

Curriculum Strand: Energy and Forces

Sound

Sound is a very suitable science topic to teach this school year given the opportunities there are to integrate work in this strand unit with music. Most of the equipment required would be readily available in school year given the opportunities there are to integrate work in this strand unit with music. Most of the equipment required would be readily available in school or at home. It is also an ideal topic to teach in the multi-class situation since many of the objectives for the different class levels are similar.

Children's ideas using a concept map

Children's ideas should be the starting points for all science work in the classroom. Concept maps (*Science Teacher Guidelines*, p. 144, see example below) are one of a range of tools which teachers can use to gather information about children's ideas. They can be introduced to, and used by, children in the junior classes up.

The teacher can compile a list of sound concept words suggested by the children. These can then be connected, using joining words. The teacher can record this activity on the board or the children can make the connections themselves either in pairs, small groups or individually. The children could also be asked to complete another concept map at the end of the topic of sound, which can indicate whether their initial ideas have changed and/or if learning has taken place.

Content Objective:

The child should be enabled to recognise and identify a variety of sounds in the environment (Infants – Sixth Class)

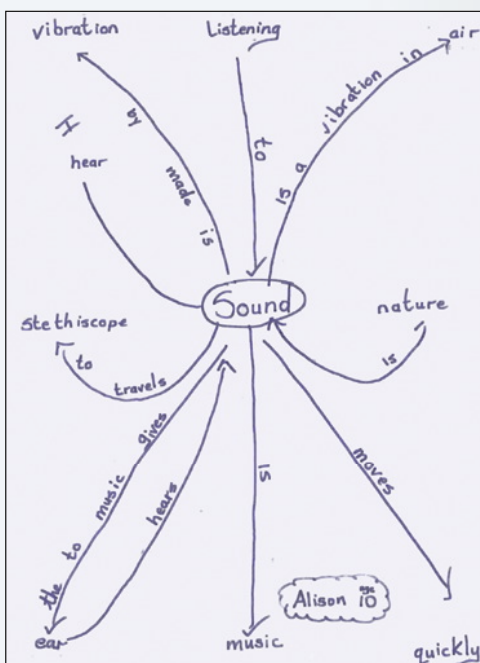
Sound and Music

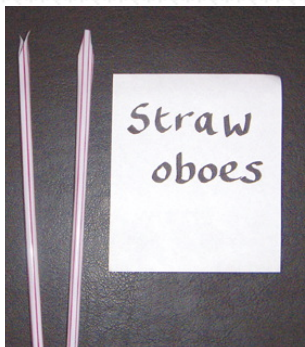
It will be important that the work on sound be linked to the music curriculum (Science Teacher Guidelines, p.92)

- Classroom sounds. Ask the children to close their eyes and listen to sounds in the classroom, the school or coming in through an open window. Ask them to list and/or record all the sounds they can hear. Older children can be asked to distinguish between natural and man-made sounds.
- Sound walks. Go on a sound walk in the school grounds (*Exemplar 11, Teacher Guidelines*, p. 62). The children can be encouraged to record the sounds that they hear pictorially or record where sounds were heard on a simple sound map. Older children can discuss the range of sounds that were heard at various places in the school grounds and identify quiet and noisy areas of the school. This can lead to an open-ended investigation: Where is the noisiest place in the school/ school grounds? If you

carried out a sound survey at different times would your findings be the same?

- Body sounds. What sounds can we make with our body? Clap hands, stamp feet etc.
- **Mystery Sounds 1.** Place various familiar items from the classroom (paperclips, marbles, rubber bands) in a closed opaque container like an empty butter spread box. The children shake the container and try to predict what is inside.
- **Mystery Sounds 2.** A child goes behind a screen/black board and uses one of the sound makers provided (bicycle bell, balloon, spoon, musical instrument). The other children try to guess the source of the sound.





'Making' instruments

Alternatively, the children can try to identify who is speaking behind the screen.

- **Mystery Sounds 3.** Many of the oral language schemes have recordings of sounds for the children to identify. These can include animal sounds, everyday sounds (tap dripping, shower, washing machine, door bell, telephone) and/or match the sound to a picture or word. Depending on ability level, groups of children could be asked to produce their own recordings of mystery sounds to be used with the rest of the class.

