**Name:** Emily Leinwand

**Grade Level**: First Grade

**NGSS Performance Expectation:**

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 sounds and holding an object near a vibrating tuning fork.)

**Unpacking the Performance Expectation:**

|  |  |  |
| --- | --- | --- |
| **Science or Engineering Practice(s)** | **Disciplinary Core Idea(s)** | **Cross-Cutting Concept(s)**  **Copy from g** |
| ***Use the*** [***NGSS website***](http://www.nextgenscience.org/) ***&*** [***NGSS Appendix F***](http://www.nextgenscience.org/sites/default/files/Appendix%20F%20%20Science%20and%20Engineering%20Practices%20in%20the%20NGSS%20-%20FINAL%20060513.pdf) ***to guide your work.*** | ***Use the links from your PE on the*** [***NGSS website***](http://www.nextgenscience.org/)***.*** | ***Use the*** [***NGSS website***](http://www.nextgenscience.org/) ***&*** [***NGSS Appendix G***](http://www.nextgenscience.org/sites/default/files/Appendix%20G%20-%20Crosscutting%20Concepts%20FINAL%20edited%204.10.13.pdf) ***to guide your work.*** |
| [Planning and Carrying Out Investigations](http://www.nap.edu/openbook.php?record_id=13165&page=59) [Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.](http://www.nap.edu/openbook.php?record_id=13165&page=59)   * [Plan and conduct investigations collaboratively to produce evidence to answer a question. (1-PS4-1),(1-PS4-3)](http://www.nap.edu/openbook.php?record_id=13165&page=59)   *(NGSS Appendix F, p.7).* | [PS4.A: Wave Properties](http://www.nap.edu/openbook.php?record_id=13165&page=131)  * [Sound can make matter vibrate, and vibrating matter can make sound. (1-PS4-1)](http://www.nap.edu/openbook.php?record_id=13165&page=131) | [Cause and Effect](http://www.nap.edu/openbook.php?record_id=13165&page=87)  * [Simple tests can be designed to gather evidence to support or refute student ideas about causes. (1-PS4-1),(1-PS4-2),(1-PS4-3)](http://www.nap.edu/openbook.php?record_id=13165&page=87)   *(NGSS Appendix G, p.5).* |
| Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.   * Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. * Evaluate different ways of observing and/or measuring a phenomenon to determine which way can answer a question. * Make observations (firsthand or from media) and/or measurements to collect data that can be used to make comparisons. * Make observations (firsthand or from media) and/or measurements of a proposed object or tool or solution to determine if it | Sounds  Vibrations  Matter | In grades K-2, students learn that events have causes that generate observable patterns. They design simple tests to gather evidence to support or refute their own ideas about causes. |
| Students should be able to test different materials and find patterns between the materials they are using and the sounds they are making. | Sound- is a form of energy  Sounds -produced by vibrations  Vibrations – is a regular back and forth motion  Matter – any kind of material, it takes up space  Sound can make matter vibrate.  Vibrations make matter vibrate. | Sound can make matter vibrate, and vibrating matter can make sound.  Showing cause and effect because vibrating (the cause) causes sound (the effect).  Investigating how a material produces sound. Another cause and effect. |

**Learning Objectives:** Because the performance expectations are large, you will have two or three smaller learning objectives for the instructional sequence. These should be one-sentence statements about what you want your students to learn as a result of the instructional sequence. In this section, write 2-3 learning objectives for this instructional sequence that describe what students will be able to do at the end of your instructional sequence.

1. At the end of this instructional sequence, the students will be to conduct investigations to provide evidence in order to prove that vibrating materials can make sound highlighting cause and effect.
2. At the end of this instructional sequence, the students will be able to explain that sounds can cause materials to vibrate.
3. At the end of this instructional sequence, the students will be able to explain why vibrating materials can cause sounds.

