Ames Public Library **@HOME Activities**

The Science of Music

Music and science have a lot in common. Science is required both in the construction of an instrument and in playing it. Understanding the science concepts that govern an instrument can make you a better musician. See a related video on the Library's YouTube Channel at http://bit.ly/APLvideos.

Books and Media:

Title	Author / Performer	Call Number
Bangs and Twangs, Science Fun With Sound	Cobb, Vicki	J 534 COB
The Science of Music	Pinto McCarthy, Cecilia	J 534 MCC
Music Crafts for Kids	Fiarotta, Noel & Fiarotta, Phyllis	J 784.19 FIA
Making Music, 6 Instruments You Can Create	Oates, Eddie Herschel	J 784.19 OAT
Make Music!	Haynes, Notma Jean, et al.	J784.192 HAY
Play, Make, Create, A Process-Art Handbook	Cherry, Meri	J PC 745.5 CHE
Making Toys for Infants and Toddlers	Miller, Linda and Gibbs, Mary Jo	J PC 745.5924 MIL
Woodwind	Lynch, Wendy	J 788.2 LYN
Recorders	Saari, Holly	J 788.36 SAA
Bill Nye the Science Guy: Sound	Nye, Bill	J 534 (DVD) NYE

Websites:

URL	Notes
https://www.orsymphony.org/learning-community/instruments/	*Great music resource for families*
https://www.youtube.com/watch?v=3SEtgQsIJSw	*How Music Works, part 1*

ames™ PUBLIC LIBRARY

Vocabulary:

Dynamics – Loudness and softness of the sound; the volume of sounds in different parts of a musical performance.

Vibration – Vibration is when an object moves or shakes back and forth. This vibration cause the molecules in the medium (water, air etc.) around it to vibrate. Sound is produced when such vibrations happen.

Pulse – A single vibration or short burst of sound.

Tone – A steady, periodic sound.

Pitch – The highness or lowness of a tone. Objects that vibrate quickly produce a higher pitch sound.

Rhythm - A strong, repeated pattern of sounds

Brass instruments – Musical instruments in which sound is produced by the vibration of air, typically by the player blowing into the instrument. In brass instruments players vibrate their lips by buzzing them against a metal cup. Brass instruments include the tuba, trombone, trumpet, and French horn.

Woodwind instrument – These are instruments that used to be made of wood, but today are made of a variety of materials including wood, metal, plastic or a combination of material. Woodwinds are played by blowing air through the mouthpiece, which for some instruments like the clarinet, oboe, and bassoon includes a thin piece of wood called the reed. The reed vibrates when air is blow across it. Woodwinds include the flute, clarinet, oboe, and bassoon

Percussion instruments - These include any instrument that makes a sound when it is hit, shaken, or scraped. Percussion instruments keep rhythm, make special sounds and add excitement and color to music.

String instruments - These instruments have strings stretched over the body and neck. They are attached to small decorative head, where there are tuning pegs. The bodies of string instruments are hollow inside to allow the sound to vibrate within them.

References – Oregon Symphony Orchestra, "*Instruments of the Orchestra*". Pinto McCarthy, Cecilia "*The Science of Music*".

Take Away Kit: Craft Stick Kazoo

Bag Contents:

- 2 Craft Sticks
- 1 Long Rubber band
- 2 Small Rubber bands
- Straw

You will need a pair of scissors to cut the straw.

Begin with one craft stick and the large rubber band. Wrap the rubber band from end to end on the craft stick.

Cut two pieces from the straw about 1 inch long. Place one piece of the straw under the rubber band about 1 inch from the end of the craft stick. Place the other piece of straw on the opposite end of the craft stick on top of the rubber band. See Fig. 1

Place the second craft stick on top of the first, sandwiching the straws in between.

Fasten each end of the craft sticks together with the small rubber bands. See Fig. 2

Your Kazoo is now ready! Put the edge of the kazoo up to your lips and blow.

Fig. 1

Fig. 2

Consider these questions and experiment!

Can you change the pitch by blowing harder or softer? Does the shape of your mouth affect the pitch?

What happens to the sound when you use longer or shorter pieces of straw?

What would happen of the straws were closer together or farther?

Can you play a song on your instrument?

ames™ PUBLIC LIBRARY