

Lesson Plan Template

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Grade: 4th Grade	Subject: Physical Science
Materials: worksheet, materials listed in prep	Technology Needed: PowerPoint of image
Instructional Strategies: <ul style="list-style-type: none"> <input type="checkbox"/> Direct instruction <input checked="" type="checkbox"/> Guided practice <input type="checkbox"/> Socratic Seminar <input type="checkbox"/> Learning Centers <input type="checkbox"/> Lecture <input type="checkbox"/> Technology integration <input type="checkbox"/> Other (list) 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Peer teaching/collaboration/cooperative learning <input type="checkbox"/> Visuals/Graphic organizers <input type="checkbox"/> PBL <input type="checkbox"/> Discussion/Debate <input type="checkbox"/> Modeling
Standard(s) Lesson plan standard 4-PS4-3 Construct a code to convey information by researching past and present methods of transmitting information Unit standards 4-PS4-1 Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move. 4-PS4-3 Construct a code to convey information by researching past and present methods of transmitting information	Guided Practices and Concrete Application: <ul style="list-style-type: none"> <input type="checkbox"/> Large group activity <input type="checkbox"/> Independent activity <input checked="" type="checkbox"/> Pairing/collaboration <input type="checkbox"/> Simulations/Scenarios <input type="checkbox"/> Other (list) Explain: <input type="checkbox"/> Hands-on <input type="checkbox"/> Technology integration <input type="checkbox"/> Imitation/Repeat/Mimic
Objective(s) By the end of the lesson the students will use a past method of transmitting information by creating a string and cup phone model.	Differentiation <p>Below Proficiency: For the students who are below proficiency, they may not understand how sound is moved through the string. For these students to succeed they may be partnered up with a student who is at or above proficiency. This will allow the students to collaborate and work together through the worksheets and experiments</p> <p>Above Proficiency: For the students who are above proficiency they will be able to understand how sound is moved through the string. Since these students understand the concepts, they will be paired up with a student who needs more help comprehending the content. They will be able to solidify their knowledge of the content by teaching it to another student</p> <p>Approaching/Emerging Proficiency: For the students who are approaching proficiency they should be able to understand how sound is moved through the string. If these students do not understand this concept, they will do the same as those who are below proficiency. If the students do understand the concept, they will do the same as those above proficiency.</p> <p>Modalities/Learning Preferences:</p> <ul style="list-style-type: none"> • Visual: The students will be able to see the phenomena. They also will be able to see step by step instructions on how to build a string telephone

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	<ul style="list-style-type: none"> • Auditory: The students will be able to hear directions given to the students verbally. They will be verbally given step by step instructions • Kinesthetic: The students will be able to move around the room while doing the experiment • Tactile: The students will be able to manipulate the materials within the experiment
<p>Classroom Management- (grouping(s), movement/transitions, etc.)</p> <p>I will count down from 5 to gain the students attention. The students will remain at their desks throughout direct instructions. I will release the students with a verbal direction that will allow them to gather other materials needed for the lesson. When there is 5 minutes remaining in the lesson, I will give them a 5-minute warning. When there is 3 minutes remaining in the lesson, I will instruct the students to start cleaning up their areas and head back to their seats. In the remaining 2 minutes the students will wrap up and close this lesson while sitting at their desks.</p>	<p>Behavior Expectations- (systems, strategies, procedures specific to the lesson, rules, and expectations, etc.)</p> <p>My expectations for the students will be for them to respect the materials in the room. They may not leave materials out after the experiment is over. The students must collaboratively work together throughout the experiment. Their voice levels must remain at a 1 throughout the experiment. During the directions the students must raise their hand to ask questions or talk to the whole class</p>
Minutes	Procedures
10 Minutes	<p>Set-up/Prep:</p> <ul style="list-style-type: none"> - Cups (All sizes) - Construction paper - Ribbon - Pencil - Floss - Yarn - Dental floss - Paper clips - String - Materials
5 Minutes	<p>Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate questions, etc.) https://umary0-my.sharepoint.com/:p:/r/personal/bkpfaff1_umary_edu/Documents/science.pptx?d=w0cc1470595aa491e917b3f8e7248c062&csf=1&web=1&e=nDaNRO</p> <ul style="list-style-type: none"> - This picture is an example of past communication - This is the phenomena that we are going to research and do experiments with - Raise your hand if any of you have used this type of communication before? - For those of you that have not we are going to make one today! - My expectations for this are that you respect Mrs. Gibbens room and the materials that are in it. You must clean up and put back all the materials that you are not using <div style="text-align: right;"> </div>