**Brainstorming Phenomena and Associated Driving Questions and Explanations:**

|  |  |  |
| --- | --- | --- |
|  | **Phenomenon 1** | **Phenomenon 2** |
| **Phenomenon**  *Identify two phenomena that you might use to support students’ learning in your instructional sequence. These should be scientifically rich occurrences or events that happen—or happened—in the world that will require students to use concepts that are central to your disciplinary core idea to explain.* | When you play a guitar, it makes sound. | The sound of your voice can make your cup phone (string) move. |
| **Driving Question**  *Identify a driving question associated with each phenomenon. Your driving questions have a real-world context and require deep understanding of the NGSS performance expectation. These are generally how or why questions. The answer should be an explanation of the phenomenon.* | How does the guitar make the sound we hear? | Why does the string move on the phone cup when we talk into the cup? |
| **Explanation:**  **Student Version**  *Identify the explanation that students will be working towards figuring out. Use your phenomenon and the unpacking table above to guide you.* | When you strum the guitar strings they move and vibrate. These vibrations make sounds. | When you talk into the cup the sound from your voice makes the string move. |
| **Explanation:**  **Teacher Version**  *Provide a teacher-level explanation for the phenomenon (i.e., a more advanced version of the student-level explanation). You will likely need to draw on resources beyond the NGSS to create this explanation.* | “A sound wave is produced by a vibrating object. As a guitar string vibrates, it sets surrounding air molecules into vibrational motion. The frequency at which these air molecules vibrate is equal to the frequency of vibration of the guitar string. The back and forth vibrations of the surrounding air molecules creates a pressure wave which travels outward from its source. This pressure wave consists of compressions and rarefactions. The compressions are regions of high pressure, where the air molecules are compressed into a small region of space. The rarefactions are regions of low pressure, where the air molecules are spread apart. This alternating pattern of compressions and rarefactions is known as a sound wave (1996, Henderson).” | “When one person talks into his/her cup, the bottom of the cup vibrates back and forth with the sound waves. Imagine the bottom of the cup moving back and forth very quickly (1,000 times per second or more) with the sound waves of the speaker's voice. The vibrations travel through the string by pulling the string back and forth. Therefore, the bottom of the second cup should start to vibrate back and forth just like the bottom of the first cup is vibrating, producing sound waves. The second person can hear the sound waves and can therefore hear what the first person says (Contributors, How Stuff Works”. |

**Resource List:**

Staudt, Cathy. *Light and Sound.*

Teach TCI. (2015). *Light and Sound.* Teachers’ curriculum Institute. <https://www.teachtci.com>

Henderson, Tom. (1996-2020). *The Physics Classroom, Longitudinal Waves and Guitar Stings.* The Physics Classroom. <https://www.physicsclassroom.com/mmedia/waves/gsl.cfm>

Kim, Meeri. (2013). Sound aves can be used to levitate and move objects study says. Washington Post. <https://www.washingtonpost.com/national/health-science/sound-waves-can-be-used-to-levitate-and-move-objects-study-says/2013/07/15/4d808a5e-eb15-11e2-8023-b7f07811d98e_story.html>

Contributors, H. S. W. (2020, January 27). Can two cans and a string really be used to talk over a distance? Retrieved January 30, 2020, from https://science.howstuffworks.com/question410.htm

**Name:** Emily Leinwand

**Grade Level**: First Grade

**NGSS Performance Expectation:** 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 sounds and holding an object near a vibrating tuning fork.)

**Learning Objectives:**

1. At the end of this instructional sequence, the students will be to conduct investigations to provide evidence in order to prove that vibrating materials can make sound highlighting cause and effect.
2. At the end of this instructional sequence, the students will be able to explain that sounds can cause materials to vibrate.

**Phenomenon and Driving Question:**

* **Phenomenon:** When you play a guitar, it makes sound.
* **Driving Question:** How does the guitar make the sound we hear?

### Instructional Sequence

Complete the table below, using the checklists below to guide your work.

