

Super STEM Club

Super STEM Club is an after school activity for Year 2 pupils run by St Faith's parents, Dr Fox and Ms Wong.

At this week's session, the children investigated which materials and surfaces most amplified the sounds of their previously made mechanical music boxes. To do this, they used Dr Fox's version of a Chladni plate.

Ernst Chladni (1756-1827) was a German physicist and musician. He is famous for his research into sound and acoustics using vibrating plates. He attached metal plates, of varying sizes and shapes, to a vertical stand. To make the plates vibrate he ran a bow along the edge. By sprinkling sand on top of the plate, he was able to see how the plate vibrated in response to different frequencies. Where the plate vibrated the most, the sand would bounce away. Where the plate vibrated least (the nodes) the sand would accumulate.

Dr Fox's version uses a sub-woofer speaker and a card 'plate' connected by a metal rod. Instead of a bow, a tone generator on her phone caused the speaker to vibrate at different frequencies, the group then observed how the changes in frequencies altered the pattern of the sand on the plate.

Variations on this technique are used today in the production of many stringed instruments, like violins, 'cellos and guitars for instance.

Here are some images of the sand patterns.

