



Knowledge and Skills Mind Map (Science) Year 4 Summer Term

Knowledge - 
Skill - 



Sound

1.Can I ask questions and identify how sounds are made and link them to vibrations?

- **Prior Learning (last term):** Electricity (electrical appliances, circuits)
 - **Vocab:** sound, vibration, movement
 - Know that sounds are made when objects vibrate.
 - Know that a vibration is a movement backwards and forwards very quickly, (e.g. a ruler twanging on a desk or a drum skin being hit).
 - Know that we can sometimes see or feel vibrations when a sound is made.
 - Know that careful observation helps us to identify how sounds are produced.
- (note for teachers – suggested task:** provide simple objects such as rulers, drums or elastic bands and ask children to create sounds, observe what is happening, and feel the vibrations to link sound with movement.)
- **Making systematic and careful observations**
 - **Ask relevant questions and use different types of scientific enquiries to answer them**

2.Can I explain how vibrations travel through a medium to the ear?

- **Prior Learning (last lesson):** identified how sounds are made and linked to vibrations
 - **Vocab:** vibration, medium, travel, ear
 - Know that sound travels through a medium such as air, water or solids.
 - Know that a medium is the material through which sound moves, (e.g. air carries sound from a speaker to our ears).
 - Know that vibrations travel through the medium to reach the ear.
 - Know that without a medium, sound cannot travel.
- (note for teachers – suggested task:** simple investigation e.g. tapping on a table and listening through it or using a string telephone, asking children to compare how sound travels through solid and air.)
- **Using straightforward scientific evidence to answer questions or to support their findings**

3.Can I find patterns between the pitch of a sound and features of the object that produced it?

- **Prior Learning (last lesson):** explained how vibrations travel to our ears
 - **Vocab:** pitch, high, low
 - Know that pitch describes how high or low a sound is.
 - Know that different objects can produce sounds with different pitches.
 - Know that the features of an object affect its pitch, (e.g. thinner or tighter objects produce higher sounds, while thicker or looser objects produce lower sounds).
 - Know that observing and comparing sounds helps us identify patterns in pitch.
- note for teachers – suggested task:** use elastic bands of different thicknesses or stretch them to different tightness over a box and ask children to pluck them, comparing which produce higher or lower sounds.)
- **Identifying differences, similarities or changes related to simple scientific ideas and processes**

6.Can I use my understanding of pitch and volume to design and improve an elastic band guitar?

- **Prior Learning (last lesson):** investigated how sound changes in as distance increases
 - **Vocab:** pitch, vibration, design
 - Know that pitch changes depending on how fast something vibrates, (e.g. tighter or thinner elastic bands produce higher sounds).
 - Know that volume changes depending on how strong the vibrations are.
 - Know that changing parts of an instrument can affect the sound it produces.
 - Know that testing and improving designs helps us create better instruments.
- **(note for teachers – suggested task:** create an elastic band guitar (**Rubber Band Guitar:** <https://www.youtube.com/watch?v=eLEUVo16dls>) using a box and different bands, then test how changing thickness, tension or length affects pitch and volume, recording results and improving their design.)
- **Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions**
 - **Gathering, recording, classifying, presenting data in variety of ways to help answering questions**

5.Can I investigate how sound changes as the distance from the source increases?

- **Prior Learning (last lesson):** patterns between volume of sound and strength of vibrations
 - **Vocab:** distance, faint, volume
 - Know that sound gets fainter (quieter) as the distance from the source increases.
 - Know that this happens because the vibrations lose energy as they travel further away.
 - Know that measuring or observing changes in sound at different distances helps us identify patterns.
 - Know that results can be used to draw conclusions about how sound travels over distance.
- (note for teachers – suggested task:** place a bell/instrument in the classroom or playground and ask children to move further away, recording how the volume changes, then discuss patterns and conclusions.)
- **Making systematic and careful observations**
 - **Using results to draw simple conclusions, make predictions for new values, suggest improve-**

4.Can I find patterns between the volume of a sound and the strength of vibrations?

- **Prior Learning (last lesson):** found patterns between pitch of a sound and object producing it
 - **Vocab:** volume, loud, quiet
 - Know that volume describes how loud or quiet a sound is.
 - Know that louder sounds are made by stronger vibrations, while quieter sounds are made by weaker vibrations, (e.g. hitting a drum harder produces a louder sound).
 - Know that the strength of a vibration affects how much energy is transferred.
 - Know that comparing sounds helps us identify patterns between vibration strength and volume.
- (note for teachers – suggested task:** use instruments e.g. drums/tambourines and ask children to play them softly and then loudly, observing and describing how vibrations and sound change.)
- **Identifying differences, similarities or changes related to simple scientific ideas and processes**

Note for 2027—mind map changed mid term, lessons 1,2 and 3 might be slightly different to this, lessons 4, 5 and 6 have been changed to match this. Lesson 6 may have to be slightly adapted as there was a lot of teaching about pitch put in as they hadn't had a lesson on pitch but if this mind map has been followed next year they will have had a lesson on it (I3) so it would just be recap rather than new teaching