

Teacher's Name: Janice Kane  
Grade Level: 1  
Ten, 50 Minute Classes

Topic of Focus: Waves - Sound  
Title of Lesson Plan: I Can See Sound

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Time Needed:

**Introduction:** Sounds are scientific phenomena that we encounter on a daily basis, without ever giving them a second thought. Sounds are just "there", something that we take for granted as being part of our lives, making it even more interesting to bring to light the fact that sounds are governed by a very interesting scientific phenomenon. Using the arts to demonstrate the phenomenon involved in sound, vibrations, something too abstract for six and seven year olds to comprehend without visual and tactile experiences, will provide the students with some evidence that vibrations are involved in the creation of sounds. Through the creation of musical instruments, the artistic display of vibrations, and the digital view of sounds, students will have the opportunity to play with, alter, and experiment with the vibrations that result in various sounds. Understanding of the concept will be reinforced throughout the unit through group sharing and discussions, allowing students to build upon their own understanding through the ideas of others.

Share a personal experience in your life that is related to sound. This will spark a conversation about everyday sounds. Introducing students to prior experiences that are related to the current topic of study will help to broaden their understanding of how the areas that they study are related to their life. Although the example below is specific to me, related experiences in the sound unit could involve anything from playing a musical instrument, to singing, or just enjoying various styles of music.

My share: Prior to teaching I worked in the Air Force on the electronic systems (Communication and Navigation - Sound) on the F-15 aircraft. The image below will be used as an opportunity for sharing "non-teacher" life experiences with my students.

Breaking the Sound Barrier - Air Force F-15  
(Image is labeled for commercial use with modification.)



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**Objective (NGSS):** Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

**Justification:** The arts subjects that will be integrated into the 1st grade sound lesson are art and music. The fact that vibrations, which can't be seen, create sound, is difficult for 1st graders to understand without a visual demonstration. By using music, which is done by making musical instruments (Kazoo and Box Guitar), students can feel and observe the vibrations that are made. By changing the force they place on the rubber bands or the intensity that they hum into the kazoo, they are able to observe the difference in pitch and loudness caused by changing the level of vibrations. Creating a piece of art using a tuning fork, students are able to see how the splatter will vary depending on how hard the tuning fork is hit. By holding onto the tuning fork after it begins to make a sound, the students can also observe the fact that as soon as the vibrations stop, the sound also stops. Using both art and music to demonstrate vibrations will help students to see what creates sound, vibrations.

## Standards

### [NGSS - NGSS - Grade 1](#)

#### **1.Waves: Light and Sound**

**1-PS4-1.** Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. [Clarification Statement: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.]

**1-PS4-4.** Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.\* [Clarification Statement: Examples of devices could include a light source to send signals, paper cup and string "telephones," and a pattern of drum beats.] [Assessment Boundary: Assessment does not include technological details for how communication devices work.]

**K-2-ETS1-1.** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

### [CCSS - Math - Measurement and Data](#)

[CCSS.MATH.CONTENT.1.MD.A.1](#) - Order three objects by length; compare the lengths of two objects indirectly by using a third object.

### [ISTE](#)

**Empowered Learner** - Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.

1d. Students understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.

**Creative Communicator** - Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.

6b. Students create original works or responsibly repurpose or remix digital resources into new creations.

6d. Students publish or present content that customizes the message and medium for their intended audiences.

**National Core Arts Standards**

- [Music Technology Strand](#) - Anchor Standard 1 - Creating - MU:Cr1.1.T.1a Generate melodic, rhythmic, and harmonic ideas for compositions or improvisations using digital tools.
- [Visual Arts](#) -
  - Anchor Standard 1 - VA:Cr1.1.1a - Engage collaboratively in exploration and imaginative play with materials.
  - Anchor Standard 11 - MU:Cn11.0.1 - Demonstrate understanding of relationships between music and the other arts, other disciplines, varied contexts, and daily life.

5E Lesson Plan	Measurable Objectives and Standards:
<p><b>Engage</b>            The purpose of the ENGAGE stage is to pique student interest and get them personally involved in the lesson, while pre-assessing prior understanding.</p>	<p><b>Essential question: Can we see the sounds around us?</b></p> <p><b>Brainstorm/Assess prior knowledge (DOK 1)</b>            Whole class discussion: See resources in the <a href="#">Background and Resources</a> section below to determine how best to facilitate this discussion.</p> <ul style="list-style-type: none"> <li>● Have students complete the first page of the <a href="#">Discovery Journal</a> in order to see their initial vision of “what sound looks like”.</li> <li>● What is sound? Have an open discussion as a whole group in order to begin to generate ideas and assess prior knowledge about the students’ thoughts on sound.               <ul style="list-style-type: none"> <li>○ Vocabulary to look for: Vibrations, sound waves, volume (loud, soft, high, low) - Record all sound related vocabulary words on a large sheet of paper as they come up and post it in the classroom.</li> </ul> </li> <li>● Can we see sound? Discuss sounds that they may hear around the school and create a list. Pose the question, “Can we see sound?” and have the students share their ideas.</li> </ul> <p><b>Demonstration - Tuning Fork - <a href="#">Dancing Salt</a> (DOK 1)</b>  <b>Whole Group Demonstration</b>            Questions for discussion:            Prior to the demonstration, ask students what they think will happen. Make a list to use for a later discussion.</p> <ul style="list-style-type: none"> <li>● “What will happen when the Tuning Fork touches the plastic?”</li> <li>● “Can we make the salt dance?”</li> </ul> <p>After the demonstration, have the students share their observations. Compare to their initial</p>

