Nova’s Night-Time Sound Lab

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

Follow the drawing prompts to create a scientific diagram of sound waves. Use the word bank to accurately label your illustration.

Draw: Draw a scientific diagram showing Nova the owl sitting on a branch at night. Use clear, dashed lines to represent invisible sound waves spreading out from her beak in a circular pattern towards a listening ear on the right side of the page. Include a zoomed-in 'magnifying glass' circle showing the air particles vibrating close to the source.

Label words: vibration · sound wave · ear canal · eardrum · medium · source

Steps:

1. Label your drawing to show the 'source' of the sound. Explain why the object must move back and forth to create a sound.

2. Draw arrows to show the path of the sound wave. If you were in space (a vacuum), why would you not be able to hear Nova’s hoot? Justify your answer.

3. Compare and contrast how sound travels through air compared to how it might travel through a solid object like a wooden table.

4. What might happen to the volume of the sound if the vibrations of the source become much smaller? Explain your reasoning.

5. Identify one way you could muffle or 'dampen' the sound in your drawing. Explain why this material stops the sound from reaching the ear.

6. Step 1: Draw Nova the owl hooting on a branch. Step 2: Draw ripples in the air to represent sound waves traveling away from her beak.