Accessing Prior Knowledge

Name: _____ Date: _____

Sound

What Is Sound?

Part 1:
Write down as many things as you can that make a sound in two minutes.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Part 2:
Some people are deaf and cannot hear sound, but they can feel it. Put your hand over your throat and say your name. Share with a partner what you notice.

Scope Phenomenon

Name: _____ Date: _____

Good Vibrations

1. What happens to the guitar strings in the video?

2. The video is silent, but if it had sound, what could be heard in the video? How do you know?

3. What are some other objects that use vibrations to make sounds?

Explore Student Journal

Name: _____ Date: _____

Sound Stations

Student Journal

Observations	Station 1	Station 2	Station 3	Station 4
What did I see?				
What did I hear?				
Did anything move?				

1. How is sound made?

2. What do you think moves so that we hear people talking?

Explore

Name: _____ Date: _____

Sound Stations

Student CER

Complete the sentence.

Sounds make materials _____.

Draw a picture of what you observed at the sound stations.

Explore

Sound Stations

Student Rubric

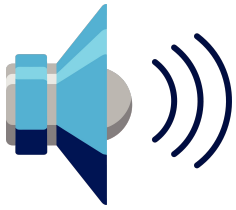
	3 ☺ ☺ ☺	2 ☺ ☺	1 ☺
Fill in the Blank	I filled in the blank correctly.	I filled in the blank incorrectly.	I did not fill in the blank.
Drawing	I drew a picture of what I observed	I drew a picture, but it wasn't of what I observed.	I did not draw a picture.
Listening and Following Directions	I was actively listening and following my teacher's instructions.	I listened sometimes, and I followed some directions.	I did not listen or follow directions.

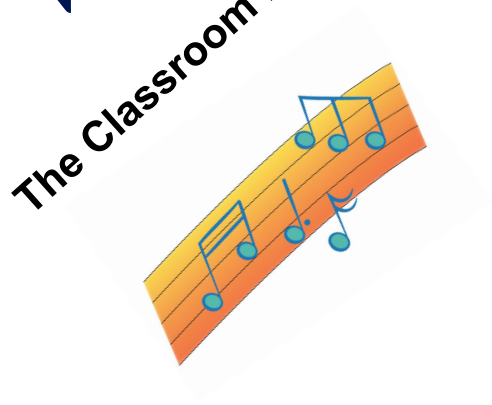
Explore

Name: _____ Date: _____

Rock Out!

Entry Document





How do musical instruments make sound? Let's find out by designing our own instruments like the kids in Paraguay by using the materials available to us in our classroom. We can form our own classroom band! Other classrooms may want to make instruments and form their own band, so we are going to make a "how-to" book to provide directions on the instruments we design. Use the template provided to show the pictures and directions for making your instrument.

You can research how instruments can be made using everyday materials by searching the internet sites and the books provided by your teacher. In your group be sure and have different instruments that make different and unique kinds of sounds. For example, some instruments make low tones or high tones, and other instruments provide a beat and rhythm.

You and your group will share the sounds your instruments make by performing for your classroom a short musical selection. Create a song or rhythmic chant with lyrics about sound. The Instrumentalist, Rhythm Expert, Composer, and Band Leader will work together to complete that tasks and be ready for the final performance.

Mini Book Instructions

Cut out the mini-book along the solid, bold outside lines. Carefully cut along dotted line in center. Fold once, hotdog style, with crease facing upward. Hold by the outside edges. Push the paper inwards so that it makes an "x" shape. Fold along the solid black lines to make a book with pages you can turn.

Explore

Rock Out!

PBL Expert Roles

Instrumentalist
You are responsible for investigating how to design instruments that make high and low musical tones. Two members of your team will need to make stringed instruments that make high and low tones. Designing stringed instruments that are similar to violins and guitars and understanding how strings vibrate to make sound will help you make decisions about how to design these instruments. You will share your findings with your team to help guide the design of instruments and get ready for the final performance.

