Professor: Dr. Allison Downing
Grade: First

MSCCR Science Standard:
P.1.6B.1 Conduct an investigation to provide evidence that vibrations create sound (e.g., pluck a guitar string) and that sound can create vibrations (e.g., feeling sound through a speaker).

Learning Objectives:
TSW recall that sound can create vibrations.

Engage
"What is something you like to listen to? How do you hear those things?"
"One thing we hear is someone's voice on a telephone or cell phone. We are going to investigate using paper cup phones today."

Explore
Advanced Preparation: each team of students will need a paper cup phone
"Using your phone, you will need to work with your partner and try to figure out how to get your phone to work. You will need to take turns with your partner talking and listening. One person will say something in their cup and the other person will listen. Once you get it to work, you will need to explain how and why it works."
Classroom teacher will circulate to make sure they can successfully create their phones. However, don't offer input on how and why they work at this time. I want the students to have their own ideas as they work to observe, discuss, and draw conclusions. They should begin to discover (with some prompting) that the string has to be pulled tight for sound to move across the string.

How does it work? What if you hold the string while you use it? Does the sound change? Do you feel anything?

Explain
The students are asked to share their ideas on how the phones work and their observations. The focus of this discussion will be about the students' thoughts on how and why the phones worked. As the teacher, I want to make sure that the idea of vibrating materials make sound and sound can make materials vibrate.
"I would like to <u>Why phones worked</u> and what you found out about the <u>string</u> on your phones. Did they work? Why? How did the sound travel?"

Why phones worked? Why does the string need to be tight?
"Did you feel or see the string when one person was talking? What did you observe?"
When you touch your throat while you hum you can feel the vibrations. Try it.

Elaborate
TTW read What Makes Different Sounds? A portion or the whole thing depending on time. What other things make sounds using vibrations? TTW name items that make noise; TSW indicate if they make vibrations by a show of hands. (All sounds make vibrations.)
Items: guitar strings, drum, barking dog, piano, radio speaker, crumpled paper, chirping cricket, singer, popped balloon, thunder, hammer, wood saw, rustling leaves, snapped fingers

Evaluate
"Before I leave, I want to thank you for letting me do this activity with you today. Your teacher has a piece of paper with a few questions on it, so I can find out if you learned something new today. You can also let me know how you liked the lesson by circling the face that matches your feelings about the lesson. I had fun and I hope you did, too! Remember, stay curious!"

Making Sound

All of the objects listed below make sounds. Put an X next to the objects you think involve vibrations in producing sound.

___ guitar strings
___ drum
___ dripping faucet
___ barking dog
___ piano
___ screeching brakes
___ radio speaker
___ crumpled paper
___ car engine
___ chirping cricket
___ singer
___ popped balloon

___ drum
___ wind
___ wood saw
___ clapped hands
___ bubbling water
___ rustling leaves

___ hammer
___ flute
___ thunderstorm
___ two stones rubbed together
___ snapped fingers

Explain your thinking. What "rule" or reasoning did you use to decide which objects involve vibrations in producing sound?