*Your first activity should introduce students to your phenomenon and driving question.*

**Framework:** EPE/I-AIM

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Activity Title** | **Activity Description**  **(approximately 1-2 sentences)** | **Framework Function** |
| **1** | Guitar Video  Day 1 | Children will watch a video of someone strumming a guitar. Then we will talk about what we see and what we hear. | Experience Phenomena |
| **2** | Guitar Question  Day 1 | How does the guitar make the sound we hear? Have children talk in partners. | Establish A Question |
| **3** | Guitar Anchor chart  Day 2 | We will have a group conversation about the question above and the findings and add it to our anchor chart. | Elicit Students’ Initial Ideas |
| **4** | Explore a tuning Fork  Day 3 | Introduce the class to tuning forks. Explain that they are used to help tune musical instruments. Have children explore the tuning forks played separately. Then choose one to strike against the rock. Then have them strike it and grab it while it’s playing. Then see what happens when they put it in water. | Explore Phenomena For Patterns |
| **5** | Anchor Chart  Day 3 | Add our findings, patterns, ideas, thoughts to an anchor chart. Have children talk in partners first. Then take it to a whole group. | Explore Phenomena For Patterns  Explore Ideas about patterns |
| **6** | Explore Rubber Bands and Rulers  Day 4 | Have children use their hands to pull rubber bands. Then someone else strums the rubber band. Have them explore what is happening. Have children use a ruler on the edge of a desk. Then have them flick the end of it to see what happens. | Explore Phenomena For Patterns |
| **7** | Anchor Chart  Day 4 | Add exploring’s and patterns to the anchor Chart. Add our findings, patterns, ideas, thoughts to an anchor chart. Have children talk in partners first. Then take it to a whole group. | Explore Phenomena For Patterns  Explore Ideas about patterns |
| **8** | Exploring Tin pan and bottle  Day 5 | Children will get a tin pan and plastic eat utensils to make sound and explore how sound is being made. Children will be able to blow into a liter bottle and make sound. | Explore Phenomena For Patterns |
| **9** | Anchor Chart  Day 5 | Add exploring’s and patterns to the anchor Chart. Add our findings, patterns, ideas, thoughts to an anchor chart. Have children talk in partners first. Then take it to a whole group. | Explore Phenomena For Patterns  Explore Ideas about patterns |
| **10** | Exploring Paper Cups with String  Day 6 | Let Children explore with partners talking to each other with paper cups and string. Then add findings to an anchor chart. | Explore Phenomena For Patterns |
| **11** | Combine Anchor Charts  Day 6 | Have children in small groups compare/ come to an agreement about all of the patterns we observed. | Identify Patterns |
| **12** | Whole Group  Anchor Chart Discussion  Day 7 | Make a new anchor chart about all of the little ones we made. Bring the small groups ideas together as one.  (Science Talk) Data Collection  Formative Assessment | Identify Patterns |
| **13** | Slinky Activity  Day 8 | Whole group make a circle. I will be in the middle of the circle with my teacher. We will move the slinky in the pattern of a wave. Show them that the way the slinky moves is how sound waves move. Have different volunteers come up and try it. | Introduce Scientific Ideas |
| **14** | Compare and Contrast Slinky to Anchor Chart  Day 8 | Have children compare and contrast the ideas we learned from the slinky activity to what we put on our anchor charts. Start with partners. Turn it into a group conversation. | Compare student and scientific ideas |
| **15** | Review Concepts  Day 9 | Whole Group discussion about the concepts we learned and patterns we found. Do a sample problem that will be on the summative assessment to prep them, maybe have them work on the problem in small groups. | Apply to Similar Contexts with Support |
| **16** | Worksheet  Day 9 or 10 | Have children answer the questions on the worksheet. They will do this by themselves. It won’t take long. At most should take 10 minutes. This is the summative assessment. | Apply to Novel Contexts with fading Support |

### Assessment Plans

**Mid-Unit Formative Assessment Task**

This task should occur partway through your unit (after Lesson 4) to help you to gauge students’ progress towards your learning objective(s) and/or NGSS performance expectation.