Rhythm Expert
You are responsible for researching and helping design instruments that make a rhythm and keep a beat. Two members of your team will need to make instruments that produce rhythm and beat. Drums, tambourines, and mariachis are a few of the instruments that you will research to help understand how these instruments make sounds of rhythm. This information should help you make decisions about how to design your instruments. You will share your findings with your team to help guide the design of instruments and get ready for the final performance.

Composer and Writer
You are responsible for leading the team to create a musical selection that you will perform for your class. You will work closely with the team to decide what song and lyrics about sound to perform that will best utilize the instruments your team has created. You will also help lead the team in writing the “how-to” book that will describe how each instrument was made and how it produces sound. You will be in charge of making sure the template for the “how-to” book is completed and turned in for the final performance.

Explore

Rock Out!

Expert Roles, continued

Band Leader

As the Band Leader you are responsible for seeing the entire project through to completion. You will need to constantly assess where team members need help and assist them. You will need to keep the rubric in hand and constantly refer back to it to make sure that your team is meeting the criteria. You will also be the band leader that helps your team practice and prepare for the final performance of your chosen musical selection for the class.

Explore

Step 4	**Step 3**
Step 5	**Step 2**
	Step 1
My Instrument	**Materials**

Explore

Rock Out!, Key

Team Rubric for a Problem/Project Based Learning Challenge

Category	Expert (4)	Competent (3)	Beginner (2)	Novice (1)
Problem and Solution	We made a unique instrument and wrote a detailed how-to book showing others how to make it.	We made an instrument and wrote a how-to book showing others how to make it.	We made an instrument, but did not write a how-to book showing others how to make it.	We did not make an instrument or a how-to book.
Performance	My group made four different instruments and our lyrics were about how sound is produced by vibrations.	My group made three different instruments and our lyrics were about sound.	My group made two different instruments and our lyrics were about sound.	My group did not give a performance.
Creativity	We had a lot of different ideas that we shared for instruments and lyrics. We helped each other make instruments.	We had some ideas that we shared for instruments and lyrics. Some of the team helped make instruments.	We had few ideas that we didn't share with each other. We each made our own instrument.	I did not know what I was supposed to do, and I did not help my team come up with ideas for instruments or build the instruments.
Understanding	We could tell the teacher that our instruments produced sound by vibrating.	Some of the team could tell our teacher that our instruments produced sound by vibrating.	Only one member of our team could tell our teacher about how the instruments produced sound.	No member of the team could tell our teacher about how the instruments produced sound.

Explore

Rock Out

Individual 21st Century Skills Rubric

Communication	3 ☺ ☺ ☺	2 ☺ ☺	1 ☺
Lyrics 	My group wrote a song about sound.	My group wrote a song, but it wasn't about sound.	My group did not write a song.
Instruments 	My group created instruments that made different sounds.	My group created instruments, but they all made the same sound.	My group did not make any instruments.
Explain 	I wrote a how-to book that completely explained how to build my instrument.	I wrote a how-to book, but it didn't explain how to build my instrument.	I didn't write a how-to book.
Listening and Following Directions 	I was actively listening and following my teacher's instructions.	I listened sometimes and I followed some directions.	I did not listen or follow directions.

