



PMC's FUN WITH DRUMS – LESSON PLAN

'Make Your Own Xylophone'

By Dr. Craig Woodson



Overview

Using simple tools and easily available materials, students young and old, along with parents and/or teachers can make great sounding percussion instruments for use at home and in the classroom. In addition to learning how to play music, students will learn how these skills relate to science, technology, engineering, art, math (STEAM).

Audience focus ages/grades – This project can typically be made by children ages 9 to 13 without much assistance. Students ages 6 to 8 will need some older student or adult help.

Required resources/instruments – You will need:

XYLOPHONE Materials

1. One thick yardstick or two large, thick paint paddles
2. Masking tape
3. Dowels – 3/8" diameter 10" (2) or new pencils

XYLOPHONE Tools

1. Scissors to cut tape
2. Sandpaper – @150 grit
3. Permanent markers
4. Pencil - sharpened
5. Brick, wood block
6. Kleenex box – empty
7. Wash cloth for sound
8. Hacksaw

Impact of this video – This video will stimulate interest in drumming alone and with others by providing simple music making activities based on the building of easy-to-make instruments in the home. It also provides connections to the STEAM approach.

STEAM Connections

Science – When you make the Xylophone, you can experiment with different types of wood for the bars, then find out what that means for the sound. The word Xylophone ('xylo' + 'phone') means 'wood sound.'

Technology – The sound of the Xylophone comes from what's called 'bar vibrations.' This means there are three places on a bar with lots of motion or 'anti-nodes' (middle and both ends) and two places with no vibration or 'nodes,' small areas a short distance in from each end of the bar.

Engineering – The best sound will come when you hit the bar's anti-nodes and support each bar on the nodes, about 1/5 of the distance in from each end of the bar. You can hit the Xylophone with a soft beater or a hard one for different sounds.

Art – Decorate the bars with various colors of permanent markers. However, nothing else should be attached to the bars except at the nodes, since this could muffle the sound.

Math – When you play music on the Xylophone, experiment with patterns of numbers for each of the bars. For example, when 1 is the longest bar and 4 the shortest: 1, 1, 2, 3, 4, 4, 4. Also vary the sticking, for example, if R=Right, L=Left, try RLRL, or RRL, or RLLRL or LLRLLR.

Set up for lesson

Instruments/supplies - If possible, use a school's xylophone for comparison to your homemade instrument. Now, get the tools and materials listed above ready to make your own Xylophone.

Resources – Go to www.PlayDrums.com for more information about playing drums, and go to www.RootsofRhythm.net for similar drum making projects.

LESSON PLAN

Instructions that go with the 14-minute video found at www.PlayDrums.com/fun-with-drums

Video Steps for Making the Xylophone

HACKSAW TYPES

Video Time
2:01

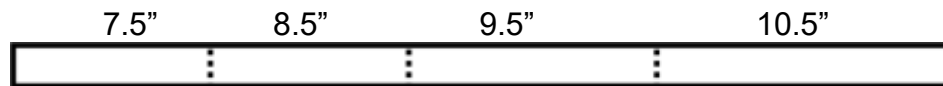
- a. Standard hacksaw b. Craft hacksaw c. Simple handle blade



YARDSTICK Option for Longer Bars

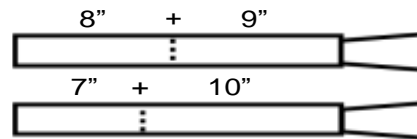
Mark 7.5"/ 8.5"/ 9.5"/ 10.5" lengths

2:20



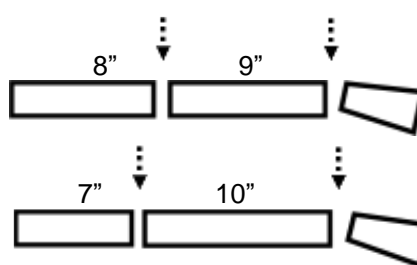
PAINT PADDLE Option for Shorter Bars

Mark 7"/ 8"/ 9"/ 10" lengths. The handle will not be used.



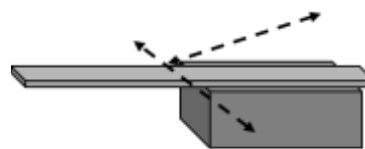
2:31

1. **Paint paddle cuts.** Cut one paddle with 8" and 9" lengths, 7" and 10" lengths on the other.



2:46

2. **Use a brick or table.** Cut wood on a brick with a hacksaw starting high and then going low.



3:16

3. **Sand bars.** All sides, edges and corners.