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<p>7-12 Minutes</p>	<p>Explain: (concepts, procedures, vocabulary, etc.)</p> <ul style="list-style-type: none"> - Have students pass out different materials to the students - While the students are handing out materials the educator will pass out the worksheets - Make a knot in the string like this *Demonstrate - Now connect the string to the paper clip like this *Demonstrate - Now take your pencil and poke a hole through the cup like this *Demonstrate - Now we are going to connect your cup phone to your partners cup phone, your partner is the person standing next to you - This is how you will connect your string to your partners string *Demonstrate - Now that you and your partners cups and strings are connected, you will be doing the first worksheet that I handed out to you with the picture of a string and two cups attached - You and your partner will work together through this sheet - Once you have completed the first worksheet, I want you to think about what could be modified to improve it, while you're thinking out your hands on your head, so I know you are finished with the first worksheet 	
<p>10-15 Minutes</p>	<p>Explore: (independent, concrete practice/application with relevant learning task -connections from content to real-life experiences, reflective questions- probing or clarifying questions)</p> <ul style="list-style-type: none"> - For the second worksheet you and your partner can make changes to the original design - Record on the sheet what you are going to change and how you think it will affect it on the lines - In the blank box area of the worksheet, you will draw a model of what you changed and write how it affected it - The second worksheet allows the students to use different materials and manipulate the standard form of a string and cup phone - The students will change two things and possibly a third if time allows and record their findings on the worksheet - The worksheet will allow the students to write out their observation and findings about what was changed and how it affected it - The students will collaboratively work together in their partner groups - The educator will walk around 	
<p>5 Minutes</p>	<p>Review (wrap up and transition to next activity):</p> <ul style="list-style-type: none"> - As you guys are putting away your materials, I want you to think about something you found out or noticed throughout the experiment - Once everything is cleaned up, we will discuss our findings in the experiment - For the remainder of the lesson the students will be called on to share their findings in the experiment 	
<p>Formative Assessment: (linked to objectives, during learning)</p> <ul style="list-style-type: none"> • Progress monitoring throughout lesson (how can you document your student's learning?) 	<p>Summative Assessment (linked back to objectives, END of learning)</p> <p>After the unit the students will be assessed in the areas of sound waves. The assessment will cover the two standards of the unit.</p>	

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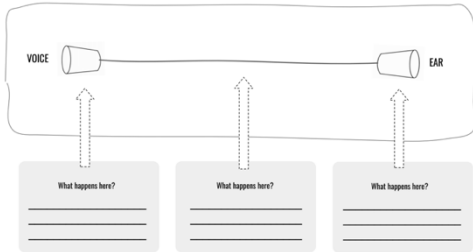
I will be using a worksheet, observation, and questioning to monitor the students learning throughout the lesson. I will use the data from observations and questioning to see where students need help during the lesson. I will use the worksheet to see where students are at in their learning and if there needs to be reteaching of certain areas.

Paper Cup Telephone

Name: _____

1. EXPLAIN HOW IT WORKS

How do you think the paper cup telephone works? Draw and describe what happens to the sound as it goes from cup to cup.



2. DISCUSS:

HOW COULD YOU CHANGE YOUR PAPER CUP TELEPHONE TO MAKE IT BETTER?

