

Featuring Zuill Bailey: *Cello (Piano Accompaniment)*

Study Guide: Science

- Objective:** To understand how pitch is different when different levels of water are filled in glasses of the same size. Students will make up a song with glasses of water.
- Standard:** Grades 3-5 FL Science Standards: The student understands that all matter has observable, measurable properties. (SC.A.1.2) The student uses the scientific processes and habits of mind to solve problems. (SC.H.1.2)
- Time:** 45 minutes x 2 (2 days)
- Materials:** water, sets of 3 glasses of the same size (enough for each group), metal spoons, ruler, paper, pencil
- Activity:**
1. The teacher will begin the lesson by explaining they are going to make to make up a song with glasses of water. This activity is in conjunction with the concert by Zuill Bailey. The larger the string instrument (i.e. cello or bass), the lower the sound. The smaller the instrument (i.e. violin), the higher the sound. Glasses of water resemble the same concept. More water indicates a higher sound, and less makes a lower sound.
 2. Students will receive 3 glasses of the same size on their tables (groups of 3-4 work best). They will also have a pitcher of water and a metal spoon.
 3. Teacher will direct the students to fill their glasses with 1 inch of water (use a ruler). Students will lightly tap on the glass and notice tone. Then, they will add another inch of water to the glass and tap lightly. Students should notice the tone is a little higher because there is a **smaller amount of free space** in the glass to make a sound.
 4. Once this concept is understood, the students should be free to fill their glasses however they want and play Hot Cross Buns, a song made up of only three tones. The teacher will model this first and then allow students to work together in groups.
 5. As an option, students can be assigned “jobs” for the experiment so that discipline is not an issue: For example, water person, tapper, note taker, cleaner.
 6. Once Hot Cross Buns has been successful, the students will make up their own short song (or use a familiar song) with the glasses. One person in the group will write down the sequence of glasses tapped (i.e. Left, Middle, Right, or High, Medium, and Low tones).
 7. After groups have had a chance to finalize their songs, they will perform for the entire class. Group members may want to take turns and play it twice for the class so everyone can hear the tones they are playing and possibly recognize a familiar song.
 8. Students will clean their space.
- Assessment:** Class discussion, observation, and song.
- Resources:** <http://www.greatschools.net/cgi-bin/showarticle/579>