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<table>
<tr><td>Grade:1</td><td>Subject: Science</td></tr>
<tr><td>Materials: Rubber bands, observation sheets

For differentiation- paper cups</td><td>Technology Needed: Projector to show video</td></tr>
<tr><td>Instructional Strategies:

✦ Direct instruction
✦ Guided practice
☐ Socratic Seminar
☐ Learning Centers
☐ Lecture
☐ Technology integration
☐ Other (list)

Peer teaching/collaboration/ cooperative learning
☐ Visuals/Graphic organizers
☐ PBL
☐ Discussion/Debate
☐ Modeling</td><td>Guided Practices and Concrete Application:

✦ Large group activity
✦ Independent activity
Pairing/collaboration
☐ Simulations/Scenarios
☐ Other (list)
Explain:

✦ Hands-on
☐ Technology integration
☐ Imitation/Repeat/Mimic</td></tr>
<tr><td>Standard(s)

1-PS4- 1 Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.</td><td rowspan="2">Differentiation

Below Proficiency:
Students may wrap the rubber band around a cup and pluck it.

Above Proficiency:
Students will compare the vibrating of a rubber band to other “sounds” they have seen. (Plucking a guitar string, flapping of a bird’s wing, etc.).

Approaching/Emerging Proficiency:
Student uses a rubber band to investigate how vibrations cause sound. The student draws and writes about their observations.

Modalities/Learning Preferences:
• Tactile
• Kinesthetic
• Auditory
• Visual</td></tr>
<tr><td>Objective(s)

By the end of the lesson, the students will be able to show the source of sound as vibration by drawing a picture of drawing a picture and writing about their observations of a rubber band vibrating and making noise.

Bloom’s Taxonomy Cognitive Level:

Application</td></tr>
</table>

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Classroom Management- (grouping(s), movement/transitions, etc.)	**Behavior Expectations- (systems, strategies, procedures specific to the lesson, rules and expectations, etc.)**
I will dismiss students to their table spots in groups of 5 at a time. The students should move back to their table spots and pretend they are vibrating. (wiggle their legs and arms) they should make sure to be aware of their personal space. When the students hear the chimes, they should stop, look, and listen for directions.	When students are using the rubber bands, they need to use them as tools and not toys. I will tell the students that by using the rubber bands incorrectly, someone could get hurt. We need to keep ourselves and our friends safe. Pull on the rubber band just enough to watch it vibrate (not to hard). If you do not use the rubber band appropriately, you will have to watch someone else use it. This is very important because we need to make sure everyone stays safe. When working on our observations- our voices should be at a level 0 or a level 1 if we are talking with a teacher. This is important because we want to be able to hear the vibration. We cannot hear the vibration if everyone is talking.

Minutes	**Procedures**
	Set-up/Prep: Pass out rubber bands and observation sheets to table spots.
5	**Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate questions, etc.)** • I will begin the lesson by having the students gather at their carpet spots and asking the students questions that will generate interest and questions about the concept of sound. • I will tell the students that today we are going to be scientists! I will ask the students to stand up. I will say "All scientists wear protection whenever they do experiments, we need to put on some protective gear. First, we need to put on our thinking caps. Let's pretend they are way up high on a shelf, reach up and pull it down. Put it on your head and tie it tightly under your chin. Now let's put on our boots. Reach way down low and grab your boots. Stop down on your foot when you've got them on." Continue with jackets and goggles, and gloves. "Now that we are all dressed as scientists, let's sit down get ready to learn!"

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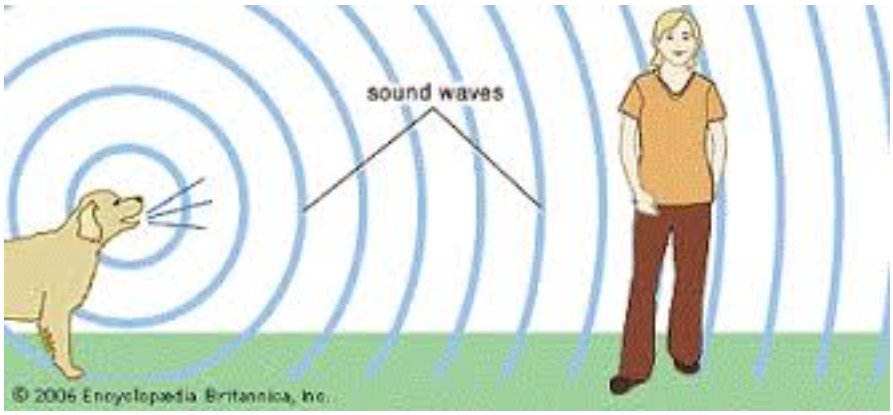
	• Today we are going to find out how sound moves! (vocab- sound is something you hear) • I wonder what my mouth is doing that allows you to hear me talk? • How is it moving? • How does the sound get from my mouth to your ears?
5	**Explain: (concepts, procedures, vocabulary, etc.)** • I will tell the students that we can hear sounds because all sounds come from vibrations (vocab) • A vibration is when something moves back and forth very quickly (could relate to a phone- have you ever seen/felt your mom or dads phone vibrate? Could you hear it too?) • Let's show with our bodies how something vibrates. Please be careful and make sure not to touch your neighbor, wiggle your body back and forth really fast! That is what it looks like when something vibrates. Sometimes we can't see something vibrate, but we can feel it. • Did you know that all sounds come from vibration? Touch your neck and say your name a couple of times. Did you feel something inside your neck vibrating? • When something vibrates, it moves the air around it back and forth very quickly, this causes the air around that to move back and forth, and this keeps going until it gets to the air right next to your ear. This is why you can hear it. • I will show the students the following visual as a guide in describing how sound travels to our ears • 
15-20	**Explore: (independent, concreate practice/application with relevant learning task - connections from content to real-life experiences, reflective questions- probing or clarifying questions)** • I will tell the students that today we are going to use rubber bands as a tool to investigate how vibration makes sound. Show the student the following short clip: **https://youtu.be/92nAhXXpqm0** I will show a couple of times to point out the vibrating rubber band. • I will point out how we could see the rubber band vibrating, and we could hear it.

