy-center.org/~media/16619839982C48C392A2296FD1AEF681.ashx>
https://artsedge.kennedy-center.org/~media/ArtsEdge/LessonPrintables/grade-3-4/percussion_and_pitch_assessment_rubric.ashx

Extending the Learning

The Procedural Guidelines for Creating Percussion Instruments include instructions for making more percussion instruments. Allow students to make their choice of instruments, and play them together.

Author

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