

Day 2 Sound: Music

Science

Design your own instrument! Will it have strings like a guitar? Keys like a piano? Pads like a drum? Use materials from around your house to create your instrument.

For more information about how strings can vibrate to make different sounds, check out:

pbskids.org/designsquad/build/build-instrument/





CYBERCHASE

Create a Music Maker

30 min activity

Discover the benefits of designing for function by creating musical instruments!

Before You Play

Invite your child to share times when she's made plans before doing something. Ask, "Why do we make plans?" Discuss how inventors often make plans before they build their inventions. These plans or designs help them think about what they want their inventions to do and how, and can help them avoid problems. If possible, watch the Cyberchase episode "Designing Mr. Perfect" with your child to further explore this idea.



Materials

- Plastic and paper cups
- Paper plates
- Beans
- Beads
- Jingle bells (or something that rattles)

Day 2 Sound: Music Science

- Paper towel rolls
- Pipe cleaners
- Paper straws
- Waxed paper
- Combs
- Rubber bands
- Balloons
- Popsicle sticks
- Plastic food containers
- Aluminum foil
- Other found objects
- Masking tape
- Stapler
- Pencil
- Printable: Music to our Ears (PDF)
- Printable: My Invention Design (PDF)
- Printable: Ideas to Get Started (PDF)

Directions

1 Give your child the “Music to Our Ears” and “My Invention Design” printables.

2 Allow time for her to examine and make sounds with the instrument-making materials provided. Have her use the “My Invention Design” printable to write about her ideas for a music maker and sketch a plan that shows what parts it should include.

3 To help your child think of sounds she might make, talk about ways that some familiar musical instruments make sound (striking, plucking, blowing, shaking, vibrating, etc.). If your child has trouble coming up with ideas, use the “Ideas to Get You Started” printable for suggestions.

Day 2 Sound: Music

Science

- 4 After your child has designed her invention, have her build it. Then have her check the sound the invention makes against the original plan. Is she getting the sound she wanted? If not, have her revise her design or set a new goal to fix the problem.
- 5 Invite your child to talk about her instrument and the different ways she found to make different sounds. Encourage your child to experiment and try making more music makers!

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<https://www.pbs.org/parents/crafts-and-experiments/create-a-music-maker>



Music to Our Ears!

Help! Hacker stole all the musical instruments from the borgs in R-Fair City on the day of their big parade! Can you invent a musical instrument to save the parade?

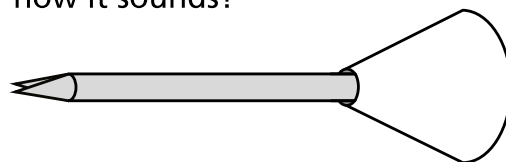
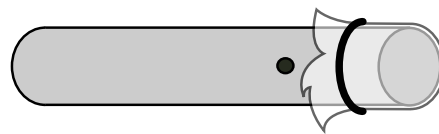
Materials

For your Music Maker:

- plastic and paper cups, paper plates, beans, beads, jingle bells, paper towel rolls, pipe cleaners, paper straws, waxed paper, combs, rubber bands, balloons, craft sticks, plastic salad bar containers, aluminum foil, and other found objects
- Masking tape
- Stapler
- "My Invention Design" handout
- Pencil

Make Your Instrument

- 1 Play with the materials. Find sounds that you like by shaking, striking, or spinning objects.
- 2 Use the "My Invention Design" handout to plan your Music Maker. Make a sketch to show what it looks like.
- 3 Make your instrument and try it out. Does it work the way you planned?
- 4 What changes can you make to your instrument to improve how it sounds?



How Am I Inventing?

Inventors take time to plan an invention before they start building. They start with an idea of what they want their invention to do and make a plan. When they stick to that plan, they can build an invention that works the way they want. This is called *designing for function*. When you design your instrument to make a particular sound, you're designing for function, too.



Get inventive with **CYBERCHASE** on **PBS KIDS GO!**
Check local listings or visit www.pbskids.org/cyberchase.

My name: _____

Day 2 Sound: Music
Science



My Invention Design

Name of my invention:

Sounds I want my invention to make:

Materials I need to make my invention:



What my invention will look like:

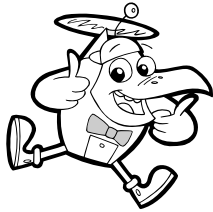
Large empty box for drawing the invention.



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To be used with "Music to Our Ears"

Day 2 Sound: Music Science

Ideas to Get You Started...

Kazoo



- Cut out a piece of waxed paper big enough to fit over one end of a cardboard tube (toilet paper or paper towel roll).
- Securely wrap the piece of waxed paper around one end of the tube and use a rubber band to hold it in place.
- Make sure that there are no gaps between the waxed paper and the tube. If the paper feels loose, use more rubber bands.
- Using a pencil, carefully punch a hole in the side of the tube near the waxed paper.
- Hum or sing into the opposite, open end of the tube.