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	• I will tell the students that we are going to independently investigate the vibration and sound with rubber bands. • I will tell the students that there is a rubber band and an observation investigation sheet at their table spots (I will show them an example). • I will tell the students that they will pull the rubber band between their two thumbs. They will use their pointer finger to make it vibrate. • I will explain the behavior expectations listed above. • I will tell the students that scientists are always making observations (vocab- using their senses- thinking about what they see, feel, and hear- and writing it down). Because we are scientists, we want to record our observations. I will tell the students that they should record their observations on their sheet. • Extensions and accommodations listed in differentiation (see above). • I will dismiss the students to their table spots according to the classroom management strategies listed above. • As the students work, I will move around the room and assess their learning, ensure that they are following the behavior expectations, and provide scaffolding/differentiation for students who need it. • As the students work I will ask the following reflective questions to extend their thinking about vibration and sound: • Is your rubber band making the same sound as your neighbor? Why do you think that is? • What does the sound of the rubber band remind you of?
2	**Review (wrap up and transition to next activity):** • At the end of the lesson, I will ring the chimes. I will ask the students to gather at their carpet spots. • I will ask the students the following questions and pull sticks to determine who will answer • What did you see when you plucked the rubber band? • What did you feel when you plucked the rubber band? • What did you hear? • Why was it sometimes hard to hear? • What did plucking the rubber band remind you of? • Where does sound come from? How do you know? • To further the lesson and connection to real world application, I will play a song on guitar. • I will tell the students that the guitar strings vibrate the air just like the rubber bands we used in our experiment.
Formative Assessment: (linked to objectives, during learning)	**Summative Assessment (linked back to objectives, END of learning)**

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• **Progress monitoring throughout lesson (how can you document your student's learning?)** I can monitor the students' learning throughout the lesson by analyzing their observations as that they recorded. I will do this both during the lesson and after. To document my assessment, I can use a running record or a checklist.	I can assess the students' learning at the end of the unit by administering a written test about sound and light. From this lesson, I will include questions about the source of sound (vibration).

Reflection (What went well? What did the students learn? How do you know? What changes would you make?):

This was a great lesson! The students enjoyed the activity, and because of my reflections of earlier lesson, I could better manage the classroom as well as engage the students in the lesson. I saw evidence of student learning, and I was able to differentiate my instruction to accommodate the needs of all the learners.

The students loved the engage portion of the lesson as they got a chance to move around and pretend to be scientists. This helped them to get their wiggles out as well as mentally prepare for the lesson and recall background information.

The students remained engaged in the lesson during the explain portion of the lesson. The concept of being able to see and feel sound was new to them, but they quickly were able to assimilate this knowledge into their existing schemas.

Some of the observations that the students made were original and showed evidence of critical thinking and extension. One student compared the vibrating rubber band to the wagging tail of a dog. Another student noticed that plucking the rubber band was much like plucking a string on a guitar. I was really impressed with the students' ability to make such interesting observations and comparisons. This showed me that the students learned.

One thing that I would have changed about this lesson is the way the observations sheet is written. I would have written simpler and clearer directions because, even though I verbally described the directions, many of them needed me to constantly tell them what to do because they could not read what was written on the sheet.

I also noticed that the students remained engaged through the review portion of the lesson. Many of them were excited to share their observations. They made some really great connections to other things they see or feel vibrate. In the future, I should consider bringing in a guitar, a drum, or other things that show visual vibration in relationship to sound. This would solidify some of the learning through real life examples.

Next time I teach this lesson, I will also find a visual (picture or video) that relates how the sound travels from the rubber band (or other vibrating matter) to a person's ear. This would help the students

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understand the concept better. This would be especially important for the students who learn best through visually seeing the information. Overall, this was a successful lesson. With the improvements I have noted, it has potential to be even more successful in the future.