Investigating the Science of Sound with Nova

Learning objective: To explain how sounds are made, how they travel, and how they change as they move away from a source.

Use this scaffold to structure your scientific report about your recent sound experiment. Ensure you use precise vocabulary to explain your observations and scientific reasoning.

During our investigation into acoustics, we discovered that sound is created when an object vibrates rapidly, sending invisible waves through the air to our ears.

Word bank: vibrations · oscillations · sound waves · medium · decibels · volume · pitch · attenuate · travels through · consequently · furthermore · in contrast · observe

1. The Source of Sound: Describe how the object you tested created sound. What happened to the object when it stopped making a noise? Start with: The sound was produced when... (3 marks)

2. The Journey of Sound: Explain how the vibrations travelled from the source to your ears. What medium did the sound pass through? Start with: The vibrations travelled through the air by... (3 marks)

3. Distance and Volume: Compare the volume of the sound when you were close to the source versus when you moved further away. Justify why the sound became quieter. Start with: When I increased the distance from the source, the volume... (4 marks)

4. Changing Pitch: Explain how you could change the pitch of the sound during your experiment. What might happen to the sound waves if the object vibrated faster? Start with: To change the pitch of the sound, I... (4 marks)

5. Scientific Conclusion: Based on your findings, explain why sound is often described as a form of energy. Start with: I have concluded that sound is energy because... (4 marks)

6. Critical Thinking: If you were to repeat this experiment in a room filled with soft materials like cushions and curtains, how would the sound differ? Explain your reasoning. Start with: If the experiment took place in a room with soft materials... (4 marks)

Extension challenge: Nova the owl wants to know: If you were in space, where there is no air (a vacuum), would you be able to hear a rocket launch? Justify your answer using your knowledge of how sound waves require a medium to travel.