Discovering Strings and Orchestra – Sample Lesson Plan

Math Grades l-3 - Counting

(contributed by Dr. Anne Clark, September 2007,
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National Music Standards
Content Standard 6: Listening to, analyzing, and describing music
Content Standard 8: Understanding relationships between music, the other arts, and disciplines outside the arts

Lesson Length
45 minutes

Materials Needed
Plastic straws, one per student

CD's of orchestral selections such as these below, available in libraries and stores, or from iTunes. Before the project session begins, download one selection per team for each different time signature, onto a blank CD.

4/4 time Allegro deciso (tempo di marcia) from "L'Arlesienne Suite No. l" by Georges Bizet

3/4 time Allegretto from "Symphonic Variations" by Cesar Frank

2/4 time Lento from "Le Sacre du Printemps" (The Rite of Spring) by Igor Stravinsky
(this work's Presto is also a great example of changing time signatures)

6/8 time Vivace assai from "Symphony No. 94" (Surprise) by Franz Joseph Haydn

9/8 time Assez vif from "Alborada del Gracioso" by Maurice Ravel

5/4 time Allegro con grazia from “Symphony No. 6,” Op. 74 by Peter Tchaikovsky

2/2 time: Large e maestoso from “Scheherazade,” Op. 35 by Nikolai rimsky-Korsakov

Chalkboard with chalk, or dry-erase board with marker

A CD player (like a boombox) which has enough volume to be heard by the entire group

Enough individual CD players with earphones for each team of students. In advance, have the troop leader arrange with parents for students to bring battery-powered ones from home to use in the session (one per team to be shared).

A small decorated box (with printed music or pictures of string players or string instruments), with a clearly readable title on it, “Counting and Music,” and enough folded small pieces of paper with review questions in primary type print(see below)

Vocabulary to be Taught

Time Signature
Beat
Steady Beat
Equal Time Value
Unit of Measurement
Measure or Bar of Music
Bar line
Conducting
Conductor baton
Counting
Conductor podium

4/4 3/4 2/4 6/8 9/8 5/4 2/2 Time

Metronome
Regular Intervals of Time

Resources and sources for This Lesson

Metronome and conductor clip used at the top of this lesson plan
http://www.dorlingkindersley-uk.co.uk/nf/clipArt/Image/0,,239039_1583462_,oo.htm.

Enjoy animated metronomes on this site:
dir.coolclips.com

Look up your favorite orchestra website and notice the photos of the conductors. There is a tiger conductor on the website of Clemson University Symphony Orchestra!

You can also see women conductors on websites of these orchestras:

Southeastern Ohio Symphony Orchestra
North Ohio Youth Orchestra
Warren Philharmonic Orchestra
Old York Road Symphony
Hilton Head Orchestra
Symphony of the Mountains
El Paso Symphony Orchestra
River Oaks Chamber Orchestra
Oregon Pro Arte Chamber Orchestra
La Crosse Symphony Orchestra
Spartanburg Philharmonic Orchestra

Orchestral Excerpts from the Symphonic Repertoire for Cello, Volumes 1-3, edited by Leonard Rose, published by International Music Company in New York City, NY in 1953 was used to find music examples in different time signatures for this lesson.

Lesson Procedure

The volunteer clinician asks the class, "What would happen if in a parade there were people marching to music, and all of a sudden the music started to go all haywire – faster, slower, and unsteady?" Enjoy the answers, and let a few students act out what could happen (safely!).

Say, "Math is one of the tools we use in music to keep things in order. We do it by **counting** steady **beats**, which should be like a steadily ticking clock. However in music, we make groups of the ticks, and we call each of the groups a section, or **unit** of **measurement**. What are we measuring? TIME PASSING… Often we want to count out the music in **regular intervals of time**, like inches on a ruler- all the same size. We call musical units of time either a **measure** of music, or a **bar** of music. They are the same."

"Does anyone want to tell our troop what is the sign we put between the bars or measures of music when we write it?" Write a music staff on the board and wait for (or provide) the answer **bar line** as you draw equally spaced ones across the board. Tell the students, "In my picture, each measure or bar will have **equal time value**, or equal length of time."