Straw Oboe

- Flatten the last 1/2 inch of a straw with your fingers.
- Cut off the top 2 corners of the flattened portion of the straw so that it looks like an upside down V.
- Place the V end in your mouth.
- Tighten your lips and blow through the straw.
Do you hear a buzzing noise?
- Now cut off an inch of the straw end not in your mouth.
- Listen to the sound your shorter straw makes. What do you notice about the sound? How did it change?

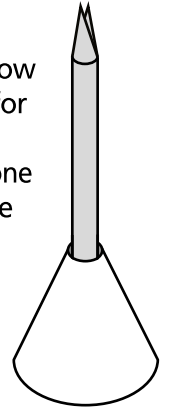


Straw Trombone

- Make a Straw Oboe.
- Place the Straw Oboe inside a larger straw, with the mouth end sticking out.
- Blow through the Straw Oboe and slide the large straw to change the pitch.

Straw Oboe Megaphone

- Make a Straw Oboe.
- Cut out a small hole at the bottom of a snow cone cup. Make sure it is just big enough for your Straw Oboe to fit through.
- Place your Straw Oboe through the snow cone cup with the mouth end sticking out of the pointed end of the cup. Tape it together with masking tape.
- Blow through the Straw Oboe and notice what happens.



Goose Call

- Tie a piece of yarn to a paper clip.
- Have an adult help you poke a hole in the bottom center of a plastic cup.
- Thread the other end of the yarn through the hole in the bottom of the cup so the paper clip is inside the cup.
- Wet your thumb and first finger with water.
- While holding the cup in your dry hand, pinch the yarn where it reaches the cup.
- Pull down on the yarn away from the cup, letting it slide through your fingers.

Pluck Drums

- Get a plastic cup.
- Get a balloon and cut off the end where you blow into it.
- Stretch the balloon and then place over the top of the cup. The balloon's rubber should be stretchy enough to hold it in place.
- Pinch a little of the balloon over the top of the cup between your thumb and index finger.
- Pull up slightly and let go.

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Day 2 Sound: Music

Social Studies

You have an instrument that you carry with you all the time! Your voice!

Check out yodeling, one form of singing that started in the Alps of Switzerland as a way for herders to communicate with their sheep. Overtime, it became a way for people to express themselves.

Read the attached article: [How Do You Yodel?](#)

After reading, talk about the article with a family member. Do you have any songs or types of singing that is important to your culture?

Singing involves changing the pitch of your sounds in order to make different notes.

Find out more about how vibrations and pitch affect sound here:

<https://bit.ly/330brQk>



Wonder of the Day #526

How Do You Yodel?



ARTS & CULTURE – Music

Have You Ever Wondered...

- How do you yodel?
- What are the two types of vocal registers?
- Who started the yodeling craze in the United States?

Here's a joke for you to share with your friends:

Knock-knock.

Who's there?

Little old lady.

Little old lady, who?

Hey! We didn't know you could yodel!

Yodeling is a unique type of singing that features a fast, repeated change from a low to a high pitch. If you've ever heard Tarzan yell, then you have a bit of an idea of what yodeling sounds like.

Your voice has two separate vocal registers: a lower- pitch “chest” voice and a higher- pitch “head” voice. The differences in these vocal registers result from the different ways your body produces sounds.

Singing requires air support from either your lungs (your “chest” voice) or your mouth and throat (your “head” voice). Some people can even sing in a very high pitch without either chest or head air support. We call this singing in falsetto.

For most people, there is a natural gap between the chest voice and the head voice. Yodeling takes advantage of this gap by incorporating quick, repeated switches between the chest and head voices at a high volume.

So how did yodeling get started? Scholars believe that yodeling got started in the Central Alps of Switzerland. They think yodeling was a way for herders to communicate with their flocks or people from different villages to communicate with one another.

Over time, yodeling became a traditional part of Alpine culture, folklore, and music. Yodeling made its way into other cultures, too. As early as the 1800s, traveling minstrel shows in England and the United States featured yodeling.

Yodeling didn't become mainstream in the United States until the 1920s, though. In 1924, country music singer Riley Puckett released “Rock All Our Babies to Sleep,” the first yodeling recording ever.

Then, in 1928, Jimmie Rodgers released “Blue Yodel No. 1 (T for Texas).” His song became a hit that started an immediate national craze for yodeling. Many blues and country musicians credit Jimmie Rodgers as a big influence on their careers.

Yodeling remained popular for many years. By the 1950s, however, yodeling was rarely heard in either blues or country music. Yodeling remains a unique form of singing that many people still enjoy listening to today.

Wonder Words (18)

VOCAL, PITCH, REGISTER, FALSETTO, VOLUME, HERDERS, FLOCK, MINSTREL, CHEST, MOUTH, THROAT, UNIQUE, REPEATED, DIFFERENCES, ADVANTAGE, INCORPORATING, COMMUNICATE, TRADITIONAL

Wonder What's Next?