Content Objective

The child should be enabled to explore ways of making different sounds using a variety of materials. (Infants – Second Class)

The child should be enabled to understand and explore how different sounds may be made by making a variety of materials vibrate. (Third – Sixth Class)

- Explore a variety of objects (tins, metals, plastic bottles) to explore what sounds they can produce. Use these materials to make soft and loud, high and low sounds.
- Ask children to use these or other materials to create an accompaniment to a song or poem.
- How many different sounds can be made using one sheet of paper eg tearing, crunching etc?
- Ask the children to place their fingers gently over their voice box (ie larynx at the base of the neck) to feel the vocal vibrations when they

speak. Is it any different if they whisper/shout/sing?

- Gather a collection of musical instruments. Ask the children to play them and record how they are played (blow, pluck, struck, shake) Classify the instruments into groups and discuss how they are the same/different. Discuss and suggest what is vibrating each time. Is it the instrument, a piece of the instrument or perhaps the air?
- Hold a ruler on the end of the table and twang it. It vibrates and produces a sound. What happens when you alter the length of ruler that is free to vibrate? (The pitch of sound produced changes). What happens when you stop the ruler vibrating?
- Blow up a balloon, stretch the neck of it and slowly let the air escape. What happens? Sound is produced as the escaping air causes the neck of the balloon to vibrate.
- Collect about five or six identical glass bottles. How could we make the bottles produce a sound (tap them, blow across the top) The children can investigate the effect of different water levels in the bottles on the sound produced. How could they produce a different sound or note for example by adding varying amounts of water? Tap the bottles and identify which produces the highest/lowest notes. Blow over the tops and identify which produces the highest/lowest notes. Does the same bottle produce the highest note each time? Why do you think this is so?

Content Objective

The child should be enabled to design and make a range of simple percussion instruments (First and Second class), string instruments (Third and Fourth class) and woodwind instruments (Fifth and Sixth class)

- *Exemplar 23, Teacher Guidelines p. 94.* Can you make a banjo from rubber bands? This exemplar can be used as the basis for a lesson to design and make any instrument.
- Percussion instruments: Make drums (various containers/boxes with a skin pulled across), shakers (use crisp tubes, bottles etc), tambourines (use paper plates with discs around the edge), xylophone (using glass bottles), castanets and/or triangles of different sizes and using different materials. Investigate how changes in the materials used affect the sound produced. Does the material from which the container is made make a difference? Does the size of the container make a difference to the sound?
- Shakers: Test different fillings. Does the type/amount of filling make a difference to the sound? (High/low; loud/soft)
- String instruments: Make a rubber band banjo or guitar using a variety of rubber bands of different thickness and width and cardboard plastic or metal containers. POSSIBLE INVESTIGATIONS *Does the length of the rubber band affect the sound produced? Does the thickness or the tension of the rubber band affect the*

sound produced?

What other materials can I use? Wool, thread, string, cord.

Does the size of the box make a difference? Butter box, biscuit tin, tissue box.

Can I make the same note/sound with different types of rubber bands?

- Wind instruments: Make straw oboes. Use drinking or art straws. Flatten about 2cm at the end with your teeth and use a scissors to cut off the flattened corners to make a point. Put about 2cm of the cut straw end in your mouth, with your lips closed but a little loose. Blow hard into the straw. If there is no sound, blow less hard until a sound is made.
- Make panpipes using a selection of straws or narrow tubes connected together. Blow gently over the top to produce a sound. POSSIBLE INVESTIGATIONS *What happens to the sound produced if we shorten the straw? This can be very effective if one child snips pieces from the end of the straw oboe as another child is blowing into it. Remember to keep safety to the fore when using scissors. Does the diameter of the straw make a difference to the sound? Does the material (paper/plastic) make a difference to the sound of the straw oboe?*

Compiled by the science team of the Primary Curriculum Support Programme.

The activities outlined above have been taken from the PCSP website. For further ideas visit the website at www.pcsp.ie