Sound

Picture Vocabulary

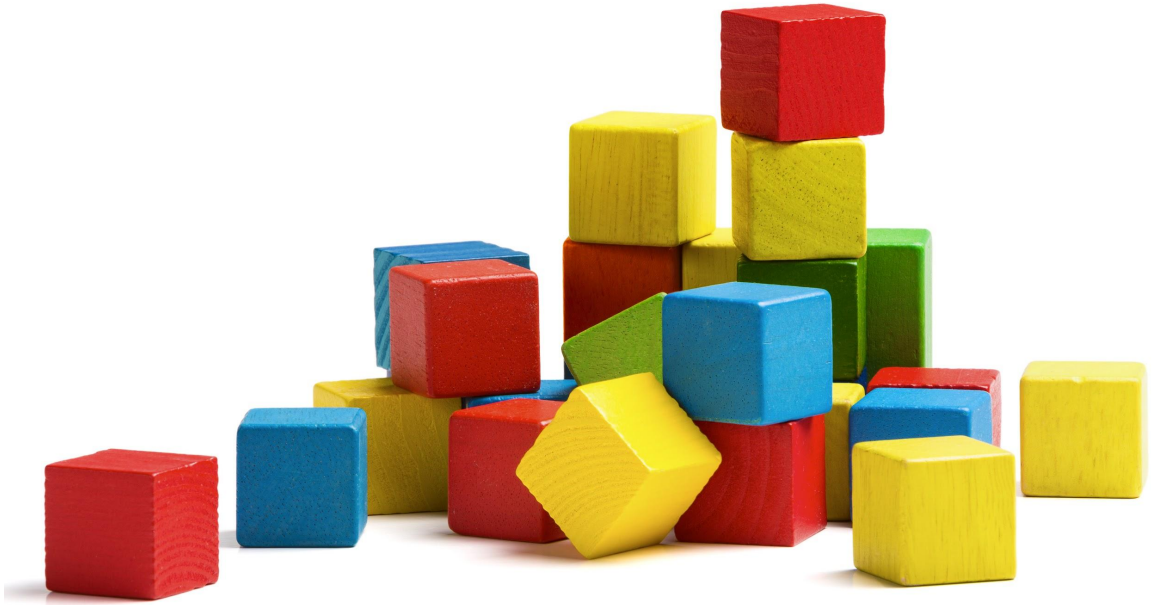
Evidence

Information that supports an idea

Materials

Equipment and supplies for doing or making things

Matter

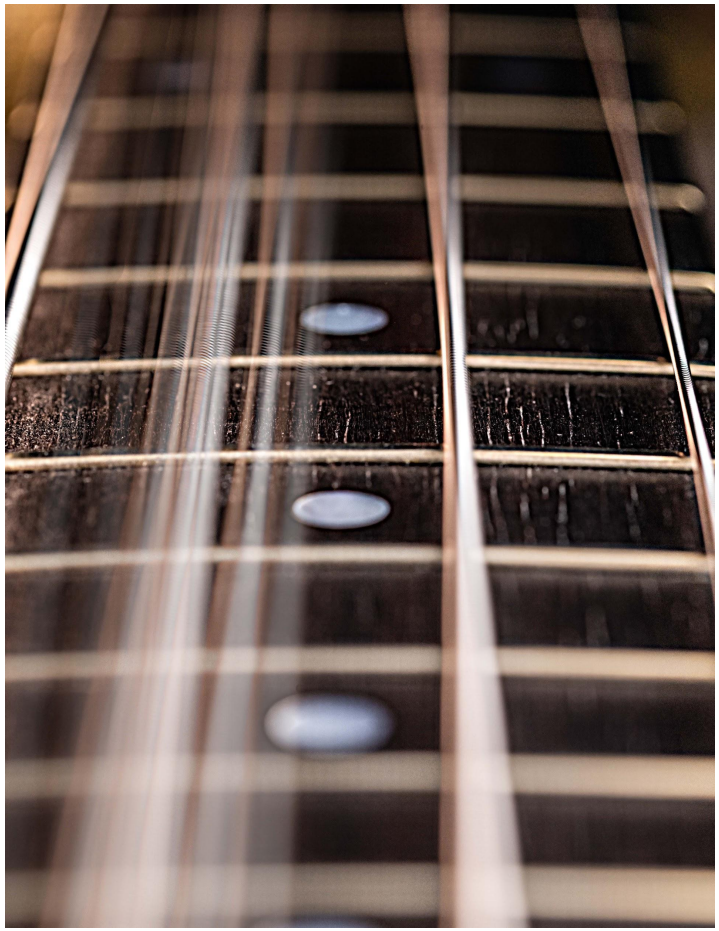


Stuff that everything is made of

Sound

Energy that travels through the air and can be heard by the ear

Vibrate



To shake quickly

Reflect

Think of a big parade you might have been to. A marching band goes by. Have you ever felt the vibrating of drums as drummers walk by?