Tomorrow's Wonder of the Day explores what could possibly be alien territory!

Try It Out

Are you ready to yodel? Find a friend or family member to help you explore the following activities:

Learning to yodel can be a lot of fun. First, you'll need to find your chest voice and your falsetto voice and learn to switch between the two. Can you sing low notes from your chest? Now try to sing really high from the top of your throat. Turn on the radio and try to sing songs in both your chest voice and your high falsetto voice. Practice switching between the two. When you think you have both voices down pat, try singing a simple phrase as a yodel. Take the joke that kicked off today's

Wonder as an example. Can you sing "little old lady who?" as a yodel? The entire phrase should be in your low, chest voice except for the "dee" sound in "lady," which should be in your high falsetto voice. Keep practicing, because practice makes perfect!

If you want some inspiration, check out this fun yodeling video: Cowboy's Sweetheart by 9-Year-Old Yodeler (http://www.youtube.com/watch?v=-_XSevhw0-4) Do you think you could ever become a professional yodeler? Why or why not?

Why do you believe yodeling has waned in popularity? Can you imagine turning on the radio and hearing yodeling in your favorite Top 40 songs? Why not give it a try? Choose one or two songs that are popular right now and try singing along with them while also adding in your own yodeling from time to time. What do you think? Can you make today's hits even better with yodeling?

Wonder Sources

<https://www.britannica.com/art/yodel>

<http://www.esquire.com/news-politics/q-and-a/a5407/history-of-yodeling-0109/>

<http://www.neatorama.com/2010/05/21/a-brief-and-incomplete-history-of-yodeling/>

<http://www.buzzle.com/articles/how-to-yodel.html>

<http://www.wonderopolis.org/wonder/how-do-you-yodel>

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Day 2 Sound: Music

Math

Can you solve these musical instrument word problems? Carefully read each question for clues and help the musicians organize their instruments!

NAME _____

Musical Instrument Addition/Subtraction Word Problems

Directions: Read each question and solve the equations.

The symphony school is moving to a larger space. The musicians are busy organizing instruments.

1. Three boxes filled with brass instruments and two boxes filled with woodwinds were just delivered. If each box is filled with 120 instruments, how many brass instruments are there?
2. From the boxes delivered, a musician takes out 40 string instruments to put on the shelf. Then, she takes out another 65 string instruments and leaves them on the counter. How many string instruments are left in the boxes?
3. There were 445 drums, but 83 went missing, and 45 were transferred to another symphony. How many drums are left?
4. The school's musical instrument library has a total of 2,475 instruments. 592 instruments are on loan, and 137 instruments are missing. Out of the 592 instruments, 74 are on loan for six months. How many instruments are there left in the library?
5. Solve for "x" in the following equation.

The school purchased 115 new brass instruments, 38 new drums, and "X" new string instruments. They ordered 174 instruments in total. How many string instruments did they order?

Day 2 Sound: Music

English Language Arts

Your musical talents have earned you a spot on today's hottest TV show! Can you write a song that captures your feelings about working from home and perform it LIVE?

NAME _____

WRITE AND PERFORM A HIT SONG - ELA

You have earned a spot on American Idol. You have to write a song about being stuck at home. Then, using the instrument you designed from today's science lesson to create music for your song and sing your song.

MATERIALS: Your Brain, Pencil, Paper, Things from around your house
REMEMBER: Think creatively! You might even want to use family members of as backup singers.

PROCEDURE (You will have 20 minutes to complete this project):

Do the following steps:

- Step 1 – Ask a question about your problem (e.g. How can I Write an original Song in that relates to Being Stuck at Home for Virtual School in less than 20 minutes?)
- Step 2 – Brainstorm your song ideas: e.g. style of music, are you going to make a happy or sad song, will it be rock, rap, classical, folk, etc. (This should take approximately two (2) minutes):
- Step 3 – Use the instrument your made earlier in this week's assignments to help you create your music while you write the lyrics to your song (approximately fifteen (13) minutes).
- Step 4 - Practice singing your song while playing your instrument. (approximately three (3) minutes)
- Step 5. Sing your song for your family or record it on a cell phone and play it back for your friends and family (approximately two (2) minutes)

Day 2 Sound: Music
English Language Arts

NAME _____

Using the Engineering Design Process (EDP) Write a Song

Step 1 – Ask a question: How can I Write an original Song in that relates to Being Stuck at Home for Virtual School in less than 20 minutes?

Step 2 – Brainstorm Ideas for your song (ex. Rap, Country, Rock, Opera, etc.)

Step 3 – Write Your Song Lyrics

Day 2 Sound: Music
English Language Arts

Step 4 – Practice singing your song (Does it sound close to the way you want it to sound?)

Step 5 – Perform you song (What could you change to make it better?)
