

## KIT FOR BUILDING MUSICAL INSTRUMENTS





## **Kit for building musical instruments**

This kit for building musical instruments from recyclable materials is an inspirational guide for creative teachers, social workers, cultural operators, educators and anyone else who is interested in converting “waste” into simple musical instruments.

Musical instruments in this kit are grouped into three commonly recognized families based on how they make sounds: strings, percussion and wind instruments – woodwinds and brass. Each musical family contains short description, links to audio recordings and images of instruments, and a few examples for building musical instruments from recyclable materials.

A special attention is given to typical Romani instruments that have been adopted by various European cultures aiming to raise awareness about the rich Romani culture and about the influence of Romani music on European classical music. The list of typical Romani instruments in this kit is definitely not exhaustive; it only serves as a small exemplar of a huge variety of instruments related to Romani music and culture.

There are no boundaries in creative thinking and every one using this kit is encouraged to come up with own ways of building musical instruments from recyclable materials and share them by using template in appendix 1.

Homemade musical instruments are also an excellent source for science classes where curricular topics such as the physics of waves and sounds can be easily explained by fun activities in which practicality of the subject matter is demonstrated through self-made musical instruments.

Have fun and let imagination run wild!

## Content

### Families of musical instruments

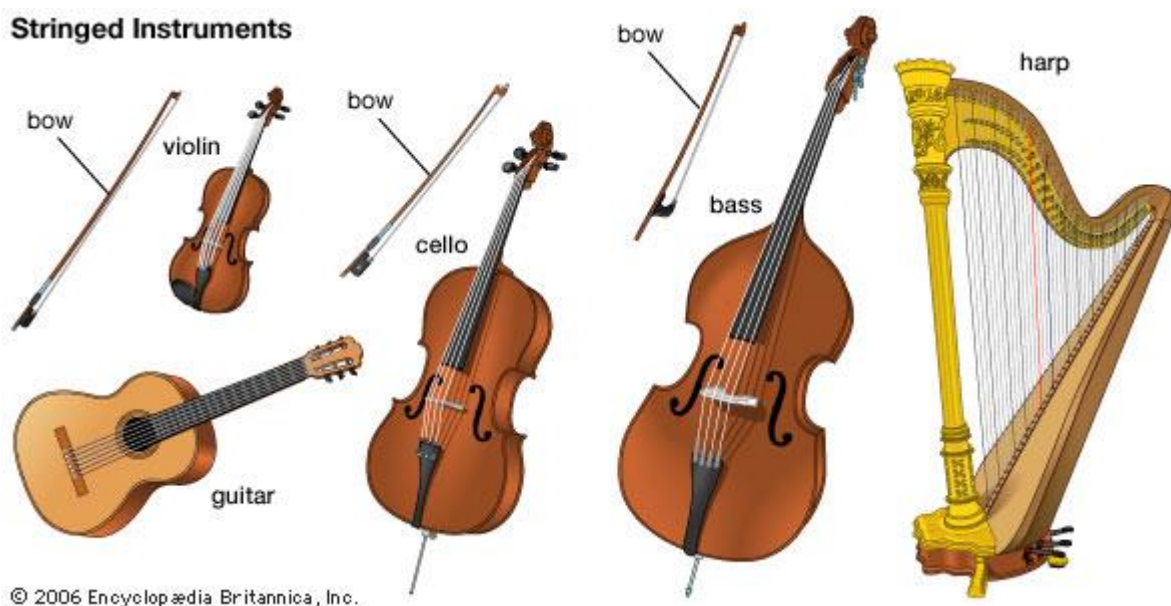
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## A. Strings Instruments

When you look at a string instrument, the first thing you'll probably notice is that it's made of wood, so why is it called a *string* instrument? The bodies of the string instruments, which are hollow inside to allow sound to vibrate within them, are made of different kinds of wood, but the part of the instrument that makes the sound is the strings, which are made of nylon, steel or sometimes gut. The strings are played most often by drawing a *bow* across them. The handle of the bow is made of wood and the strings of the bow are actually horsehair from horses' tails! Sometimes the musicians will use their fingers to pluck the strings, and occasionally they will turn the bow upside down and play the strings with the wooden handle.

