

Music in the Willows - Water Xylophone

Life along the riverbank is always full of bustle and noise, but more so than ever in the Spring! Just listen next time you are out on a walk. If it's a gusty day you might hear the wind **whistling** through the willows and reeds. If your walk takes you by a weir, you're sure to hear the water **roaring** as it tumbles over and down. And then there is the noisy **quack, quack** of the ducks squabbling on the river and the **chirruping** of the birds busy building their nests in the hedgerows, the **honking** of the hungry geese and, if you are very lucky, the gentle **plop** of a water vole as it drops into a stream.

Ratty from the Wind in the Willows loves the music of the river and he loves to sing, he even writes his own songs and poems. You might know the mischievous song he composed to tease the ducks when they were trying to enjoy their breakfasts. He called it 'The Ducks' Ditty'.

You could make up a tune for Ratty's song or compose your own riverside ditty or musical story using a water xylophone - the kind of instrument that Ratty might have played himself!

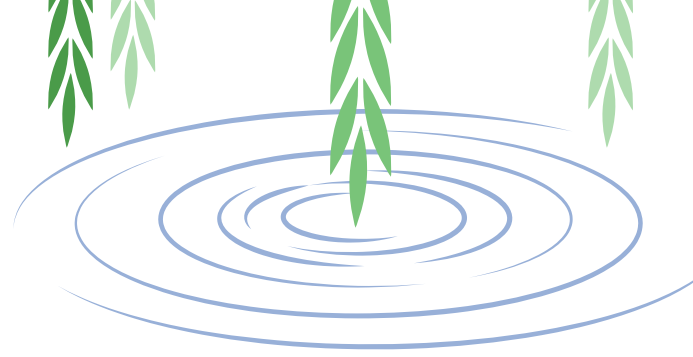
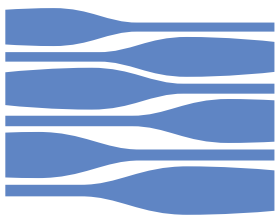
What you will need:

- 4-6 water glasses, the taller the better. It is best if they are all the same size and shape (but do keep reading even if they are not).
- A water bottle or jug full of tap water.
- A wooden spoon or strong stick or pencil.

What to do:

- First arrange your glasses in a line and carefully TAP each in turn – remember glass is fragile and will shatter if you strike it hard. Do they all make the same sound?
- Using your water bottle carefully fill the first glass almost to the top. Then fill the second glass so that the water level is about an inch (3 cm) lower than the first, and the next glass so that its level is about an inch (3 cm) lower still, and again with the other glasses. When you have finished there will be even steps between the levels of water in your glasses. Make these steps smaller if your glasses are not very tall.
- Now tap each glass in turn with your spoon and listen to the sounds. Are they the same?
- Which glass produces the lowest note?
- Which produces the highest note?
- Can you explain why the notes produced by the glasses now have different pitches?
- Try with a plastic spoon and a metal spoon, try with your finger nail and finger. Does this make a difference?
- Next play with the volume of your notes. Try making the softest sound that you can, but be very careful if you try to make louder sounds. Finally, try tapping different rhythms.

Now that you know how to change the pitch and loudness of your notes and have explored different rhythms, try making up a tune for Ratty's Ditty. You might like to create your own song or story about life along the river bank using your xylophone to create the sound effects.



The Science behind the Sound

Sound is created when something moves back and forth very quickly (vibrates) sending waves of energy (vibrations) travelling to our ears. For example, when a bumblebee moves its wings up and down very quickly, it creates vibrations in the air and we hear this as a buzzing sound.

Most of the sound we hear travels through air, but sound can also travel through water, glass, wood, metal and many other things, because all these things are made up of particles that can vibrate.

Sounds can have different pitches (high or low). If an object vibrates quickly we hear a high-pitched sound; if it vibrates slowly, a low-pitched sound.

In the experiment, you should have found that tapping an empty glass produces a higher-pitched sound than tapping a glass full of water. This is because the water makes the glass heavier and therefore it is more difficult for the glass walls to vibrate and the sound waves produced are much slower. We hear these slower sound waves as a lower-pitched note.

“DUCKS’ DITTY.”

All along the backwater,
Through the rushes tall,
Ducks are a-dabbling,
Up tails all!

Ducks' tails, drakes' tails,
Yellow feet a-quiver,
Yellow bills all out of sight
Busy in the river!

Slushy green undergrowth
Where the roach swim—
Here we keep our larder,
Cool and full and dim.

Everyone for what he likes!
We like to be
Heads down, tails up,
Dabbling free!

High in the blue above
Swifts whirl and call—
We are down a-dabbling
Up tails all!

From *The Wind in the Willows*,
Kenneth Grahame, 1908.