Vibrate: move back and forth quickly

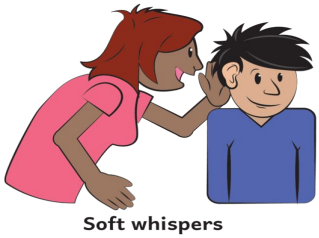
Sound comes from the energy of vibrating objects. An object is vibrating when it moves back and forth quickly. The vibrations move through the air from the drum to your ear. We hear those vibrations as sounds.

Sound is produced by nature or by man-made objects. You can hear animals making sounds, the ocean pounding the shore, the wind blowing through the trees, etc. Sound is also produced by vibrating objects such as musical instruments, radios, sirens, etc.

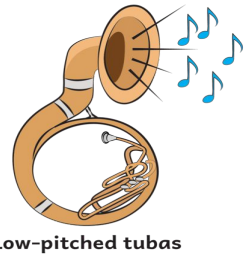
Loud sirens


Singing birds

High-pitched bells


Soft whispers


Singing kids


Low-pitched tubas

Vibrating objects make sounds we can hear.

Reflect

Sound vibrations are produced in many ways. Tapping a glass with a short column of air, makes a high-pitched sound. Tapping a long column of air produces a low-pitched (deep) sound.

High -------- Low

The size of an object also affects the sound. On a xylophone, tapping the bigger pieces of metal makes low-pitched sounds, while the smaller pieces of metal make high-pitched sounds.

High -------- Low

Try Now

Look at the musical instruments. Use the words **drum, horn,** and **harp** to answer the following questions:

1. Which instrument do we blow into to cause vibrations to make sound?
2. Which instrument do we pound on to cause vibrations to make sound?
3. Which instrument do we pluck to cause vibrations to make sounds?

Try Now

You use sound every day. Think about three objects in your home or school that are vibrating objects making sounds. Write the name of each object and draw a picture.

	Name of Object	Picture of Object
1		
2		
3		

Connecting With Your Child

Sounds from a Vibrating String

All sounds originate from something that is vibrating. In this activity, you and your child will use a stretched rubber band as a vibrating string. Begin by brainstorming about different types of sounds.

High and low sounds refer to the pitch. High-pitched sounds come from more rapidly vibrating objects. Both the tension and length of the plucked string affect pitch. Loud and soft sounds refer to how much energy a sound has. In a string instrument, amplitude is controlled by how far back the center of the string is pulled when plucked. For this activity, you will need a hammer; three nails; a short, wide board; and a large, strong rubber band. Help your child complete the following procedure:

1. Pound the nails into the board to form a triangle with unequal sides. The triangle should stretch the rubber band out completely (tight).
2. Stretch the rubber band over the nails with equal tension on each side.

3. Pluck each side of the rubber band and observe the differences in pitch.
4. Pull hard on one side of the rubber band to increase the tension on the other two sides; observe the change in pitch of the two sides with increased tension.
5. Use a finger to hold the middle of the long side of the rubber band to the board; this will create two “new,” shorter sections of rubber band on either side of your finger. Pluck each “new” section and observe its pitch.
6. Vary the distance you pull back on one of the sides of the rubber band when plucking. Observe the differences in loudness.

Connecting With Your Child

Here are some questions to discuss with your child:

- Were you able to see differences in how the rubber band moved?
- When was there a high or low sound?
- Did it make a difference how far each rubber band moved?
- What do you think affected how loud the sound was? Try plucking hard and then soft to find out.

Linking Literacy

Name: _____ Date: _____

Categorize Cut and Paste

Cut out the pictures below and paste them in the correct category.