The strings are the largest family of instruments in the orchestra and they come in four sizes: the violin, which is the smallest, viola, cello, and the biggest, the double bass, sometimes called the contrabass. (Bass is pronounced "base," as in "baseball.") The smaller instruments, the violin and viola, make higher-pitched sounds, while the larger cello and double bass produce low rich sounds. They are all similarly shaped, with curvy wooden bodies and wooden necks. The strings stretch over the body and neck and attach to small decorative heads, where they are tuned with small tuning pegs.

Source: <<http://www.orsymphony.org/edu/instruments/strings.aspx>>



Source:  
<<http://kids.britannica.com/elementary/art-88224/Stringed-instruments-include-the-violin-the-guitar-the-cello-the->>

For short audio recordings, please follow the link:

<[http://www.musictechteacher.com/music\\_learning\\_theory/music\\_instruments.htm](http://www.musictechteacher.com/music_learning_theory/music_instruments.htm)>



**String instruments related to Romani music and culture**

**Violin:**



**Kobza:**



**Mandoline:**



**Persian Saz:**



**Lute:**



**Persian Tanbur:**



**Cimbalom:**



**Bass:**



## Rubber band guitar

### Materials:

- A small sturdy cardboard box
- An assortment of rubber bands that can stretch around the box (choose a variety of length and thickness)
- A paper towel tube
- Duct tape

### Directions:

1. Cut a hole about 10cm in diameter in the top of the box
2. Stretch 4-6 rubber bands around the box and place them over the hole, lined up like guitar strings
3. Slide in a pencil under the rubber bands on one side of the hole.
4. Tape one end of the paper towel tube on the end of the box opposite the side with the pencil. This becomes a “neck” of the guitar.
5. Pluck or strum the rubber bands. Notice how thinner and tighter bands make higher-pitched sounds while thicker and looser bands make lower pitched sounds.



Source:

<<https://www.atlantasymphony.org/aso/asoassets/downloadcenter/Symphony%20Street%20Activity%20Sheets.pdf>>

## B. Percussion Instruments

Percussion instruments are the simplest and most primitive musical instruments. The easiest definition of a percussion instrument is something that produces a sound through being struck. Percussion instruments are usually rhythm or accent instruments, although instruments like bells, xylophone, or glockenspiel can play melodies. Since they are so simple, percussion instruments are extremely varied - from symbols and maracas to normal drums and vibraphones. A symphony orchestra usually has many different percussion instruments for each piece played.

Percussion instruments make sound by being hit. Drums have a hollow body that amplifies the noise of a stretched membrane being hit. Some instruments are shaken, like the maracas. Others resonate when hit, like bells. Yet others, like cymbals, just plain make a noise when they're hit. Percussion instruments can even be odd things like ratchets or castanets.

Source: <<http://alohapercussion.weebly.com/percussion-music.html>>



Source:  
<<http://kids.britannica.com/elementary/art-88223/Percussion-instruments-include-the-xylophone-the-timpani-the-gong-the>>

For short audio recordings, please follow the link:

<[http://www.musictechteacher.com/music\\_learning\\_theory/music\\_instruments.htm](http://www.musictechteacher.com/music_learning_theory/music_instruments.htm)>

## Percussion instruments related to Romani music and culture

### Tambourine:



### Castanets:



### Cajon:



## Bottle-cap tambourines

### Materials:

- A strong, Y-shaped tree branch (hand sized), preferably hardwood
- 10-15 metal bottle caps
- Strong wire
- Hammer and a nail

### Directions:

1. Decorate the tree branch
2. Remove the rubber liners from the bottle caps by having an adult heat them for a few minutes on a grill or in the oven
3. Flatten the caps with a hammer
4. Use the nail to punch a small hole in the centre of each cup
5. Thread the caps onto the wire and string it tightly between the arms of the Y



Source:

<<https://www.atlantasymphony.org/aso/asoassets/downloadcenter/Symphony%20Street%20Activity%20Sheets.pdf>>

