From the Top at Carnegie Hall
Episode 3: "Meeting Our Heroes"
Airing on PBS (check local TV listings)
Available online at pbs.org

Learning Activity

Title: *Marimba Beat*

Description: In this activity students will develop ideas and plans for constructing their own marimbas using readily available materials. As a variation, students could construct other percussion instruments such as xylophones or drums.

Grade Level: 9-12 (can be adapted for 5-8)
National Music Standard: 6, Understanding relationships between music, the other arts, and disciplines outside the arts [mathematics/science]

Background

In this episode, 17-year-old percussionist **Jingchen Sun** plays a marimba, a percussion instrument with a fascinating history. The marimba is played in many different countries, from Zambia and Mozambique in Africa to the Central American states of Guatemala and Honduras. All marimbas have keys that are hit with mallets and resonators that amplify the sound of the keys. But from there, the variations are infinite! Jingchen plays a five-octave marimba (the piano, another percussion instrument, has 11 octaves), but marimbas come in both larger and smaller sizes. Music for the marimba is also very diverse, from classical pieces like the one in this episode to folk, hip hop, electronic, marching band and jazz tunes.


Jingchen Sun at Carnegie Hall

Materials

Television or computer, DVD player, video of Episode 3, pencils, paper; additional materials for actual construction of instruments (pipes, gourds, wooden slats, etc.)

Activity Instructions *[Note that this activity requires two or more days to complete when the students actually build instruments.]*

1) Begin by **watching** Jingchen's performance on Episode 3, asking students to observe how the marimba is constructed and how sounds are produced on it.

2) **Discuss** what you've seen and heard. Ask students what factors they think affect the sounds of the marimba. What other instruments or sound-producing objects (like wind chimes or steel drums) are they reminded of? What do they like about the sound of the marimba? What don't they like? Ask them to list other percussion instruments (such as drums, tambourine, triangle) that might be compared to the marimba.

3) **Divide** students into small groups of 4 or 5. Ask them to brainstorm about constructing a marimba or a similar instrument. What materials would they need? Where could they find them? What construction techniques would affect the sound? How would they create a frame, keys, resonators, and mallets? Why do people make new instruments, anyway?

4) **Have the groups share** their designs, the design process, and any questions that emerged.

5) **Watch** the video segment from the same episode in which Travis Johnson talks about how his custom-built guitar was made for him. Did students notice anything new or different about the construction process?

6) For the **next class period, ask** students to bring materials and experiment with building the instruments they designed.

A traditional marimba from the Guatemalan Highlands with gourd resonators

Courtesy of the photographer via Wikipedia Commons
Source: http://en.wikipedia.org/wiki/Image:GuatemalanMarimbaGourds.JPG

Find out more!

About Jingchen Sun

Jingchen appeared on From the Top's National Public Radio program, performing a piece by Japanese composer Keiko Abe. You can read about her and download her performance at: http://www.fromthetop.org/Programs/Performers.cfm?pid=2415

You can also hear another version of "Ultimatum 1" on YouTube: http://www.youtube.com/watch?v=6yrr-3zo7Cg

About marimbas and their musical relatives

Vibraphonist and composer **Stefon Harris**, 30, is a rising star of the jazz world. Listen to this NPR story about his band, and visit his web site at http://www.stefonharris.com to hear more of his music.
http://www.npr.org/programs/jazzset/shows/harris.html

See what happens when you combine **a marimba, a computer, some tennis balls, and a few teenagers:**

> Created by MIT alums Dan Paluska and Jeff Lieberman, Absolut Quartet is a "large-scale electromechanical sculpture," which takes simple pieces of user-created music over the Internet and turns them into complex melodies. The machine itself is actually a combination of three very analog instruments -- a marimba played by flying rubber balls, a rubber and glass apparatus that simulates the "finger on the wine glass" trick, and a "drum kit" of percussive instruments played by robotic arms.
>
> From "Ping Balls + Robot + You = Music," on the NPR show *The Bryant Park Project*

http://www.npr.org/blogs/bryantpark/2008/03/ping_balls_robot_you_music_1.html