Things That Make Noise	Things That Do Not Make Noise








Linking Literacy

Name: _____ Date: _____

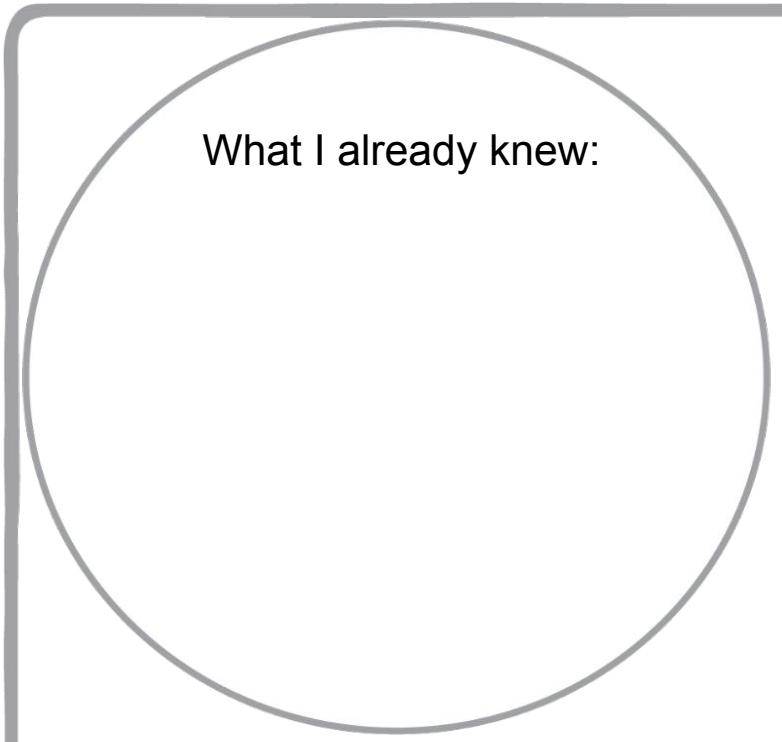
Comic Strip

In the comic strip boxes below, draw and label three different ways you can make sound.

Linking Literacy

Name: _____ Date: _____

Rearview Mirror



New facts and words I learned about:

Math Connections

Name: _____ Date: _____

The instruments below produce sound through sound waves. Use counting cubes to measure the length of each instrument below. Write the number of cubes next to each object.

1. Look at the instruments above. Circle the object that is the longest with a red crayon. Circle the object that is the shortest with green crayon.

Math Connections

2. Your shoes make sound waves that travel through the air as you run on the sidewalk at recess. Observe the length of your shoe. Draw an object that is shorter than your shoe and an object that is longer than your shoe in the boxes below.

Shorter than your shoe	Longer than your shoe

Susan and her family rode their bicycles to the park. She wanted to find out length of her family's bicycles without using a ruler. She used her tennis shoe as a unit of measurement. Look at the bicycles below to see the lengths she found of her mom's, her brother's, and her bicycle.

Mom

= 17 shoes

Brother

= 7 shoes

Susan

= 11 shoes

3. Circle the bicycle that is the longest. How many more shoes is the longest bicycle than the shortest?

Math Connections

A harp has strings that are many different lengths. Each string produces a higher or lower sound when it is strummed. Look at the harp below to identify the longest and shortest string.

4. Circle the longest string(s) with a red crayon.

5. Circle the shortest string(s) with a blue crayon.

6. Using a ruler, what is the length of the longest string(s) in centimeters?

7. Using ruler, what is the length of the shortest string(s) in centimeters?

Reading Science

Name: _____ Date: _____

Sound

Reading Science
1st Grade: Sound
Lexile: 540L

Reading Science

How are sounds made? When an object is hit or dropped, it moves back and forth quickly. This is known as vibration.

If you hit a drum with a stick, the drum will vibrate and cause the sound that your ears hear.

