



INVESTIGATING SOUNDS



Equipment:	<ol style="list-style-type: none"> 1. Butter cartons with lids or Petri dishes or other containers with lids; various items to rattle in them (e.g. salt, coins, uncooked pasta, paper clips.....); paper to wrap up the containers; pictures of these items (or else more of these items unwrapped). 2. Butter cartons, rubber bands, pencils 	
Suggested Class Level:	Younger classes	
Preparation:	Make up the 'Sound Boxes': put different items in each box and wrap them up. Label them A,B,C,D,E..... and make a note of what was in each.	
Background information:	<p>Sound is caused by vibrations which travel through the air or other medium (e.g. water, metal, wood, etc.). Vibrations can be made by plucking a string, by blowing or by banging. Shorter strings and shorter columns of air give higher-pitched notes. Tighter strings and drum skins also produce higher notes. When something vibrates it moves the air near it. This air in turn moves the air next to it, and so on. This is a bit like how a vibration passes along a 'Slinky'. You hear a sound when this vibration reaches your ear.</p>	
Trigger questions:	<p>What is sound? What are vibrations? How are sounds made? Are all sounds pleasant? Can you think of some words to describe sound? (Loud/soft, high/low, musical/unpleasant)</p>	
Content:	<p>SCIENCE: Energy: Sound – identify and differentiate between high and low sounds Living Things: myself, the ear</p> <p>MATHS: Number: Comparing and ordering Measures: Length Data: Sort and classify, represent data (e.g. pictograms)</p>	
Skills:	Predicting, Investigating,, Observing, Recording, Analysing	



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Cross-curricular Links:

Music
SPHE: Myself, knowing about my body, the ear



Activity:

1. Recognising and Identifying Sounds

The children shake the wrapped-up boxes and listen to the sounds. They then guess what is inside each box.

They can try to match the sounds with pictures of the items which are in the boxes, or else with another set of the various items which are unwrapped.

Use of vocabulary should be encouraged for the various sounds: e.g. rattly, swishy.....



2. Plucking strings to make vibrations

A brief introduction to how sounds are made: by plucking strings (e.g. guitar), by blowing (e.g. wind instruments), by banging (e.g. drums).

The children could be asked to spend a short while making sounds of different pitch, and then asked to describe them as 'low', 'medium' or 'high'. (This could be done with the aid of a musical instrument).

(REMEMBER WHEN SCIENTISTS TALK ABOUT SOUND BEING 'LOW' OR 'HIGH' THEY MEAN THE PITCH OF A SOUND. WHEN THEY WANT TO DESCRIBE THE VOLUME OF THE SOUND THEY TALK ABOUT 'SOFT' AND 'LOUD'.)

Then ask them "Do you think the length of a string makes any difference to how a note sounds?"

"Do you think a long string will give a higher or lower note than a short string? Or the same?"

LET'S INVESTIGATE!

Then give the children a butter carton and elastic band and ask them to wrap the elastic band lengthways around the carton. Ask them to pluck the elastic band and describe the sound that they hear ('low', 'medium' or 'high').

"Now can you think of a way of plucking different lengths of elastic band, using the same carton and band, and maybe a pencil as well".

One suggested way is to wrap the elastic band lengthways around the butter carton; then place the pencil widthways across the carton under the elastic band. *(When the pencil is moved up and down it has the effect of changing the length of the elastic band, because the vibrations do not pass beyond the pencil.)*

The different lengths of elastic band are then plucked, and the children note the sound that they hear.



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The results should be recorded as a pictogram, or in a chart thus:

	Short 'string'	Medium length 'string'	Long 'string'
Pitch of Note (Low, Medium or High)			



MATHS: The children could measure the length of the vibrating part of the string in each case
(in standard or non-standard units)

Safety:

Follow-up activity:

1. Design and make a percussion instrument.

2. Children can also compare (using 'fair testing': "What will we change? What will we keep the same? What will we observe/measure?"):

(i) Thicker and thinner elastic bands; (keep the same: the length and tension; change: the thickness) (Thicker = lower; thinner = higher)

(ii) Looser and tighter elastic bands. (keep the same: the length and thickness – you can use the same elastic band; change: the tightness; note: the pitch) (Looser = lower; tighter = higher)

