

Nova's Soundscape Explorer: The Science of Vibrations

Learning objective: To identify how sounds are made, associating some of them with something vibrating, and understand how sound travels through a medium to the ear.

Follow the drawing prompt below to create a diagram of a sound wave travelling from a source to a listener. Use the word bank to label your scientific illustration accurately.

Draw: Create a detailed scientific diagram. On the left, draw Nova the owl plucking a string on a handmade guitar. Show small, blurred lines near the string to represent vibrations. Draw a series of expanding, curved lines (sound waves) travelling through the air toward a listening ear on the right side of the page. Use clear, neat lines and add arrows to show the direction the sound is travelling.



Label words: Vibrations · Sound source · Medium (air) · Sound wave · Outer ear · Eardrum · Particles

Steps:

1. Step 1: Draw a guitar being plucked. Label the part that vibrates to create the sound. Explain why the sound stops when you touch the string.
2. Step 2: Draw a series of wavy lines moving away from the guitar. Label these as the 'sound wave'. Justify why sound cannot travel through a vacuum (empty space).
3. Step 3: Draw a small diagram of an ear. Label the 'eardrum'. Explain how the eardrum reacts when sound

waves hit it.

4. Compare and contrast: How would the sound wave travel differently if the guitar were underwater compared to in the air? Use the term 'particles' in your answer.
5. What might happen to the sound if you placed a thick, soft blanket over the guitar? Justify your prediction using scientific vocabulary.
6. Creative Extension: Design an original instrument using household objects. Describe how you would change the 'pitch' of the sound it produces.