"We have a way to tell how to count in music, called the **time signature**. It looks like two numbers stacked on top of each other, with a straight line in between them. It is found at the start of music, and also during music. When we count in music, we read the top number and count steadily up to it, starting at l. Let's try this together."
Then write on the board all the time signatures in the vocabulary list, and have the troop leader call on different volunteer students to count steadily for two or three examples. Ask the students to raise their hands if they think the counting starts to be unsteady, and have the volunteer clinician help the counting student.

Then ask, “What do you think you could use to help a person keep a **steady beat** when using counting to play music?” After various answers, say, “There are two inventions we use today to help with steady beat, and they are the **metronome** (for practice) and the **conductor baton** (for performing in public). You are going to get a chance to feel what it is like to be a conductor of a symphony orchestra. First, we have to practice our steady counting with the batons.”

Pass out the straws (one to a student) and show a metronome. Spend a few minutes showing how the metronome can make a steady sound at different speeds. The volunteer clinician will need to fit each conducting pattern to a comfortable metronome speed, and then have students practice the conducting patterns for counting the unpracticed time signatures in the vocabulary list. To do this, spread everyone out, and tell them to not be stiff in their wrists, fingers, or arms. Students can stand or sit. Once you are ready to practice, ask the students to count out loud with you as you practice short tries of a few time signatures. The students can conduct in continuous l-beat motions, or try the real conductor patterns for 2,3,4,5,6, and 9 beats.

Let everyone have a break, and then tell the group, “Now we are going to play a musical counting game with the orchestra, and each team will try to conduct a steady beat to the music. ” Have the troop leader put the students into teams of 2-4 students, tell each team the time signature on the CD music, and let teams practice counting and conducting (with silent earphones) to the music for about 3-4 minutes.

Regroup students together facing a homemade **conductor podium** big enough for at least one or more students from each team to lead the group. Put on a few minutes of each team’s CD, and have the team conductors use their straws to lead, as the rest of the students pretend they are playing the orchestra instruments. Designate someone from each team (or an adult) to help count the steady beat out loud, and try to help with a quick recovery from any “train wrecks.”

Informal Assessment

Have the troop leader let some or all of the students select questions on small slips of paper from the “Counting and Music” box, one at a time. Have the student read the question and try to answer it, with the other students and adults adding correct information, if needed.

Types of questions: Is a measure the same as a bar of music?
Does 3/4 time have more counts in a bar than 4/4 time?
If the conductor speeds up, is he conducting regular intervals of time?
Draw two different time signatures which do not have a number 4 under the line.
What is the line between equal units of measurement called in music?
Demonstrate conducting in 3 (or other amounts)

Extension
Tell students that dance music is the kind that usually needs very steady counting, so the dancers are comfortable and do not fall down. Ask them if they know names of some dances that need to use music with steady beats (waltz, square dance, etc.).

Tell students that some very old historical dances changed the time signatures back and forth in the same song. Let them try conducting a pattern of 1-2, 1-2-3, and tell them it was used long ago in England.

Tell students that when musicians become more advanced, they also must learn to count in between the beats **(subdivision)**. Let them try to count with "and" between the main beats in 4/4, 5/4, etc.

Conclusion
Ask, "What would it be like if we did not have the same units of measurement in the world, not just in music but in other things? For instance, what if our minutes and hours were not the same length? What would it be like if one mile was shorter one day, but longer the next, when you rode your bicycle or walked somewhere? If a person is using music to make a movie or a TV show, it is very important to be able to measure how long the music lasts, so it fits into the time that you have. This is one reason why every good musician must also be a good counter. We do not want to leave some beats out, or put more beats in the music than the time signature gives us. Who do you think are usually the best counters in music? (Answers such as conductors, composers, principals of string sections, and percussion players are all good ones.)
When we go see an orchestra concert later this year, be sure to notice how hard the conductor is working to keep the music steady until there is a conductor signal to change the counting. Also you can watch to see how hard the string musicians work to keep steady beat by having their bows move the same way in each string section."

Notes for the String Clinician and Troop Leader

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