|  |  |
| --- | --- |
| **Activity Number & Title**  Activity 12: Whole Group Anchor Chart Discussion  **Mid-Unit FORMATIVE Learning Objective:**  Students will be able to pick a material from exploring in class and tell: the sound they heard, what happened when they made it make a sound, how they made the sound, did they see it feel it or hear it.  **NGSS Performance Expectation this task addresses:**  **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 sounds and holding an object near a vibrating tuning fork.) | **Assessment Task Rationale:**  I chose to have them do an exit ticket after our two – three days of exploring materials. After we compare and contrast all of our anchor charts and find patterns, I am hoping they will be able to tell me what they have observed over the past couple days. I want to know if they can describe the sound and what they did to make it make a sound. This will give me a good indication if children are on the right track towards my two learning objectives: At the end of this instructional sequence, the students will be to conduct investigations to provide evidence in order to prove that vibrating materials can make sound highlighting cause and effect. At the end of this instructional sequence, the students will be able to explain that sounds can cause materials to vibrate. |
| **Task:**  **I will give each child this document to fill out.**  **Name: \_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_**  **Circle your favorite material we explored in the last couple days.**  **Rubber Band**  **Ruler**  **Tin Pan and spoon**  **Bottle**  **Describe what you did to make the material make sound.**  **Describe What happened when the material was making sound.**  **Describe the sound you heard.** | **Criteria:**  I have attached a key for each of the materials on the list. |

Sound Exploring!

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Circle your favorite material we explored in the last couple days.**

**Rubber Band**

**Ruler**

**Tin Pan and spoon**

**Bottle**

**Describe what you did to make the material make sound.**

My friend held the rubber band. I pulled the rubber band.

**Describe What happened when the material was making sound.**

The rubber band was moving back and forth really fast.

The rubber band was vibrating.

**Describe the sound you heard.**

I heard the rubber band moving fast.

Like a boing sound.

Sound Exploring!

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Circle your favorite material we explored in the last couple days.**

**Rubber Band**

**Ruler**

**Tin Pan and spoon**

**Bottle**

**Describe what you did to make the material make sound.**

My friend held one side of the ruler. I flicked the other side.

**Describe What happened when the material was making sound.**

The end of the ruler went up and down really fast.

**Describe the sound you heard.**

I heard the ruler moving fast.

Like a boing sound.

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Circle your favorite material we explored in the last couple days.**

**Rubber Band**

**Ruler**

**Tin Pan and spoon**

**Bottle**

**Describe what you did to make the material make sound.**

I banged/tapped the spoon to the tin pan.

**Describe what happened when the material was making sound.**

The spoon hit the pan and then the pan vibrated and made sound waves.

**Describe the sound you heard.**

It sounded like thunder.

It sounded like crumpling up newspaper.

It sounded like the TV when it goes gray and black.

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Circle your favorite material we explored in the last couple days.**

**Rubber Band**

**Ruler**

**Tin Pan and spoon**

**Bottle**

**Describe what you did to make the material make sound.**

I blew air into the top of the bottle.

**Describe what happened when the material was making sound.**

The air went into the bottle and made sound waves.

The air vibrated.

**Describe the sound you heard.**

It sounds like you are playing an musical instrument.

It made a high/low pitch.

**Summative Assessment Task –**

This task should at the end of your unit to help you to gauge students’ performance with respect to your learning objective(s) and/or NGSS performance expectation.