4:45

4. Bar Vibration

2 Nodes - Small Motion

5:16



3 Anti-Nodes – Large Motion

Video Time

5:58

6:12

6:38

7:01

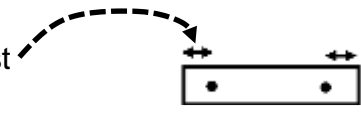
7:54

8:30

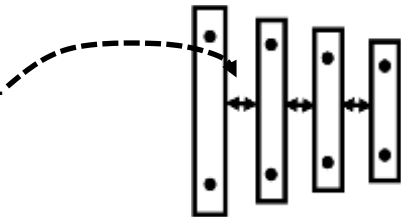
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10:43

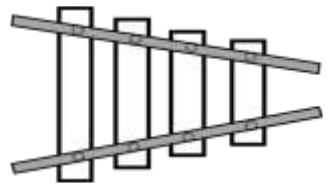
5. Mark a dot 1.5" from end of longest bar, then gradually a little less to the shortest bar.



6. Line up bars long to short, 3/4" apart (3 arrows) on flat surface.



7. Press tape pieces over dots making two angled lines.

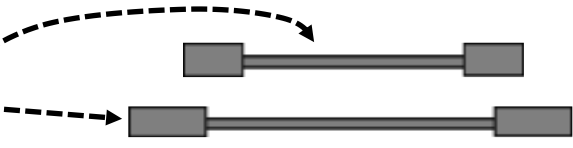


8. Firmly press tape onto each bar over each dot across wood's entire surface.

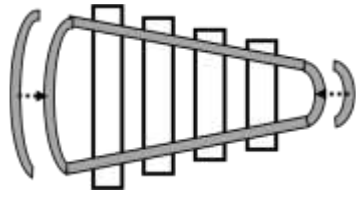


Peel up 4 tape ends, turn Xylophone over.

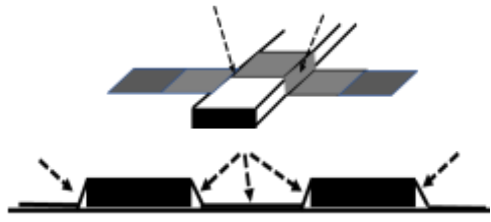
9. Make two handles, 10" and 8" long. Pinch the tape in the middle leaving 2" of sticky tape on each end.



10. Attach the sticky ends of the handles—short one above the small bar and long one below the large bar.



11. Attach 2 more pieces of tape. Beginning at a handle's end, go on all surfaces of each bar: side, top, other side, bottom.



12. Tape around the end of two dowels or pencils.





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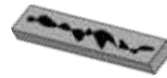
By Dr. Craig Woodson



Video Time

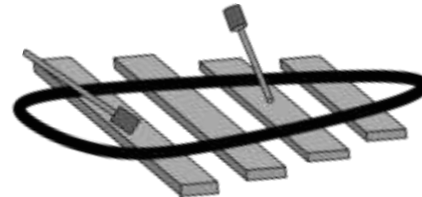
11:19

13. Decorate the bars with markers, sign your name on the Xylophone



11:17

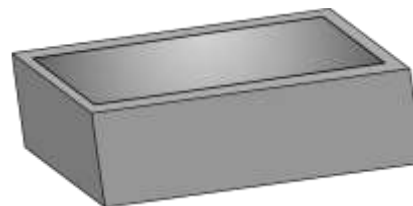
14. Place the Xylophone on your lap with bar #1 at your waist then hit in the middle or on the end of each bar.



11:40

15. Cut top out of Kleenex box.

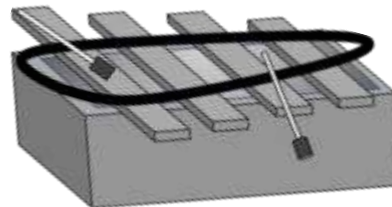
First make a mark to guide the scissor cut. Take out the tissues.



12:29

16. Lay the Xylophone over the box's opening, place a washcloth under the box.

- Hit middle of bar
- Hit bar's end



Questions to stimulate and nurture your interest in:

- Music – Make a bar instrument with other materials, maybe metal tubing (a 'metallophone'). What would it sound like? How about making it with different lengths?
- Rhythm – Can you play four hits with one beater and two with the other at the same time? How about two and three?
- Percussion – Your Xylophone is also called an 'idiophone' (self-sound), an instrument where its sound comes directly from the body itself—the bars. What other instruments might be idiophones? Is a shaker or a cowbell an idiophone? How about a horn?
- Performance – This type of instrument is sometimes played by two players, positioned side by side or across from each other? Try this with a friend. When seated across from each other how many notes can each player hit?

Written by,

Craig Woodson, PhD