	<p>thoughts recorded in the earlier discussion.</p> <ul style="list-style-type: none"><li>• “What is making the salt dance?”</li></ul> <p>Show these videos after the students share their ideas about what happened in the experiment.</p> <p><b>Videos:</b> <a href="#">Make Me Genius</a> <a href="#">Try with Tuning Fork</a> <a href="#">Ultra Slow Motion</a> <a href="#">Sound Song</a> - Sung to the tune of London Bridge (Pg. 10)</p>
<p><b>Explore</b> The purpose of the EXPLORE stage is to get students involved in the topic providing them with a chance to build their own understanding.</p>	<p><b>Exploration to Support Students' Understanding (DOK 3)</b> These are some hands-on activities that the students will engage in, in order to create a visual of the vibrations that are involved in the creation of sound. <a href="#">Discovery Journal</a> pages will be completed after each activity.</p> <ul style="list-style-type: none"><li>• <a href="#">Tuning fork painting</a> - Art, Science, Math<ul style="list-style-type: none"><li>◦ Students will complete the tuning fork <a href="#">journal</a> page.</li></ul></li><li>• <a href="#">TP Roll Kazoo</a> Pg. 12 - Music, Science, Engineering<ul style="list-style-type: none"><li>◦ Students will complete the kazoo <a href="#">journal</a> page.</li></ul></li><li>• <a href="#">Rubber band guitar</a> - Music, Science, Engineering<ul style="list-style-type: none"><li>◦ Students will complete the guitar <a href="#">journal</a> page.</li></ul></li><li>• <a href="#">Making Music With Code</a> - Technology, Science</li><li>• <a href="#">Music Mixer - Made W/Code - Google</a> - Technology, Science</li></ul>
<p><b>Explain</b> The purpose of the EXPLAIN stage is to provide students with an opportunity to communicate what they have learned so far and figure out what it means.</p>	<p><b>Student Journal (DOK 3 or 4)</b> Students will demonstrate their understanding of the concepts of sound/vibration through the illustrations in their <a href="#">Discovery Journal</a>.</p> <p><b>Final Group Discussion</b> Following the prior discussions, videos, and hands-on activities, students will share their understanding of how vibrations are involved with sound.</p>
<p><b>Elaborate/Extend</b> The purpose of the EXTEND stage is to allow students to use their new knowledge and continue to explore its implications.</p>	<p><b>Project Presentations</b>-Students will present and comment on their projects in front of the class. Presentations will include: (DOK 2)</p> <ul style="list-style-type: none"><li>• Playing and describing how their musical instruments produce sound.</li><li>• Showing their vibration art painting and describing what created the paint splatter.</li></ul>

	<p><b>Bulletin Board</b> - Ongoing posting of examples of items that produce sound.</p> <p><b>Video</b> <a href="#">Sonic Booms</a> - Breaking the Speed of Sound - This is an opportunity to share a part of my career/science background that is related to sound. I worked on the communication systems of military fighter aircraft.</p>
<p><b>Evaluate</b> The purpose of the EVALUATION stage is for both students and teachers to determine how much learning and understanding has taken place.</p>	<p><b>Assessments</b></p> <p><b>Formative</b></p> <ul style="list-style-type: none"><li>• Ongoing monitoring of class discussions for understanding of concepts.</li><li>• Ongoing monitoring of design progress while creating kazoo, guitar, and tuning fork art.</li><li>• Ongoing monitoring of Journal Entry progress.</li></ul> <p><b>Summative</b></p> <ul style="list-style-type: none"><li>• Final evaluation of the students' Discovery Journal.</li><li>• <a href="#">Rubric</a> for evaluating overall understanding.</li><li>• Observe understanding during individual presentations/demonstrations of kazoo, guitar, and tuning fork painting.</li></ul>
<p><b>Background Information and References</b> The purpose this section is to provide adequate information such that another teacher could implement this lesson plan. This includes essential resources in APA format.</p>	<p><b>Standards and Ideas</b> NSTA - NGSS Hub - <a href="#">Waves: Light &amp; Sound</a><sup>1</sup> NGSS - <a href="#">Waves: Light &amp; Sound</a><sup>2</sup></p> <p><b>Resources for Teachers - Sound and Vibration</b> <a href="#">Kids Discover</a><sup>3</sup> <a href="#">Ducksters</a><sup>4</sup> <a href="#">DKfindout</a><sup>5</sup></p>

1 (n.d.). Waves: Light and Sound - NGSS@NSTA - National Science Teachers .... Retrieved February 27, 2019, from <https://ngss.nsta.org/DisplayStandard.aspx?id=4&view=topic>

2 (n.d.). 1.Waves: Light and Sound | Next Generation Science Standards. Retrieved February 27, 2019, from <https://www.nextgenscience.org/topic-arrangement/1waves-light-and-sound>

3 (n.d.). Sound and Vibration | Kids Discover Online. Retrieved February 27, 2019, from <https://online.kidsdiscover.com/unit/sound-and-vibration>

4 (n.d.). Physics for Kids: Basics of Sound - Ducksters. Retrieved February 27, 2019, from <https://www.ducksters.com/science/sound101.php>

5 (n.d.). What Is Sound - DK Find Out!. Retrieved February 27, 2019, from <https://www.dkfindout.com/us/science/sound/>

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