|  |  |
| --- | --- |
| **End-Unit SUMMATIVE Learning Objective(s):**  At the end of this instructional sequence, the students will be able to explain that sounds can cause materials to vibrate.  **NGSS Performance Expectation this task addresses:**  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 sounds and holding an object near a vibrating tuning fork.) | **Assessment Task Rationale:**  I chose this task because it gives children a choice of what they want to talk about. I also chose this task because it asks about experiences (NGSS expectation of conducting investigations) they had in the classroom. This makes it meaningful and hopefully they can connect what they did in the classroom to important content that I want them to take away with them. Lastly, I chose this assessment task because the questions are straight to the point and I will easily be able to understand if children know that sound is made from vibrations. |
| **Task:**  Children will have the opportunity to make their own musical instruments in class with a plethora of materials. The only criteria is that it has to make sound.  After this process they will get to make a band and come together to make music. Then I will have them fill out the following exit ticket independently.  Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_   1. What is the name of your musical instrument? 2. What materials did you use to make it? 3. How did you make it make sound? 4. When you use it to make sound what happens? (How does your instrument make the sound we hear) | **Criteria:**  **Answer Key:**  Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Date: \_\_\_\_\_\_\_\_\_\_\_\_\_   1. What is the name of your musical instrument?   **Could be anything, just a fun question.**   1. What materials did you use to make it?   **Could be any of these:**  **Paper towel roll**  **Toilet paper roll**  **Glass jar**  **Plastic cup**  **Rubber bands**  **Fork, knife, spoon**  **(Materials are still being collected from families so this list could change)**   1. How did you make it make sound?   **They will explain that things are moving with their materials. For example. I pulled the rubber band up and let it hit the glass jar.**   1. When you use it to make sound what happens? (How does your instrument make the sound we hear)   **I will know that they understood the concept if they say something vibrated and made sound waves.** |

**Name:** Emily Leinwand

**Grade Level**: First Grade

**NGSS Performance Expectation:** 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 sounds and holding an object near a vibrating tuning fork.)

**Phenomenon and Driving Question:**

* **Phenomenon:** When you play a guitar, it makes sound.
* **Driving Question:** How does the guitar make the sound we hear?

**Lesson Plan 1:** Activity #6, Day 4, Exploring Rubber Bands and Rulers

**Anticipated Teaching Date:** Monday February 24th, 2020

**Connection to Framework Function:** Explore Phenomena for Patterns

**Learning Objective(s):** At the end of this instructional sequence, the students will be to conduct investigations to provide evidence in order to prove that vibrating materials can make sound highlighting cause and effect.

**Time Estimate:** 20-30 minutes

**Materials:**

* **Rubber bands –** 12 of them (working in partners 24 in the class)
* **Rulers-** 12 of them (working in partners 24 in the class)
* **Pencils-** 24 of them
* **Worksheets –** 24 of them

**Worksheet: They will be adding to this as the days go on and they do more experiments. They will not fill this out all at once in one day.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Source** | **Describe Sound** | **What Happened** | **How did you know?** |
| **Rubber band** |  |  | **See**  **Feel**  **Hear** |
| **Ruler** |  |  | **See**  **Feel**  **Hear** |
| **Tin and Spoon** |  |  | **See**  **Feel**  **Hear** |
| **Bottle** |  |  | **See**  **Feel**  **Hear** |
| **Tuning Fork** |  |  | **See**  **Feel**  **Hear** |
| **Slinky** |  |  | **See**  **Feel**  **Hear** |

**Safety Considerations:**

I will need to model how to use a rubber band for this experiment. I will also have to model how to use a ruler on the edge of the desk. Both of these can be very dangerous. I will tell the children that this is their warning and if they can’t be respectful or mature (our amazing words) with our materials then they will do other work and during afternoon recess I will be their partner for the activity.

**Introduction (5 minutes)**

* *Hands on Top* 
  + “Everybody stop!”
* *Come to the green line and sit so we can start science.*
* *We are going to continue or sound unit. I am so excited because today you will be exploring some materials. Does anyone want to take a guess at what we could be using today to explore sound?*
  + Guessing musical instruments
  + Guessing jars, toilet paper/paper towel rolls (because that is what I asked them to start bringing in for a later lesson in the unit
* *Today we will be using two different materials to explore sound. One will be a rubber band.* (show the rubber band)*. The other will be a ruler.*
* *Does anyone know how we might be using these to explore sound?* 
  + Stretching the rubber band
  + Putting the rubber band on something
  + Hitting the ruler on something
* *We are going explore these materials and see if there are any similarities or differences when we make sound with rubber bands and rulers from the tuning fork from yesterday.*
* My mentor teacher will be in the room reminding students to focus or listen while I am talking and managing any children who up and not on the green line with us while I am teaching and talking to the whole group.

