

# Primary Science & Technology *Bulletin*



Ideas and inspiration for teachers in Primary Schools and S1/S2

- > Beat it! Make a drum based on a traditional African Djembe
- > Kath Crawford awarded an MBE
- > Grant McAllister joins SSERC



# Beat it! Make a drum based



Figure 1 - Place two flower pots together.

All learners should be given the opportunity to make and play a variety of instruments - observing that vibrations give rise to sound. Learners should be able to demonstrate different pitches produced and show how the pitch can be changed. Pitch is governed by the number of sound waves produced per second by the vibrating object - fewer waves per second for a low pitched sound compared to that of a higher pitched sound. The number of waves produced each second is called frequency.

If the pitch is altered the note produced will either sound lower or higher. Different pitches can be heard when the small drum is played compared to the larger drum.

Learners may be able to describe sounds as being loud or quiet and often confuse this with a change in pitch. Loudness depends on the amplitude (size) of the vibration. Use the drum and compare the sound when the drum is hit with increasing force.

Learners should be given the opportunity to experience a variety of sounds and investigate what affects the loudness of a sound.

Making a musical instrument can provide learners with a number of opportunities to explore a variety of curricular areas. Making a drum based on a traditional African Djembe could allow learners to explore how sound is made and travels. As the drum has two parts of differing sizes it allows learners to compare the pitch of the sounds made by each part.

## To make the drum

### You will need:

- 2 clean plastic yoghurt or flower pots of differing sizes
- PVA glue and water
- Parcel tape
- Newspaper
- Plastic e.g. a piece of plastic bag
- Paint brush
- Tissue
- Paper in a variety of colours
- Scissors

### What to do:

- Place the two pots (flower pots or yoghurt pots) together so that the bases touch (Figure 1). The pots may be of the same type (Figures 1 and 4) or different types (Figures 2 and 3).
- Use parcel tape to secure them together firmly (Figure 2).
- Take the plastic bag and draw a circle that will overlap the edge

of the pot by approximately 6 cm all around (Figure 3). Cut this out carefully, it will form the drum "skin". Repeat for the other side.

- Now stretch the plastic over the top of the pot and stick with single layer of parcel tape. The tape should start by being fixed to the pot at one side and stretch right across the plastic to the other side of the pot. Stretch each additional piece of tape in the same direction each time, keeping the tape and plastic very taut (Figure 4). Do the same on the other side. This will give you a large and small drum.
- Mix the water and PVA glue together (3 parts glue to 1 part water). Use a paintbrush to coat a section of outside of the drum with the mixture. Do not put any glue on the drum "skins" (Figure 5).
- Tear up the newspaper into pieces roughly 6 cm x 6 cm - you will



Figure 2 - Secure the two pots with parcel tape.

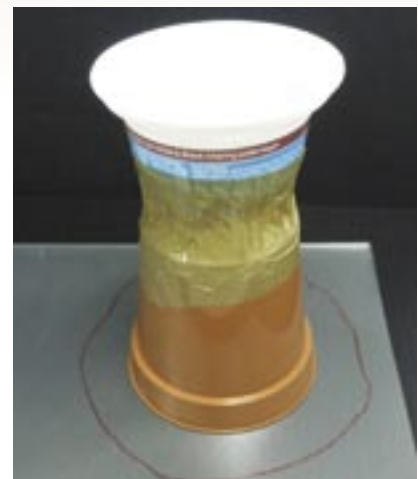


Figure 3 - Draw a circle that overlaps the edge.

# on a traditional African Djembe



Figure 4 - Stretch plastic over the top.



Figure 5 - A section is coated with glue mixture.



Figure 6 - Cover the drum with pieces of newspaper.

need enough pieces to cover the outside of the drum.

- Place each piece of paper onto a glued area of the drum and paint a layer of glue and water mixture over it (Figure 6). Repeat this process until the whole of the body of the drum is covered in a layer of glue soaked newspaper. Remember to leave the drum skins at the top and bottom clear of glue and paper (Figure 7).
- Leave to dry. Once dry this layer will strengthen the drum and provide a good surface for painting.

You could decorate your finished Djembe by painting it or with glued-on tissue paper shapes (Figure 8). Research into traditional instruments and music could provide ideas for a design.



Figure 8 - Decorate your Djembe.



Figure 7 - Keep top and bottom clear of glue.

## Experiences and outcomes

### Sciences

- Forces, electricity and waves
- Vibrations and waves
- By collaborating in experiments on different ways of producing sound from vibrations, I can demonstrate how to change the pitch of the sound - *SCN 1-11a*.

### Technologies

- Having evaluated my work, I can adapt and improve, where appropriate, through trial and error or by using feedback - *TCH 1-14b/2-14b*.
- By applying my knowledge and skills of science and mathematics, I can engineer 3D objects which demonstrate strengthening, energy transfer and movement - *TCH 2-12a*.

### Expressive arts

- I can use my voice, musical instruments and music technology to discover and enjoy playing with sound, rhythm, pitch and dynamics - *Music EXA 1-17a*.
- I can use my voice, musical instruments and music technology to experiment with sounds, pitch, melody, rhythm, timbre and dynamics - *EXA 2-17a*.

# Kath Crawford awarded an MBE

**We are delighted to let you know that Kath was awarded an MBE for 'Services to Education' in the 2015 New Year's Honours list.**

Prior to joining SSERC in 1998 Kath held a variety of posts including time as a Research Associate at the universities of Cambridge and Kent, teaching biology at North Kelvinside and Queens Park secondary schools in Glasgow, and lecturing at both Stevenson and Telford Colleges in Edinburgh.

During her time with SSERC Kath has worked in a variety of capacities including several years when she spent about half of her

time working as a Research and Development Teacher with the Science and Plants for Schools (SAPS) project. Kath has had a lead, and pivotal, role in the development and delivery of SSERC's CPD programmes culminating in her leadership of the on-going Primary Cluster Programme in Science and Technology. ◀

**To Kath we offer our warmest congratulations!**



## Grant McAllister joins SSERC



Following a restructuring within SSERC Grant McAllister joined us at the end of October as Service Director. Grant will be well known to many as he joins us from Education Scotland where he was Development Officer for Secondary Science. Grant hopes his experience there will help partner agencies' work complement each other in supporting STEM teachers.

Grant started his teaching career at Kyle Academy in Ayr, before spending 10 years in a number of roles at The James Young High

School in Livingston. Having completed an exchange year in Canada, Grant was appointed PT Physics at Bell Baxter High School in Cupar. He became Curriculum Leader at Bell Baxter in 2008. Grant has also been involved in developing materials for LTS, SQA and Scholar.

Grant lives in NE Fife with his wife, four children and their pet Labrador (Woody). Grant is delighted that in recent years he has given up golf to start playing rugby, which he also coaches. ◀