## Drum

### Materials:

- An empty oatmeal or coffee can (sturdy)
- A sheet of heavy plastic, like a plastic garbage can or a large balloon
- Ruler
- Marker
- Scissors
- Large rubber band or duct tape
- Spoon, stick or pencil



**Directions:**

1. Decorate the can
2. Measure the diameter of the can
3. Mark a circle 5-8cm large in diameter on the sheet of plastic and cut it out
4. Stretch the plastic tightly over the can and secure it with the rubber band or duct tape
5. Use the spoon, stick or pencil to hit the drum



Source:

<<https://www.atlantasymphony.org/aso/asoassets/downloadcenter/Symphony%20Street%20Activity%20Sheets.pdf>>

## C. Wind Instruments

Wind instruments are basically defined as hollow tubes, which, when blown on one end, produce a sound. Most wind instruments have keys or finger holes to vary the pitch of the sound, and different methods may be used to create the basic sound.

Sometimes the player blows across an open hole. At other times, a player uses a reed to blow sound into the instrument. Wind instruments include the woodwinds, such as the flute, the clarinet, the oboe, and the bassoon. Wind instruments also include brass instruments, such as the trumpet, the horn, the trombone, and the tuba. The saxophone is considered a woodwind, but it may be made of brass.

Source: <<http://method-behind-the-music.com/mechanics/woodwinds/>>

<<http://kids.britannica.com/elementary/art-88225/Wind-instruments-include-the-woodwinds-such-as-the-flute-the>>

### Wind Instruments



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Source: <<http://kids.britannica.com/elementary/art-88225/Wind-instruments-include-the-woodwinds-such-as-the-flute-the>>

For short audio recordings, please follow the link:

<[http://www.musictechteacher.com/music\\_learning\\_theory/music\\_instruments.htm](http://www.musictechteacher.com/music_learning_theory/music_instruments.htm)>

## Wind instruments related to Romani music and culture

### Pan's Pipe:



### Bagpipe:



### Oboe:



## Straw oboe

### Materials:

- 1 – Drinking straw
- 1 – Paper cone cup
- Scissors
- Masking Tape
- Pencil



### Directions:

1. Flatten one end of the straw with your fingers or teeth
2. Cut off one corner of the flattened part of the straw starting about 1 cm down the straw and ending just slightly off-center
3. Repeat with the other corner of the flattened part of the straw. Your straw tip should have two flaps that look like trapezoids (triangles with a flat top). You can play it at this point, but I like to add an amplifier.

Adding an amplifier:

4. Place the other end of the straw over the tip of the cone cup and draw a circle on the cone around the end of the straw.
5. Cut off the tip of the cone.
6. Starting with the flaps, run the straw from the open end of the cone up through the hole until the straw is almost all the way through the hole
7. Tape the straw to the cup

Source:

<<https://www.atlantasymphony.org/aso/asoassets/downloadcenter/Symphony%20Street%20Activity%20Sheets.pdf>>

## Garden hose horn

### Materials:

- For the bell, a pointed plastic cup or small funnel
- A 45-60cm length of the garden hose
- For the mouthpiece, a smaller pointed cup, a piece of larger diameter garden hose or a plastic snap-on hose connector
- Duct tape



### Directions:

1. Cut about 2.5-5cm of the pointed tip off a pointed plastic cup. Discard the tip. If you prefer, you can use a small funnel instead. Insert the small end of the plastic cup or the funnel into the length of the garden hose. Wrap duct tape around the connection to secure it. This will be the bell end of the instrument.
2. Cut about 5cm off the tip of another pointed plastic cup. Cut the bottom point off the segment and discard the pointed tip. Insert the smaller end of the segment into the other end of the garden hose. Wrap duct tape around the connection to secure it. This will be the mouthpiece for the instrument.
3. Coil the hose so that you can hold both ends as you play.
4. Put your lips into the mouthpiece end and buzz them together. The length of hose will determine how high or low your instrument sounds.