**Accommodations/ Modifications:**

* **Charlie can sit in his spot at his table or on the floor with the group**
* **Judah can sit next to me or on the ground**
* **Cormac, Harrison, and Oliver do not sit by each other at group**
* **Aireanna, Jack, and Nick are in front of me at group listening**

**Main Teaching Activities (15 minutes)**

* *Everyone will be working with their number partner at their tables.*
* *We will first work with the rubber bands.*
* *One person will be holding a rubber band between their fingers*. (I am modeling with a student volunteer in whole group on the carpet.)
* *The other person will carefully pull the rubber band up. (*I am still modeling so everyone can see)*. Then both of you will watch and see what happens.*
* *You will use this worksheet to record what you see and do.* (Have the worksheet on the smart board so everyone can see it.)
* *Then you will switch partners so you each get a turn to explore.*
* *What do you think will happen if I flung the rubber band too hard?*
  + It will fly across the room
  + It could hurt someone
  + It could hurt the persons fingers who is holding it
* Model what could happen without a partner or with Mrs. Staudt and tell them that this is not appropriate behavior.
* *If you choose to be disrespectful you will be my partner during afternoon recess, and you will do other work during our science time.*
* *Kapeesh?*
  + Kaposh!
* *After you and your partner explore the rubber band you will come trade me a rubber band for a ruler.*
* *One person will be holding a ruler flat on the desk with the end of it sticking out.* (I am modeling with a student volunteer in whole group on the carpet.)
* *The other person will carefully fling the end of the ruler. (*I am still modeling so everyone can see)*. Then both of you will watch and see what happens.*
* *You will use this worksheet to record what you see and do.* (Have the worksheet on the smart board so everyone can see it.)
* *Then you will switch partners so you each get a turn to explore.*
* *What do you think will happen if I flung the ruler too hard?*
  + It will fly across the room
  + It could hurt someone
  + It could break
  + It could hurt the persons fingers who is holding it
* Model what could happen without a partner or with Mrs. Staudt and tell them that this is not appropriate behavior.
* *If you choose to be disrespectful you will be my partner during afternoon recess, and you will do other work during our science time.*
* *Kapeesh?*
  + Kaposh!
* *So just to re cap what we are doing I say first you mirror me:*

1. *Working with partners*
2. *Rubber bands first*
3. *Rulers second*
4. *Safe behaviors*
5. *Recording observations on the worksheet*

*When I say go but not yet you may go to your tables.*

*Ready set go!*

* Mrs. Staudt and I will be either walking around the room or working with Charlie.
* She and I will both help pass out materials.
* We will both be around to answer questions and make sure children are on task and being safe.

**Accommodations/ Modifications:**

* **Charlie can sit in his spot at his table or on the floor with the group**
* **Charlie’s partner for the activity is either Mrs. Staudt or I**
* **Judah can sit next to me or on the ground**
* **Judah can start writing on the worksheet by himself or he can have us write in yellow marker and he traces on top or depending on time we can write the rest for him and he verbally tells us what he wants to write.**
* **Cormac, Harrison, and Oliver do not sit by each other at group**
* **Aireanna, Jack, and Nick are in front of me at group listening**

**Conclusion (5 minutes)**

* *Hands on Top*
  + Everybody Stop!
* When I say go but not yet. I want you to put the rulers and rubber bands on my desk.
* *I want you to put your pencils and erasers in your table bins.*
* *I want you to come to the green line.*
* *Mirror me: 1 put rulers and rubber bands, 2 pencils and erasers in bins, 3 green line.*
* *Ready set go!*
* *(*Next activity is the anchor chart that will have children talk in partners and then as a whole group to discuss their findings.)

