



CHRISTIAN EDUCATION DEPARTMENT

Singing Glasses Activity

Ephesians 5:15-20



...but be filled with the Spirit, as you sing psalms and hymns and spiritual songs among yourselves, singing and making melody to the Lord in your hearts, giving thanks to God the Father at all times and for everything in the name of our Lord Jesus Christ.

Ephesians 5:18b-20

This passage in Ephesians teaches us about having unity—being together and getting along. It also encourages us to sing praises to God and give God thanks through singing many different kinds of songs and music. There are many ways to praise God, even without words.

Here is a science activity that reminds us how we can be different and still come together and make music.

Materials needed:

- Several goblets (or glassware with stems)
- Water

Set out several goblets with water in them. Ordinary drinking glasses may also work but not as well. The secret is to have glassware with thin walls.

By themselves the glasses are silent; they have no ability to make music. However, when you touch them with a moistened finger, you can make them sing. Wet your index finger and gently stroke the goblet completely and continuously around the rim while you hold the glass steady by the base of the stem. (If you have difficulty getting sound from the glassware, it may help to wet your fingertip with vinegar. The vinegar dissolves any oil that may be present and increases the needed friction between your fingertip and the glass rim.) Very little finger pressure is needed, and the finger must be kept moist while it is moving around the rim. In a few seconds the glass should start to resonate or vibrate, causing a clear, loud sound. The ringing sound is quite pleasant. The pitch, or frequency, depends on the glass size and also on the amount of water it contains. Several people may want to get different goblets vibrating at the same time. By adjusting the water levels, interesting chords can be produced. It takes a gentle hand to coax the sounds from the glasses. Try to play a simple hymn or praise song using the glasses.

Science Explanation:

The ringing of a glass is called a *resonance vibration*. Sound is always produced by vibrating objects, whether violin strings, vocal cords, or air currents within a flute. For a goblet, the moving finger causes the sides of the glass to vibrate slightly inward and outward. The moistened finger provides a smooth contact, necessary for the continuous sound. It is somewhat like a violin bow moving across a string and causing the string to vibrate. The sound produced by a goblet has a frequency of several hundred cycles per second. If you watch the water surface closely, you will see tiny standing waves produced by the moving glass walls!



adapted from *77 Fairly Safe Science Activities for Illustrating Bible Lessons* by Donald B. DeYoung.