



THINGS THAT MAKE SOUND

ACTIVITIES

NOVEMBER 2015-FEBRUARY 2016

Invent a Stringed Instrument

Rock star Eddie Van Halen could not find a guitar that produced the sound he wanted, so he combined parts from several different guitars. He also hacked away at the guitar body to make room for his choice of electronics. With his innovative instrument, called the “Frankenstein,” and playing style, Eddie Van Halen changed the face of rock music. (Look for Eddie Van Halen’s guitar on display in *Spark!Lab*.)

Invent some new sounds by creating a stringed instrument of your own.

Sketch Some Tunes

The first successful audio disc playing device, called a gramophone, was invented by Emile Berliner in 1887. The sound written on the disk was played by using a vibrating stylus. The gramophone paved the way for other devices like the phonograph and record player and CD player, all of which stored sound information on a disc.

Sketch a picture to play on the color disc player.

Invent a Way to DJ and Dance

The Bronx of the early 1970s brought about new musical rhythms. Home sound systems, found objects, and technical knowhow provided the materials for the invention of hip-hop. Disc jockeys (DJs) invented new techniques for mixing beats and manipulating records to create an enduring sound. (Visit [Places of Invention](#) to learn more about the invention of hip-hop.)

Connect sensors to the automated DJ system. Use your dance moves to change beats and scratch records.

Invent an Alarm System

The Smithsonian Institution houses some of America's greatest treasures. Along with preserving and studying those treasures, the Smithsonian has to protect them. Putting an object out for all to see requires some thoughtful planning and a secure display case.

Invent an alarm to protect a precious object.

Create a "Soundscape"

All of the pieces in an invention have to work together to make the invention a success. The more pieces there are, the more challenging it is to get everything in sync. Collaborating with other inventors can bring different viewpoints to the invention process and can help shape and refine an invention.

Create a melody-making marble run.

Invent an Air-Powered Instrument

Pipe organs make sound when wind is pumped through whistles and pipes. The wind is triggered when a key on the keyboard is played. High notes are played through short pipes, and low notes are played through long ones. Pipe organs don't have to be large, like the ones found in cathedrals and churches.

Invent an instrument that turns moving air into sound. Tune it to create a sound you like.

Create Sound Effects

Sound effects have added pop and pizzazz to broadcasts since the early days of radio in the 1900s. Movies and TV took the art known as Foley, named for creator Jack Foley, to a new level by combining sounds with images. Foley artists used objects like boxes of rocks, metal pipes, and bean bags to create the sounds of footsteps, clanking tools, and punches.

Create sound effects to go along with the actions of a broadcast.

Invent an Optical Music Box

Music boxes gained popularity in the late 1800s. Inside many boxes was a cylinder with a set of pins on it. As the cylinder turned, the pins plucked the “teeth” of a comb. Each tooth was tuned to play a different musical note. The more notes a song had, the larger the cylinder had to be—so music boxes usually played short, popular songs.

Invent a music player that uses spots on a rotating cylinder to trigger sound.

Create an Electronic Symphony

Electronic sounds triggered by inputs and switches can be traced back to the late 1930s. The Hammond Novachord, one of the first electronic musical synthesizers, was manufactured from 1939 to 1942. Using keys, pedals, and adjustable knobs, the Novachord could produce sounds that mimicked those of stringed and wind instruments.

Create a touch-sensitive audio and video controller.

Invent a Drumbot

For centuries, professional drumheads were made from animal skin. This all changed in the 1950s when drummer and inventor Remo Belli came across DuPont Mylar polyester film. After stapling the material to a frame for display, Remo had the idea to use it as a drumhead. Remo's simple experiment led to the invention of the modern drumhead.

Invent a machine that can play the drums.

Invent a Recycled Percussion Sculpture

When they are creating something new, inventors explore different materials to figure out what will work best for their idea. Often, they experiment with new materials or use familiar materials in new ways. If things don't work as they had planned, inventors tweak their invention and try again until they get what they had hoped for.

Explore recycled materials to create a musical sculpture. Tweak it to get a sound you like.

Create Art that Plays Sounds

Touch-sensitive screens, like the one in *The Star-Spangled Banner*, allow us to explore deeply moving objects in a new way. Artists can also use touch sensitivity to create more engaging experiences for their artwork. Experiencing an art piece through sight, touch, and hearing can open doors for expression and emotion in art.

Create a visual art piece that play sounds when touched.