Reading Science

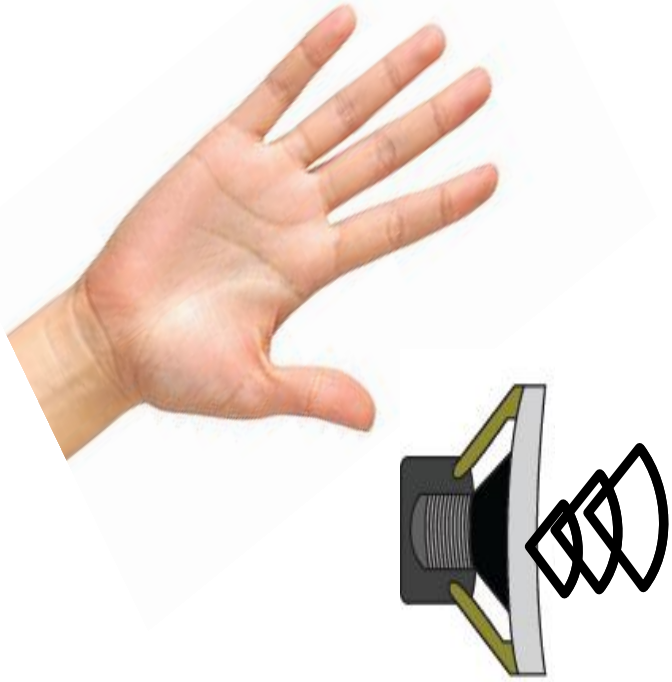
Place some rice on the drum and hit it with a stick. The rice will bounce on the drum, causing a sound.

Your mouth also makes sound. When you play a kazoo, you feel your lips vibrate. It makes them feel funny. They move back and forth rapidly.

Reading Science

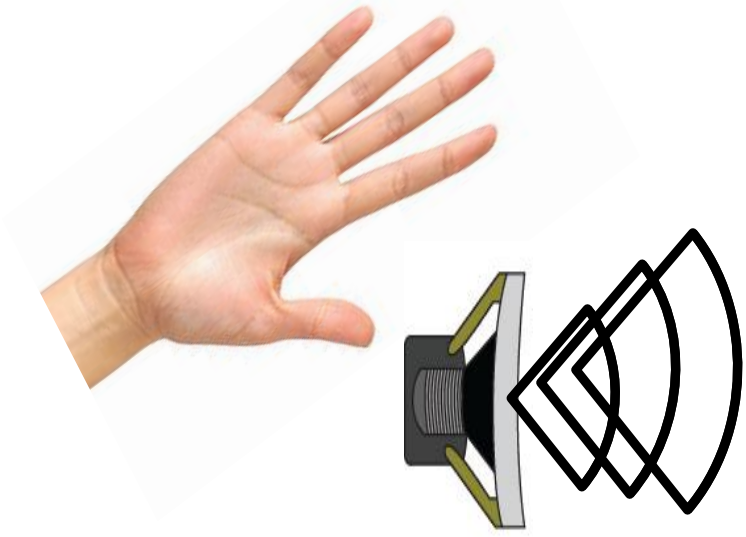
When you speak, you can feel your voice box vibrate. The vibrations allow you to speak.

We hear sound through speakers when we watch a movie. Place your hand on a speaker and you will feel it mo



Reading Science

When you turn the sound up, the speakers bounce more. The bigger vibrations cause the sound to be louder.



You can even hear sound below water in the swimming pool. That's because sound is able to pass through liquid.

Reading Science

Sound also passes through solids and gases. Many objects have the ability to carry sound.

When fireworks explode, they make a loud noise in the sky. You can feel it in your chest.

Reading Science

Sometimes sounds make objects move. When the firework explodes, it causes you to move. That's why you can feel them when they are loud.

Sound makes objects move. We need vibration to hear sounds. Without vibrations, we would hear nothing!

Reading Science

1 What does it mean to vibrate?

A Sound

B Move quickly back and forth

C Hear

D Run very fast

---

2 Sound can pass through all of the following **except**–

A water.

B speakers.

C outer space.

D mouth.

Reading Science

3 This passage is mostly about–

A how a kazoo makes your mouth vibrate.

B how to use a ruler to make sound.

C how to make objects move.

D how sound is made through vibrations.