Source:

<<https://www.atlantasymphony.org/aso/asoassets/downloadcenter/Symphony%20Street%20Activity%20Sheets.pdf>>

## Roma instruments and geographical areas in Europe

As Romani people were historically nomadic, though, nowadays largely settled, most Romani music contains elements of the folk music of countries where the Romani went through or settled. Accordingly, there are diverse instruments associated with Romani music in different regions of Europe.

### Iberian Peninsula:

Voice + guitar, castanets, bongos, djembe

### Mediterranean and Balkan Countries:

Voice + violin, contrabass, accordion, Jew's harp, wind instruments

### Central and Northern Europe:

Voice + accordion, violin, contrabass, cimbalom

### Eastern Europe:

Voice + violin, cimbalom, clarinet, guitar, accordion, darabouka (Balkan and Romanian variation)



## Links to useful sources:

### Building musical instruments from recycled material:

- <<http://www.soapkidz.org/documents/musicalinstruments.pdf>>
- <<http://www.anglican.ca/churchmice/files/2012/06/Creating-Musical-Instruments-Activity-Sheet.pdf>>
- <<https://www.atlantasymphony.org/aso/asoassets/downloadcenter/Symphony%20Street%20Activity%20Sheets.pdf>>
- <<http://www.instructables.com/id/Homemade-Musical-Instruments/>>
- <<http://makingmulticulturalmusic.wordpress.com/2012/04/10/14-world-music-instruments-that-can-be-made-from-recycled-materials/>>
- <<http://makingmulticulturalmusic.wordpress.com/2012/04/10/14-world-music-instruments-that-can-be-made-from-recycled-materials/>>

### Science classes and building of musical instruments:

- <<http://kellerphysics.com/acoustics/Lapp.pdf>>
- <[http://www.philiprothman.com/resources/Consultant/FMIA\\_ToolKit\\_FINAL.pdf](http://www.philiprothman.com/resources/Consultant/FMIA_ToolKit_FINAL.pdf)> (pg.16-32)

### Musical instruments:

- <<http://visual.merriam-webster.com/arts-architecture/music/symphony-orchestra.php#contrabassoons8143>>

And there are many more!

## References:

*Aloha Percussion*. Percussion Music. Web. 8. Nov. 2014.

<<http://alohapercussion.weebly.com/percussion-music.html>>.

*Atlanta Symphony Orchestra*. Make Your Own Musical Instruments, 2014. Web. 8. Nov. 2014. <<https://www.atlantasymphony.org/aso/asoassets/downloadcenter/Symphony%20Street%20Activity%20Sheets.pdf>>

*Encyclopaedia Britannica, Inc.* 2014. Web. 8. Nov. 2014. <<http://kids.britannica.com/>>.

*Garrett, Karen*. Instrument Families in Music, 2013. Web. 8. Nov. 2014.

<[http://www.musictechteacher.com/music\\_learning\\_theory/music\\_instruments.htm](http://www.musictechteacher.com/music_learning_theory/music_instruments.htm)>

*Hollis, Benjamin*. How Woodwind Instruments Work. 1999. Web. 8. Nov. 2014.

<<http://method-behind-the-music.com/mechanics/woodwinds/>>.

*Oregon Symphony*. The String Family, 2014. Web. 8. Nov. 2014.

<<https://www.atlantasymphony.org/aso/asoassets/downloadcenter/Symphony%20Street%20Activity%20Sheets.pdf>>.

Sinclair, A.T. "Gypsy and Oriental Musical Instruments." *The Journal of American Folklore*. Vol. 21, No. 81 (Apr. - Sep., 1908): 205-221. Web. 8. Nov. 2014.

## Appendix 1: Template

### Name of an instrument

#### Materials:

- .....
- .....
- .....
- .....

(add as many bullet points as necessary)

Image of the final product

#### Directions:

1. ....
2. ....
3. ....
4. ....
5. ....

(add as many points as necessary)

Source: .....

Video of the MUSIC4ROM experience

[https://www.youtube.com/watch?v=M5\\_sJ3dprGI&feature=youtu.be](https://www.youtube.com/watch?v=M5_sJ3dprGI&feature=youtu.be)



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