Make Glass Bottles Sing

Sections

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Challenge Areas

COMMUNITY
CREATIVE
OUTDOOR
PERSONAL GROWTH

Scout Method Elements

COMMUNITY INVOLVEMENT
LEARNING BY DOING
NATURE AND THE OUTDOORS
PROMISE AND LAW
PERSONAL PROGRESSION
PATROL SYSTEM
SYMBOLIC FRAMEWORK
YOUTH LEADING, ADULTS SUPPORTING

SPICES Growth Areas

CHARACTER EMOTIONAL INTELLECTUAL PHYSICAL SOCIAL SPIRITUAL

The Adventure

Music can be found all around us if you know where to look. Did you know that you can make glass bottles sing? This Challenge Card is similar to Make Glasses Sing but is more appropriate for younger sections.

Plan

1. Investigate friction and vibrations and how sound waves interact with different materials such as air and water. You might also want to investigate how moisture affects friction.
2. Investigate the concept of resonance and hypothesise why this might be important in music. You may also like to look at how an opera singer can break a glass with just their voice!
3. Examine how sound waves are measured and at what frequencies humans can hear. You might also want to look at factors that affect the frequencies that we can hear and why, and what frequencies different animals can hear.
4. Read the safety section of this challenge card and make sure that everyone is aware of the safety risks and requirements.
5. Collect all the necessary materials for your experiment. You will need some glass bottles (ideally 6), water, a metal soon, and some food colouring (optional).

Do

1. Place an empty glass bottle on a flat surface and half fill with water.
2. With a metal spoon, gently tap the side of the bottle and observe what happens. What sound is made? Does the sound differ if you hit above or below the water line?
3. With your mouth at the same level as the top of the bottle, gently blow across the top of the bottle and observe what happens. Does it make the same or different sound than when you hit the bottle with a spoon?
4. Fill some more bottles of the same size with varying levels of water and line the bottles up from fullest to emptiest.
5. Starting at the fullest bottle, gently tap each bottle and compare the notes produced.
6. Tune your bottle xylophone to a scale (think ‘do re mi fa sol la ti’) by adding or removing water.
7. Try playing a song with your bottle xylophone. If you are working in a patrol, each patrol member could play one bottle. You may find these suggested songs useful.

Review

1. Did you manage to get your bottles to sing? If you didn’t, what do you think you could change to make it sing? If you did, did you find it challenging? Did it get easier with practice?
2. What did you enjoy the most from making bottles sing? What did you learn?
3. If you were to do this activity again, what would you do the same? What would you do differently? How could you improve your singing bottles?
4. Do you think the type of liquid in the glass might make a difference to the note produced?

Safety

- Sharps/glass warning: This challenge card uses glass and therefore there is the risk of breakage and cuts. Supervise younger sections around glass and if glass is broken, get an adult to safely clean the glass up.
- Slips and Spills: This challenge card uses water. As such, it should be performed in an area that can tolerate spills, but care should be taken if spills occur so that slipping does not occur.

Variations

- Make your singing glasses colourful by adding some food colouring to each glass. This is especially effective if your glass bottles are clear.
- This Challenge Card pairs nicely with other challenge cards from the Magic of Music such as Make a Guitar and Make an Idiophone or other Challenge Cards about sound waves. In your patrol, you could make a range of instruments and play them together. Think about what other instruments that you may be able to make. To add an extra sciencey challenge to your glass xylophone, try playing the Periodic Table Song or another science-based song.
- Try making a xylophone using the same amount of water but different size bottles. Does this affect the sound?
- Try gently tapping the glass bottles with a different utensil or object. Does a knife or fork make a different sound to a pencil? Why might this be?