---

4 If your mom tells you to turn the TV down a little, the speakers will make–

A the same size vibration.

B smaller vibrations.

C bigger vibrations.

D no vibration.

Reading Science

5 Your brother is playing loud music in his room. You see the picture on the wall start to move. What makes the picture move?

A Your brother

B Running in the house

C Your mom's voice

D The loud music

Claim-Evidence-Reasoning

Name: _____ Date: _____

Scenario

There are many different types of sounds. There are loud and quiet sounds. There are high and low sounds. There are long and short sounds. Different instruments can make different sounds. Drums can make loud, short sounds. A violin can make a long, high sound. Although your ear detects sound, you can also feel sound. Sounds from instruments can change when they are played differently.

Prompt

People cause their instruments to make sound. Thinking and observing like a scientist, how does the drum and guitar make sounds?

Claim:

The drum and guitar make sounds by _____.

Evidence: Write how you know!

Draw how you know!

Claim-Evidence-Reasoning

Sound CER

Student Rubric

	3	2	1
Claim 	☺ ☺ ☺ My claim was correct.	☺ ☺ I made a claim, but it was incorrect.	☺ I did not make a claim.
Evidence 	☺ ☺ ☺ I gave evidence that helped me make my claim.	☺ ☺ I gave evidence, but it did not have anything to do with my claim.	☺ I did not give any evidence.

Open-Ended Response

Name: _____ Date: _____

Sound

1. If you hold your hand on your throat while you hum, what do you feel?

   I feel _____

2. What causes sound?

   _____ cause sound.

Open-Ended Response

3. How can you make sound? _____

To make sound you need to make

_____

_____ because

_____

_____ make sound.

Draw what you can do to make sound.

Multiple Choice

Name: _____ Date: _____ Group: _____

1 If loud music is played in a room, the windows will–

A change color.

B freeze.

C shake.

D melt.

2 Sound moves–

A only in the water.

B when matter vibrates.

C when there is nothing in its way.

D always in the same direction.

Multiple Choice

3 Students place small bits of paper on top of a loudspeaker. What would show that the speaker vibrates when it makes noise?

A The speaker only makes noise when it is turned on.

B The paper will move when music is played.

C The bits of paper will stick to the speaker.

D The sound gets louder when the paper is taken away.

Multiple Choice

4 A very loud sound would make the water in a small glass–

A heat up.

B change color.

C dry up.

D vibrate.

5 When a bell makes a sound we can hear, it makes the sound because–

A it's made of metal.

B it's very heavy.

C it's a solid.

D it's vibrating.

Guided Practice

Note: Due to the nature of this element, not all sections of the activity can be completed and submitted online by students.

Description

Students create a paper craft to illustrate how sound energy is useful in their everyday lives.

Materials

Scissors (per student)
Pencil (per student)
Crayons (per student)
Chart paper or whiteboard (per group)
Markers (per group)
Whiteboard or chart paper (per group)

Procedure

1. Create a list on the whiteboard or chart paper. Ask students to think about the way sound energy is used in their everyday lives and how energy causes changes in matter. As students answer, record like responses on the chart.
2. Give each student a copy of the Forms of Energy Paper Craft. Have them cut along the dotted lines, fold the solid line, and write their names on the back.
3. Have students draw an object that illustrates sound energy on the respective outside flaps of the template.
4. On the inside top flap, write how the object uses sound energy.
5. On the inside bottom flap, have the students explain a benefit of this type of sound energy.

Guiding Points

- Duplicate the Paper Craft Template on card stock. Depending on the ability level of your class, you might cut out and fold the template prior to giving it to the students. The template is cut on the dotted lines and folded on the solid line.
- Make sure students can describe the sound energy in their own words.
- Remind students that some objects or devices can produce more than one kind of energy but focus on the sound energy. For example, a television produces all three forms of energy: light, heat, and sound.
- Allow students to share their paper craft with other students.

