Sound
Lesson 7a: My Soundmaker

Grade 1	**Length of lesson:** 37 minutes	**Placement of lesson in unit:** 7a of 7 lessons on sound
Unit central question: Why do we hear sound?		**Lesson focus question:** Why do we hear sound?
Main learning goal: Vibrating objects produce sound. Vibrations travel through the air in all directions. Vibrating air can make our eardrums vibrate so we hear sound.		
Science content storyline: All soundmakers vibrate and make the air around them vibrate. These vibrations travel through the air to our ears and make our eardrums vibrate. Then our eardrums send a message to our brains that the vibrations are sound.		
Ideal student response to the focus question: We hear sound because soundmakers vibrate and make the air all around them vibrate. These vibrations travel through the air to our eardrums and make them vibrate too. Then our eardrums send a message to our brains that these vibrations are sound. I can show this by building my own soundmaker.		

Preparation

Materials Needed

- Science notebooks
- Chart paper and markers
- Bin containing a variety of materials, including more than one of each object (1 per group). Possible materials:
  - Small plastic containers
  - Rubber bands
  - String
  - Cups
  - Craft sticks
  - Ping-Pong balls
  - Rice grains
  - Balloons
  - Pie tins
- Large plastic storage bag (1 per student for their building materials)

Ahead of Time

- Review the Sound Content Background Document.
- Make sure each bin contains more than one of each object so that at least two students in each group can select the same object to use for their soundmakers.
- **ELL support:** Meet with ELL students in advance and introduce them to the lesson content, structure, materials, and activities so they know what's expected of them and can participate more fully in the lesson. Show students the various materials they could use to build their own soundmakers and give students time to explore them. Identify vocabulary words in the lesson plan to review with students in advance.

Lesson 7a General Outline

Time	Phase of Lesson	How the Science Content Storyline Develops
10 min	**Unit central question/lesson focus question and link to previous lessons:** The teacher reviews the unit central question, *Why do we hear sound?* Then students use everything they've learned about sound to answer this question.	• All soundmakers vibrate and cause the air around them to vibrate. These vibrations travel through the air to our ears and make our eardrums vibrate. Then our eardrums send a message to the brain that the vibrations are sound. This is why we hear sound.
10 min	**Setup for activity:** The teacher introduces a challenge in which students will build their own soundmakers and use them to explain how they hear sound. Then students consider the materials they could use to build their soundmakers.	• Soundmakers can be made from simple materials. To make a sound, these materials must vibrate in some way.
8 min	**Activity:** Students test different materials and then choose two they can use to build their soundmakers.	• All soundmakers vibrate and cause the air around them to vibrate. These vibrations travel through the air to our ears and make our eardrums vibrate. Then our eardrums send a message to the brain that the vibrations are sound.
8 min	**Follow-up to activity and synthesize/summarize today's lesson:** Students share their ideas for building soundmakers with the materials they've chosen.	
1 min	**Link to next lesson:** The teacher announces that in the final lesson, students will build their own soundmakers and try them out.	

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
10 min	**Unit Central Question/Lesson Focus Question and Link to Previous Lessons** **Synopsis:** The teacher reviews the unit central question, *Why do we hear sound?* Then students use everything they've learned about sound to answer this question. **Main science idea(s):** • All soundmakers vibrate and cause the air around them to vibrate. These vibrations travel through the air to our ears and make our eardrums vibrate. Then our eardrums send a message to the brain that the vibrations are sound. This is why we hear sound.	Ask questions to elicit student ideas and predictions.	**Show slides 1 and 2.** The big question we've been thinking about throughout this unit is *Why do we hear sound?* That's today's focus question too. Let's review what we've learned so far that can help us answer this question. **NOTE TO TEACHERS:** *During this review, ask elicit, probe, and challenge questions to clarify student thinking and correct misconceptions. At this stage, it's important to challenge student ideas that are scientifically inaccurate.* **Show slide 3.** Remember our friend Dingy? What happens when Dingy rings her bell? How does the sound reach our ears? **Turn and Talk:** Turn to an elbow partner and share your ideas. Use complete sentences and include the words *vibrate*, *air*, and *eardrum* in your explanations. Be ready to share your ideas with the class. **ELL support:** Give ELL students time to practice answering the review questions		

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			during the lesson preview so they understand what's expected of them and can participate more fully during the lesson. **Whole-class share-out:** Who would like to share your ideas with the class? What happens when Dingy rings her bell? How does the sound reach our ears? **NOTE TO TEACHER:** *Record key ideas on chart paper during this discussion. This will nicely summarize what students have learned about sound throughout the unit.* What happens first?		
		Ask questions to probe student ideas and predictions. Ask questions to challenge student thinking.	What happens next?	The bell makes a sound. The bell vibrates. The vibrations. When the bell vibrates, the air around it starts to vibrate. The vibrations from	Can you use one of the words on our slide? What do you think causes the bell to make a sound? What do you think causes the air to start vibrating?

