

## Technology: Sensational Speakers!

**Ages: 7 - 13**

Hello everyone. This is Bill from the Okanagan Regional Library System. Welcome to the fun and inventive world of making STEAM projects in your own home. Each week, I will share a fun and interesting project that you can make using materials commonly found in your own home.

Even though we can't be together right now, we can still learn how to make exciting projects each week!

This week's project: How to Make Sensational Speakers.

### Sensational Speakers

Would you like to make the music on your phone sound better? These smart phone speakers may be just the thing for you. They will make your music sound full and robust without any "tinny" effects.

These speakers will look good on your desk and they don't even need batteries or recharging.

#### Materials Needed:

- 2 paper cups
- Mobile phone
- Cardboard Tube
- Paper Towels
- Felt-tipped pen
- Scissors / Xacto Knife
- Paint Brush
- Paint



**Time:** 20 minutes, plus time for the paint to dry

**Steps:**

1. With the felt-tipped pen, trace around the end of your phone, halfway along the cardboard tube. Cut along one long side and the two short sides of the rectangle to make a flap. Open up the flap to make a slot.



2. Place the end of the tube against the side of one of the paper cups, close to the lip. Hold the tube steady and draw around it with your pen. Cut out the circle you have drawn. Repeat with the other cup.



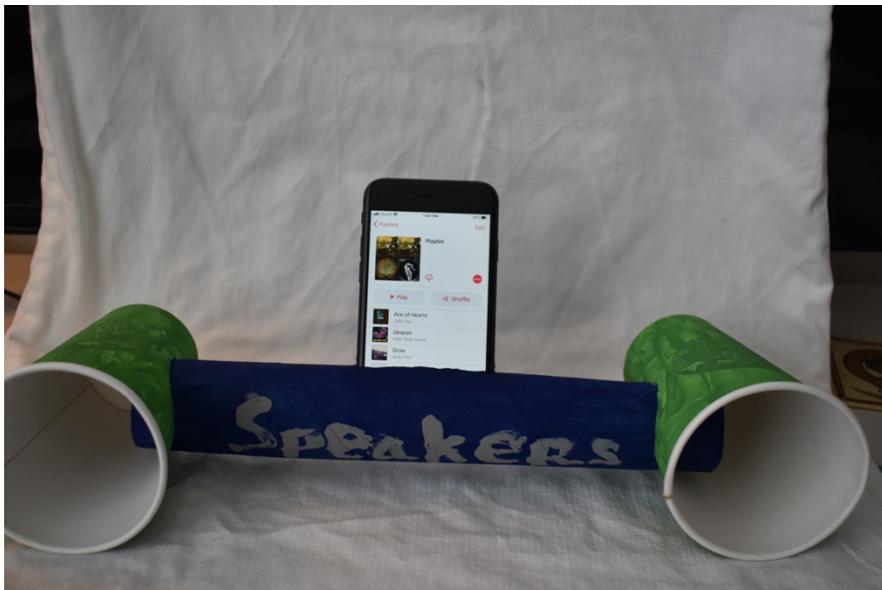
3. Now, tear off two sheets of the paper towel and loosely scrunch them up. Push one crumpled paper towel into each end of the tube. The paper absorbs some of the high-pitched sounds coming from the tube so your music sounds less tinny.



4. Push one end of the tube a little way into the hole you cut into one of the cups. You may need to use a small amount of force to secure it on. Then fit the other end of the tube into the second cup.



5. The only thing left is to paint your speakers in any colour that you like. When the paint is dry, pop a phone into the slot, with its speaker inside the tube. Then, sit back and enjoy the music.



## The Science behind your Sensational Speakers

Sounds from the mobile phone come out of tiny speakers that vibrate and disturb the air, sending sound waves spreading in all directions. When you put your phone inside your speakers, the sound waves bounce off the insides of the tube and the cups. So nearly all the sound is sent forward, toward your ears. The crumpled paper stops some of the higher-pitched sounds from getting through, but not the lower-pitched ones. This creates a clearer and warmer sound.

## STEAM

This activity includes everything you need for a comprehensive STEAM project.

**Science:** Learn how sound is created and how it can be directed.

**Technology:** Understanding how speakers work.

**Engineering and Art:** Construction and decorating your sensational speakers.

**Math:** Measuring and cutting out the parts needed for your speakers.