Guiding Questions

1. What devices produce sound energy?
2. How do these devices benefit people?
3. What devices use sound energy?
4. How do these devices benefit people?
5. Why is sound energy important in our lives?

Guided Practice

Name: _____ Date: _____

Check Understanding

1. Draw an arrow to show where each object would go. Is it a push or a pull?

Answer the questions below.

2. A wagon is sitting on the sidewalk. How can the wagon move?

3. How can the wagon go faster?

Reflect

Think of a big parade you might have been to. A marching band goes by. Have you ever felt the vibrating of drums as drummers walk by?

Vibrate: move back and forth quickly

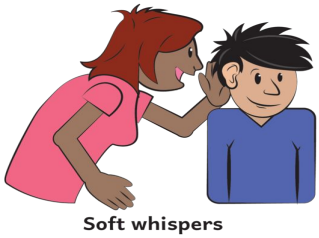
Sound comes from the energy of vibrating objects. An object is vibrating when it moves back and forth quickly. The vibrations move through the air from the drum to your ear. We hear those vibrations as sounds.

Sound is produced by nature or by man-made objects. You can hear animals making sounds, the ocean pounding the shore, the wind blowing through the trees, etc. Sound is also produced by vibrating objects such as musical instruments, radios, sirens, etc.

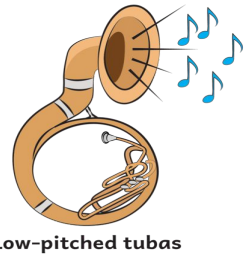
Loud sirens


Singing birds

High-pitched bells


Soft whispers


Singing kids


Low-pitched tubas

Vibrating objects make sounds we can hear.

Reflect

Sound vibrations are produced in many ways. Tapping a glass with a short column of air, makes a high-pitched sound. Tapping a long column of air produces a low-pitched (deep) sound.

High -------- Low

The size of an object also affects the sound. On a xylophone, tapping the bigger pieces of metal makes low-pitched sounds, while the smaller pieces of metal make high-pitched sounds.

High -------- Low

Try Now

Look at the musical instruments. Use the words **drum, horn,** and **harp** to answer the following questions:

1. Which instrument do we blow into to cause vibrations to make sound?
2. Which instrument do we pound on to cause vibrations to make sound?
3. Which instrument do we pluck to cause vibrations to make sounds?

Try Now

You use sound every day. Think about three objects in your home or school that are vibrating objects making sounds. Write the name of each object and draw a picture.

	Name of Object	Picture of Object
1		
2		
3		

Connecting With Your Child

Sounds from a Vibrating String

All sounds originate from something that is vibrating. In this activity, you and your child will use a stretched rubber band as a vibrating string. Begin by brainstorming about different types of sounds.

High and low sounds refer to the pitch. High-pitched sounds come from more rapidly vibrating objects. Both the tension and length of the plucked string affect pitch. Loud and soft sounds refer to how much energy a sound has. In a string instrument, amplitude is controlled by how far back the center of the string is pulled when plucked. For this activity, you will need a hammer; three nails; a short, wide board; and a large, strong rubber band. Help your child complete the following procedure:

1. Pound the nails into the board to form a triangle with unequal sides. The triangle should stretch the rubber band out completely (tight).
2. Stretch the rubber band over the nails with equal tension on each side.

3. Pluck each side of the rubber band and observe the differences in pitch.
4. Pull hard on one side of the rubber band to increase the tension on the other two sides; observe the change in pitch of the two sides with increased tension.
5. Use a finger to hold the middle of the long side of the rubber band to the board; this will create two “new,” shorter sections of rubber band on either side of your finger. Pluck each “new” section and observe its pitch.
6. Vary the distance you pull back on one of the sides of the rubber band when plucking. Observe the differences in loudness.

Connecting With Your Child

Here are some questions to discuss with your child:

- Were you able to see differences in how the rubber band moved?
- When was there a high or low sound?
- Did it make a difference how far each rubber band moved?
- What do you think affected how loud the sound was? Try plucking hard and then soft to find out.