BETTER

Write 2 ideas to test down here

3. EXPERIMENT!

The 2 experiments you decided on:	Try your experiment. What did you notice?
Here's what we'll do:	
Here's what we think will happen:	
Here's what we'll do:	
Here's what we think will happen:	

If you need more space, use the back of the page.

Below Proficient- Students who are below proficiency will have little to no understanding of how the cup phone works and won't be able to explain it. They also will have little to no understanding of why adjustments make the cup phone better/worse.

Approaching Proficiency- Students who are approaching efficiency will be able to understand how the cup phone works and they can explain it. They will also be able to understand how adjustments to the cup phone made the sound better/worse but might not be able to understand why.

At Proficiency- Students who are at proficiency will be able to understand how the cup phone works and be able to explain why. They will also be able to understand how adjustments work and be able to explain why.

Waves of Sound

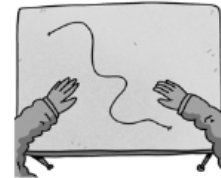
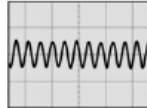
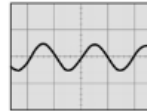
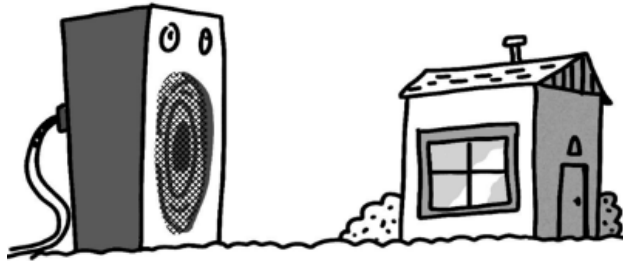
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Unit Assessment

1. Isaiah has built a giant speaker so that he can play music really loudly. He has set the speaker right outside his neighbor's house. Draw arrows and add words to the image below to show a model of what will happen to the glass window of the house when Isaiah starts playing music using the large speaker.

Hint: You can add "air blobs" to your model if that helps.



You recently learned about the wavelengths of sound waves. You've learned that different sounds have different wavelengths. For example, a tuba makes a low sound that has a long wavelength, but a flute makes a high sound that has a short wavelength. Pretend your teacher has given you a long piece of string and asked you to use it to model what sound waves look like. You can lay the string on your desk and bend it to make different wave shapes.

2. Imagine your teacher plays the high-pitched sound of a bird singing. Draw what the string should look like when you use it to create a model for the sound waves of the bird song.



3. Imagine your teacher plays the low-pitched sound of a whale singing. Draw what the string should look like when you use it to create a model for the sound waves of the whale song.



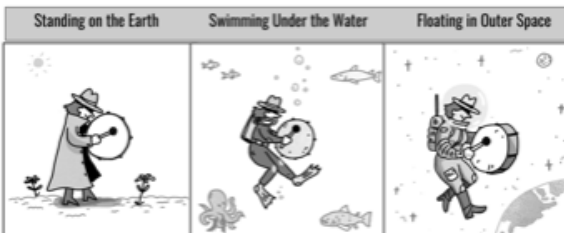
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4. Leketa is a secret agent. She needs to send secret messages to her partner, Daniel. Leketa uses the sound waves from the beat of a drum to send her messages. Leketa and Daniel create a secret code using a pattern of drum beats to communicate with one another. Here's their secret code:

BAM-BAM-BAM	means "Danger!"
BAM-BAM	means "Mission Accomplished!"
BAM	means "Send Help!"

Leketa bangs on her drum from three different locations: standing on the Earth, swimming under the water, and floating in outer space.



In which of the following places would using a drum work to send her secret messages?

- a. The drum will work on Earth, under the water, and in outer space.
- b. The drum will work on Earth and under the water. The drum will not work in outer space.
- c. The drum will work on Earth and in outer space. The drum will not work under the water.
- d. The drum will work under the water and in outer space. The drum will not work on Earth.

