



Beneath My Ear

I stand in the street
and in my ear
I feel the vibrating
and pulsating
of tubes and strings

All the sounds in the room
In the hall, in this theatre
twanging and banging
flowing and blowing

And the tubes and drum
in my ears hum
with rhythm and tune
pulsating
and vibrating
in my ear
in the street.








Teachers' Guide: Beneath My Ear

Topic Sound and Hearing	National Curriculum Reference SC4 3f (until 2014)/ Year 4 'Sound (from 2014)
Learning Outcomes	
<ul style="list-style-type: none"> • To describe and sequence the parts of the ear • To explain how our ear allows us to hear loud and quiet sounds • To change the pitch of sounds 	
Poem Link	
<p>Beneath my Ear <i>'And the tubes and drum, in my ears hum, with rhythm and tune, pulsating, and vibrating, in my ear, in my street'.</i></p> <p>Throughout these activities the children can think about what is happening inside their ear as they hear the different sounds.</p>	

Activities

Activity Type	Running Notes	Resources
 Quick Fire	<p>Remind the children of the 'earstrument' from the Centrally Heated Knickers show (slide 1).</p> <p>Challenge the children to correctly sequence the parts of the ear.</p>	<p>Activity Sheet 1: Parts of the ear</p> <p>Scissors</p>
 Hands On	<p>Use the role play cards to support 10 'volunteers' in modelling how sound vibrations pass through the air to the ear and how these vibrations then pass through the ear to be converted into signals sent to the brain.</p> <p>Use a woodblock to create the initial vibration. Repeat the modelling but this time hit the woodblock harder to produce a louder sound. Discuss with the children how the vibrations will be different. Repeat with a quiet sound.</p>	<p>Role play cards</p> <p>Woodblock (or other percussion instrument) plus beater</p> <p>Drum plus beater</p> <p>Large bottle , half filled with water, with a tight lid</p>
 Extended	<p>Use a glockenspiel or xylophone to quickly check that the children can distinguish high and low notes. Reinforce the term 'pitch' as referring to how high or low a sound is.</p> <p>Challenge the children to produce a new scene for the Centrally Heated Knickers show in which a simple explanation is given for how a member of the Homemade Orchestra changes the pitch of the note being played. This new scene must include an easy to understand demonstration of how the length of pipe, string or bar is related to the pitch of the note.</p>	<p>Glockenspiel or xylophone</p> <p>A selection of possible materials to construct the demonstration: straws and scissors to make blowers</p> <p>Plastic bottles plus a jug of water (and a tray to collect spillages)</p> <p>Elastic bands , boxes, string</p> <p>Ruler (to twang)</p>



Science Background

Quick Fire Activity

The parts of the ear should include the pinna (or outer ear), ear canal, ear drum, tiny bones (hammer anvil and stirrup), cochlea and nerves which then lead to the brain.

Hands On Activity

The key message to draw from the role play activity is that sound is transferred through the passing on of the initial vibrations first from air particle to air particle (both outside and within our ears) and then from the ear drum and small bones to the cochlea (via the oval window). The cochlea contains liquid (represented by the water filled bottle) which then vibrates. Tiny hairs inside the cochlea detect these vibrations and the message is finally passed to the nerves and to the brain.

Extended Activity

This activity could be done in a variety of ways but one possibility would be to start with a simple investigation using blowers (cut a V shape at the end of an art straw, squeeze between lips and blow), elastic bands or water in bottles to find a link between the pitch of the note and the length of what is making the sound. Using this information the children could then select one instrument from the Homemade Orchestra to explain in the new scene. This could include both a small amount of information from research about the actual instrument plus a demonstration of the link between pitch and length related to that instrument. If children wish to demonstrate the instruments classroom equivalents could be used e.g a recorder rather than a saxophone.



Activity Sheet 1: Parts of the Ear

anvil	pinna	hammer
stirrup	ear canal	cochlea
nerves	brain	ear drum



Activity Sheet 1: Parts of the Ear

Air particle 1	As soon as the instrument is hit, start to vibrate. Pass the vibration to air particle 2 by touching their shoulder.
Air particle 2	When your shoulder is touched / as the vibration reaches you start to vibrate yourself. Pass the vibration to air particle 3 by touching their shoulder.
Air particle 3 (in the pinna)	When your shoulder is touched / as the vibration reaches you, start to vibrate yourself. Pass the vibration to air particle 4 by touching their shoulder.
Air particle 4 (in the ear canal)	When your shoulder is touched / as the vibration reaches you, start to vibrate yourself. Pass the vibration to the ear drum by touching their shoulder.
Ear drum	When your shoulder is touched / as the vibration reaches you, bang the drum.
Hammer	When you hear the drum, start to vibrate. Pass the vibration to the anvil by touching their shoulder.
Anvil	When your shoulder is touched / as the vibration reaches you, start to vibrate yourself. Pass the vibration to the stirrup by touching their shoulder.
Cochlea	When your shoulder is touched / as the vibration reaches you, vibrate the water in the bottle.
Nerve	When the water starts vibrating, tell the brain that a sound is coming.
Brain	Work out what the sound is and announce it!



Sort the parts of the ear into the right order





What do you observe?



More Science Activity



Perform a poem with your own 'Homemade Orchestra'

