

ACTIVITY | VIBRATION CAUSES SOUND



LEARNING GOALS

Through a science experiment, students explore how string instruments make sound and how vibration causes sound.

STUDENTS WILL BE ABLE TO

- develop a model to describe patterns in terms of wavelength (NGSS PS-4)
- plan and carry out fair tests in which variables are controlled (NGSS ETS-1)
- use illustrations to extend the meaning of a presentation (CACCSS L1)
- demonstrate the ability to follow simple directions and rules for discussion (CACCSS SL 1)



VOCABULARY

vibration

When something moves back and forth very fast.



MATERIALS

Student Worksheet, string



STUDENT WORKSHEET LINK

[Click here](#)



PROCEDURE

Begin with a discussion about vibration. Ask students to define vibration and share examples of vibration. Take extra time to explain how the violin and cello create sound through vibrating strings.

Divide the classroom into pairs. Provide each student with 1 string for the experiment. Ask them to look at their Student Worksheet. If two people are present, one will be the observer and one will be the string player and afterwards they will reverse the roles. Remind your students each of them has important pieces of information. They should ask questions and share in order to complete the activity.

Follow these steps to demonstrate to the students how to properly hold the string for this activity:

1. Find the middle point of the string.
2. Place the middle point of the string on the back of your head.
3. Wrap the string along the back of your head and across your ears.
4. Pull both ends of the string in front of your face.
5. Hold the string together with one hand about 2 inches from your face.
6. Make sure the string is tight, but not too tight! Do not hurt your ears!
7. Use your free hand and make a quick pull on one side of the string, causing it to vibrate.
8. Listen! What do you hear?

Have the students switch roles as the observer and the string player, and repeat steps 1-8.

Ask the students to complete the activity on their Student Worksheet.

Answer Key:

Question: How does the sound change on a piece of string?

Prediction: Respond **Higher** or **Lower** to the following statements.

- When I pull the string **tighter**, the sound will go_____.
- When I **loosen** the string, the sound will go_____.
- When I make a **bigger** circle around my head by moving my hand farther away from my face, the sound will go_____.
- When I make a **smaller** circle around my head by moving my hand closer to my face, the sound will go _____.

Experiment with the String Now!

Results: Respond **Higher** or **Lower** to the following statements.

- When I pull the string **tighter**, the sound goes **higher**.
- When I **loosen** the string, the sound goes **lower**.
- When I make a **bigger** circle around my head, the sound goes **lower**.
- When I make a **smaller** circle around my head, the sound goes **higher**.

Conclusion: Use the following words to complete the statement.

(Word Bank – higher, sound, lower, stops, vibrates)

- When I pull on the string, the string **vibrates**.
 - When the string is vibrating, I hear **sound**.
 - When the string stops moving, the sound **stops**.
 - When I change how tight or loose the string is, the sound goes **higher** or **lower**.
 - When I change the size of the circle around my head, the sound goes **higher** or **lower**.
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VIBRATION CAUSES SOUND

Question: How does the sound change on a piece of string?

Prediction: Respond **Higher** or **Lower** to the following statements.

When I pull the string **tighter**, the sound will go _____.

When I **loosen** the string, the sound will go _____.

When I make a **bigger** circle around my head by moving my hand farther from my face, the sound will go _____.

When I make a **smaller** circle by moving my hand closer to my face, around my head, the sound will go _____.

Experiment with the string now!

Results: Respond **Higher** or **Lower** to the following statements.

When I pull the string **tighter**, the sound goes _____.

When I **loosen** the string, the sound goes _____.

When I make a **bigger** circle around my head, the sound goes _____.

When I make a **smaller** circle around my head, the sound goes _____.

Conclusion: Use the following words to complete the statement.

higher, sound, lower, stops, vibrates

When I pull on the string, the string _____.

When the string is vibrating, I hear _____.

When the string stops moving, the sound _____.

When I change how tight or loose the string is, the sound goes _____ or _____.

When I change the size of the circle around my head, the sound goes _____ or _____.