

Teacher Education Design Principle + code:	6. Teacher education should provide pedagogical content knowledge to stimulate inquiry and problem solving in science and mathematics education. TE: IBSE
Specific Teacher Outcome(s):	6.5 Teachers should be able to foster opportunities for children's agency and creativity in learning in inquiry and problem solving – in particular the importance of children making their own decisions during inquiry processes, making their own connections between questions, planning and evaluating evidence, and reflecting on outcomes.
Factors linked with:	P: Agency; P: Ques; P: R and R; LA: Ques; LA: Plan; LA: Obs; LA: Equip; LA: Connect
Type of material (image – interview (int) – classroom extract (class):	Photographs and classroom extract
Originating from:	
Country report :	D4.3 – report UK England
Case:	Case 2
Episode:	Sound
Teacher:	Louise
Age Group:	7-9
Selected episode present in D4.4 Appendix	Yes

Encouraging exploration and explanation through resources, group work and recording

The tables are set up with equipment for exploration: bass drum, snare drum and steel pan, each with a cup of rice; bottles and coloured water in a jug; trays, jugs, water and tuning forks; wind instruments; hollow tubes of different lengths; frog guiro. All tables have large paper and felt tip marker pens. The children had about 30 minutes to explore the resources on two tables and then had to find a way to represent on paper how sound is made.

Louise - The adults are there to help but only if asked. You have to decide how the things on the table will show you how *[sound travels]*.

Some of the children used the resources as the teacher expected, such as putting rice on the drums, but others used them in unexpected ways, such as using the rice cups as maracas.

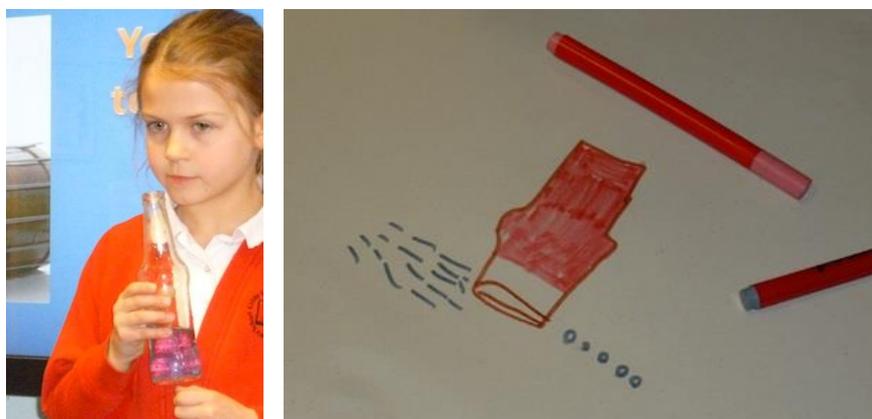


Joseph and Maisie added different amounts of water to the bottles and discussed the impact when they clinked them together.

Maisie- When the bottles have water and you ban them together they bounce off each other but when they don't they just clang.

Joseph- It makes it darker. Thought it would be lighter.

Maisie- That one's gone really high pitched.



The children explored making sounds using the resources and then recorded how the sound was made.

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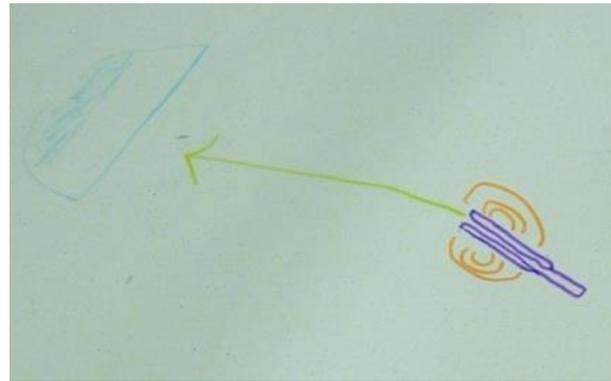
Two children demonstrated blowing with bottles and different amounts of water. George explained the difference in the pitch.

George- Because there was more air for the sound to go in and get back out and less for Marek because the water was taking up the space.

He then related this to a flute.

George- If you cover the holes the air has to travel farther to get out

Child- I just noticed when you whistle you make a column of air.



Child 1- I can make it jump really high.

Child 2- It's the vibrations.



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