6. Mateo and Ava made a paper cup telephone that they use to communicate with one another. But there is a problem: The string is too long, so there is a lot of distance between the two paper cups. Mateo can hear sounds when Ava speaks, but he cannot hear the exact words. Mateo thinks that they can solve the problem if they develop a code **using a pattern of sounds**. Generate at least two different ideas that Ava and Mateo could use to communicate with a sound pattern when they use the cups and string. Be sure to explain how each solution would work.

Solution 1:

Solution 2:



7. Mateo and Ava want to compare the solutions that you came up with to see which one will work better. Using the two solutions that you generated above, how could Ava and Mateo test these solutions to compare them and see which one works the best? Choose the best answer.

- a. Ava sends a message using Solution 1 that instructs Mateo to sit down. Mateo hears the sound pattern and sits down. This is evidence that Solution 1 is better than Solution 2.
- b. Ava sends a message using Solution 2 that instructs Mateo to stand on one foot. Mateo hears the sound pattern and stands on one foot. This is evidence that Solution 2 is better than Solution 1.
- c. Ava sends a message using Solution 1 that instructs Mateo to sit down. Mateo hears the sound and sits down. Ava then sends a message using Solution 2 that instructs Mateo to stand on one foot. Mateo doesn't stand on one foot. This is evidence that Solution 1 is better than Solution 2.
- d. Ava sends a message using Solution 1 that instructs Mateo to sit down. Mateo hears the sound and sits down. Ava then sends a message using Solution 2 that instructs Mateo to stand on one foot. Mateo doesn't stand on one foot. This is evidence that Solution 2 is better than Solution 1.

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Proficiency Scales

<https://docs.google.com/document/d/153nimizURIH01OK8mWLDs1fW5R8J6T57Ud9T0qp0lh0/edit?usp=sharing>

Below Proficiency- Students will have little to no understanding of the contents within the test. Students will not get the right answers and are unable to explain their reasoning.

Approaching Proficiency- Students will have understanding with few errors of the contents within the test. Students might be able to get the right answers but not explain their reasoning, or students may not get the right answers but will be able to explain their reasoning for the wrong answer.

At Proficiency- Students will understand the contents within the test. Students will be able to get the right answer and will be able to explain their reasoning for their answer.

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

This lesson was one of my favorite lessons to teach this semester. The students were very excited when I showed them the opening picture of the two people with the cup and string phone. I wish I would have utilized the picture more in the beginning of the assignment instead of briefly going over it. I should have had more information and probing questions at the beginning to peak the student's interest even more. I was very nervous to teach this lesson because it was my first-time teaching science, and I was being observed. The things that went well for this lesson were that the students were excited and actively participating in the experiment while learning. I used this lesson as a lab/extension from what they learned in their science classes. The week before they learned about sound waves and they did a lab with it, but they did not get the chance to do this lab, so I did it with the students. The students were able to explore how sound traveled from the cup through the string. They also were able to adjust their experiment and figured out if their adjustments made it sound better or worse. The students also were able to make their own cup and string phones with a partner. They were not able to choose their own partners because this was one of the first times they were working with partners. By deciding who their partner was helped my classroom management throughout the lesson. The students respected my choice to pick their students instead of allowing them to choose them for themselves. They worked with their partner efficiently and respectfully. The students learned how to create a communication device using cups and string. I know the students learned how to make these telephones because we made them together. The students also learned how to make modifications to their cup phone to either improve their sound or worsen their sound. The students recorded their findings and what they noticed in a two-page packet. There was an answer key for me to check if they completed the assignment correctly. One of the pages was open-ended and allowed for the students to make changes and experiment with different materials. The changes I would make would be to have more science behind the experiment. Most of the time spent was on the experiment part, but I wish that I would have involved more content in it. The other thing I

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wish I would have done would be to have more than 30 minutes to complete this lab. The lab experiment was rushed, and students were not able to get enough time with the experimenting part and filling in the worksheet. I also would have changed how I set up the experiment. I should have had the materials sitting on the desk ready for the students when they came into the classroom. Instead of having the materials ready on the desks, I passed them out at the beginning of the period.