The Science of Music and Sound! | What's Good

Join us for What's Good, a new, six-part video series where inspiration and information meet the power of science. In this video and accompanying series of activities, parents and children will explore the topic of sound and how it is produced when something vibrates. Through listening to both music and real-world sounds as well as creating sounds of their own, kids will learn the science behind their favorite tunes and look out for the vibrations that allow them to exist. Rock on!

Lesson Summary

Click the image above to watch the video "Music | What's Good"

Music provides a soundtrack for our lives: it can invoke feelings and inspire us to move, sing and dance. Music is also based in science: sound is produced with something vibrates – and those vibrations are brought to the ear as sound waves. And it's mathematical, varying in pitch, volume, tempo, and rhythm. The science of sound reminds us to stop, listen, and feel the vibration.

Introductory Activity

Talk About It!

Our conversations with our kids increase their powers of observation and help them ask and answer questions about the world around them.

- **At Home**: What are some of the different words you can use to describe music? How does a song sound different when you make one small change. For example, what if you sing Twinkle, Twinkle Little Star fast versus slow? Loud or soft? High pitch or low? Staccato (short, separate notes) or legato (long, connected notes)? As you listen to music together, introduce some musical vocabulary such as melody (the tune), tempo (the speed), and rhythm (the beat).

- **Around Town**: What sounds do you hear in your neighborhood, town, or city: Cars? Trucks? Trains? Birds? Bells? Doors? Footsteps? Horns? Dogs? Sirens? Car radios? Hammers? Construction sounds? Try to mimic what you hear with your voice. Which sounds have a fast tempo and which have a slow tempo? Which have a high pitch (fast vibration) and which have a low pitch (slow vibration)? Do any have a distinctive rhythm (e.g. hammering) or melody (e.g. rescue vehicles or birds)? Are some sounds easier to hear than others? Why?

Learning Activities

Investigate It!

- **Make Listening Active**: Make music more than background noise.Play different styles of music for your kids – an activity that can be as simple as flipping to different radio stations – and notice what makes each genre distinctive. How does hip-hop sound different from country? How are the sounds in jazz different from sounds in classical music? What instruments do you hear? Can you clap along to the beat?

- **Build a Kitchen Band**: Beating on pots and pans can lead to (loud) scientific thinking. Pull out bowls, cups, pots, and pans of various materials and sizes. When you tap them, which make high pitch sounds (fast vibration) and which make low pitch sounds (slow vibrations)? What if you use different mallets to strike them – such as a metal spoon vs. a wooden chopstick? Do big things sound different than smaller things? Try beating a fast tempo and a slow tempo. Put on some music and drum along to the beat! What other household items can be turned into musical instruments?

- **Rubber Band Vibrations**: Plucking a rubber band is a helpful was to observe the vibration that creates sound. Drape a large rubber band over a door knob. As you pull it further down, have your child pluck the rubber band. Does the sound get higher or lower the further you pull it? Can you see the rubber band vibrating after you pluck it? The faster the vibration, the higher the sound we hear in our ears. This is why you see guitar players tighten or loosen their strings! To make your own simple guitar, cut rubber bands and tape them across a glass or a cardboard box. Pull some tighter than others to create different pitches.

- **Listen to Bird Songs**: We've all heard bird calls floating through the air, but how many of us can identify which feathered friend is singing? Listen carefully to a bird song with your child and then try to mimic the sound you hear. Look around and see if you can spot the singer. Why do you think birds sing to each other? Why do you think different birds make different sounds? Want to take your birding to the next level? Use the resources at Cornell University's bird lab to identify the birds you see and hear! You can also talk about the sounds other animals make to communicate. Do dogs and cats make other sounds besides barking and meowing? What does it mean when a dog whines or when a cat hisses or purrs?

Culminating Activity

Explore Further

- Activity: Cardboard Guitars
- Activity: Water Xylophone
- Games: Daniel Tiger's Music Shop
- Games: Daniel Tiger Feel the Music
- Games: Sesame Street Monster Music
- Games: Peg + Cat Music Maker
- Game: Arthur: Crank It Up

Click here for more *What's Good* videos and activities!