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				the bell make the air vibrate.	
			How do the vibrations from the bell get to our ears? **NOTE TO TEACHER:** *Watch for the misconception that the air itself moves from the soundmaker to the ear. Make sure students understand that the air stays in place, but the vibrations move through the air in waves to the ear, just like they saw with the Slinky.*	The vibrations from the bell move through the air to our ears.	
			What happens next?	When the vibrations in the air reach our ears, they move down the ear canal to our eardrums and make them vibrate.	
			Then what do our eardrums do?	They send a message to our brains so we hear the vibrations as sound.	
			So who can summarize why we hear sound?	We hear sound because the vibrations from the bell travel through the air to our ears and make our eardrums vibrate.	

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			Great job, everyone! We just answered our unit central question and our focus question at the same time!	Then our eardrums tell our brains that the vibrations are sound.	
10 min	**Setup for Activity** **Synopsis:** The teacher introduces a challenge in which students will build their own soundmakers and use them to explain how they hear sound. Then students consider the materials they could use to build their soundmakers. **Main science idea(s):** • Soundmakers can be made from simple materials. To make a sound, these materials must vibrate in some way.	Make explicit links between science ideas and activities **before** the activity. Engage students in using and applying new science ideas in a variety of ways and contexts.	**Show slide 4.** The ideas you just shared will help you with our next challenge. In our final lesson, you'll build your own soundmakers and use them to explain how we hear sound. To build a soundmaker, you'll need materials to work with, so let's explore the kinds of materials you could use. **NOTE TO TEACHER:** *Divide the class into groups; then give each group a bin containing different kinds of materials.* Look at all of the different materials in the bin that you could use to build a soundmaker. When I hold up an item, I want you to describe how you might use it to build your soundmaker. Afterward, you'll have plenty of time to experiment with the different materials to see which ones you want to use to build your		

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			soundmakers. You can choose only two items to use, so you'll need to choose wisely. **NOTE TO TEACHER:** *Hold up each item in the bin and ask students to describe how they might use it to make a soundmaker. Ask students the following questions.* How do you think you could use these materials to build a soundmaker? How do you think your soundmaker could vibrate and make a sound? Remember, you can choose only two objects from the bin to build your soundmaker, so choose something you think will vibrate and make a sound. That's all your soundmaker needs to do. The important part of this challenge is explaining how the sound is made and how it gets to our ears.		
8 min	**Activity** **Synopsis:** Students test different materials and then choose two they can use to build their soundmakers. **Main science idea(s):** • All soundmakers vibrate and cause the	Engage students in using and applying new science ideas in a variety of ways and contexts.	**Show slide 5.** Now look through the materials in your bin again. Remember, you can choose only two objects to build your soundmakers, so choose wisely. Before making your choice, make sure to test the objects to see how they might make vibrate and a sound. When you've chosen the		

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	air around them to vibrate. These vibrations travel through the air to our ears and make our eardrums vibrate. Then our eardrums send a message to the brain that the vibrations are sound.		materials you want to use, put them in the plastic bag I'll give you and write your name on the bag. **NOTE TO TEACHER:** *Give students a few minutes to examine the materials in their group's bin and test them to see how they might vibrate and make a sound. Then ask students to decide which two items they want to use for their soundmakers. After students have made their selections, distribute the plastic storage bags and ask students to place their objects in the bag and label it with their name. Then collect all of the bags and store them for the final lesson.*		
8 min	**Follow-Up to Activity and Synthesize/Summarize Today's Lesson** **Synopsis:** Students share their ideas for building soundmakers with the materials they've chosen. **Main Science idea(s):** • All soundmakers vibrate and cause the air around them to vibrate. These vibrations travel through the air to our ears and make our eardrums vibrate. Then	Make explicit links between science ideas and activities **after** the activity.	**Show slide 6.** Now that you've chosen your materials, let's hear your ideas for how you can use them to build your soundmaker during our next lesson. First, tell us which materials you chose. Then share your ideas for how you could use them to build your soundmaker.	I chose a popsicle stick and a cup. If I hit the stick on the cup, it will make	How do you think you can make a sound with those materials?

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	our eardrums send a message to the brain that the vibrations are sound.		Who else would like to share the materials you chose and how you could use them to build a soundmaker?	a sound like a drum. The cup will vibrate. The cup will make the air vibrate, and these vibrations will travel to my ears. I'm going to put rice inside a balloon and then blow up the balloon. When I shake the balloon with the rice inside, the rice will vibrate against the balloon and make a sound. When the balloon vibrates, it will make the air vibrate too.	What will vibrate in your soundmaker? And how will the sound get to your ears? How will you make a sound with your soundmaker? How will the air start vibrating? How do you think the sound will get to your eardrums?

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				The vibrations in the air will travel to my eardrums.	
1 min	**Link to Next Lesson** **Synopsis:** The teacher announces that in the final lesson, students will build their own soundmakers and try them out.	Link science ideas to other science ideas.	**Show slide 7.** You've come up with some great ideas for making your own soundmakers! In our final lesson on sound, you'll get to build your soundmakers with the materials you chose and then try them out. You'll also use them to explain how we hear sound. So get ready to make a lot of new sounds!		