**Accommodations/Modifications:**

* **Charlie can sit in his spot at his table or on the floor with the group**
* **Charlie’s partner for the activity is either Mrs. Staudt or I**
* **Judah can sit next to me or on the ground**
* **Cormac, Harrison, and Oliver do not sit by each other at group**
* **Aireanna, Jack, and Nick are in front of me at group listening**

**Name:** Emily Leinwand

**Grade Level**: First Grade

**NGSS Performance Expectation:** 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 sounds and holding an object near a vibrating tuning fork.)

**Phenomenon and Driving Question:**

* **Phenomenon:** When you play a guitar, it makes sound.
* **Driving Question:** How does the guitar make the sound we hear?

**Lesson Plan 1:** Activity #12, Day 7, Whole Group Anchor Chart Discussion

**Anticipated Teaching Date:** Thursday February 27th, 2020

**Connection to Framework Function:** Identifying Patterns

**Learning Objective(s):**

At the end of this instructional sequence, the students will be able to explain that sounds can cause materials to vibrate.

**Time Estimate:** 15-20 minutes

**Materials:**

* All of the anchor charts from the exploring activities we have done during the week
* New blank anchor chart
* Marker

**Safety Considerations:** N/A

**Introduction (5 minutes)**

* *Hands on top*
  + Everybody stop
* *We are going to start science, when I say go but not yet come to the green line.*
* *Make sure your spot is cleaned up before you come.*
* *Ready set go!*
* *What have we been talking about in science?*
  + Sound
* *This week we explored many different materials*

**Accommodations/Modifications:**

* **Charlie can sit in his spot at his table or on the floor with the group**
* **Charlie’s partner for the activity is either Mrs. Staudt or I**
* **Judah can sit next to me or on the ground**
* **Cormac, Harrison, and Oliver do not sit by each other at group**
* **Aireanna, Jack, and Nick are in front of me at group listening**

**Main Teaching Activities (10- 15 minutes)**

* *I want everyone to show me they are thinking* 
  + They will use the class signal
* *What did we want all of our materials to do when you have an idea whisper to your number partner?*
* Give them talk time
* *If you can hear my voice clap twice* 
  + They clap twice
* Call on children to answer
  + Made things move
  + Made things make sounds
  + Used a ruler or rubber band or tuning fork or bottle to make sound
* *Now I want us to look back at all the charts we have made over the week.* 
  + I will read some of the bullet points
  + I will point and call on children to read out loud some of our ideas from the charts
  + When we go over movements use the hand motion of hand moving back and forth super- fast
* *Who remembers the guitar video we watched? Thumbs up or down.*
  + Children will put thumbs up or down
* *Raise your hand if you have remembered our ideas about how the guitar makes noise* 
  + They will be saying the strings move
  + The sound echoes in the big whole
  + You can change the strings at the top and it changes the pitch
* *Now I want you to think about how the guitar made sound and how all of the other materials from this week made sound*
* *I want you to look at all the charts I have hanging up.*
* *Talk with your number partner, what was the same?*
  + Something or some part of the material moved really fast
  + Vibrations
* *Does anyone want to share their ideas.*
* I will be asking people to repeat what they hear from friends.
* I will be asking them to tell me more.
* I will be asking people if they want to add on.
* I will be asking people if they agree or disagree.
* I will be writing these new ideas down on an anchor chart.
* I will give wait time for them to think and talk to partners.
* If no one gets the vibration word as children: *Does anyone know a word for when something moves back and forth or up and down really fast.* 
  + Hopefully someone says vibration

**Accommodations/Modifications:**

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**Conclusion (5 minutes)**

* *So, we now know based on our investigations that sound is made through vibrations.*
* *Tomorrow we are going to do an activity that is either going to confirm our ideas or tell us that we need to keep investigating*
* *Before we get ready to go outside mirror me: Sound is made by vibrations.* 
  + Children will repeat after me
* Then I will be silly and call on random people and ask the same question again. They will answer the same thing. Then before I dismiss, *I will say everybody how is sound made?* They will say from vibrations!

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