My Heartbeats

Sixth Grade + Math and Dance

Adapted by L. Lang

CORE SUBJECT AREA
Math

ART FORM + ELEMENTS
Dance
Action
Time
Energy
Tempo

MSCCR STANDARDS
6.RP.A.1 - Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

6.RP.A.2 - Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship.

6.RP.A.3.D - Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

MSCCR CREATIVE ARTS STANDARDS
DA:Pr4.1.6 Rene partner and ensemble skills in the ability to judge distance and spatial design. Establish diverse pathways, levels, and patterns in space. Maintain focus with partner or group in near and far space.

DURATION
1 class period

OBJECTIVES
I can calculate my heart rate in beats per minute at rest and after exercise.

I can calculate beats per second in two different dance movements.

I can convert beats per second to beats per minute.

I can discuss purposes of dance.

I can identify changes in level (space) and tempo (time) in dance.

I can perform movements form a dance fitness routine.

MATERIALS NEEDED
Stopwatch (online or handheld)

steady Beat handout

VOCABULARY
Beat, Convert, Conversion, Dance, Movement, Measurement, Unit, Multiply, Divide, Unit, Ratio, Rate, Quantity

RECOMMENDED RESOURCES
Online stop watch

LESSON SEQUENCE
This activity should be done when students have been at rest for about ten minutes (not right after recess or PE). Tell students that you are going to be exploring the tempo (or beat) of their hearts and tempo (or beat) in dance.

Watch DanceSense: "Elements of Dance" from 8:04-8:34. Distribute the "Steady Beat" handout.
https://ket.pbslearningmedia.org/resource/a043a463-51eb-4698-ae5543d9a6cc7a63/dancesense-elements-of-dance/#.Wv3XPYgvzIU

Help students find their pulses. (To find your resting heart rate, press the index and middle fingers over the underside of the opposite wrist, just below the thumb. Press down gently until you feel your pulse.)

Project the stopwatch and tell students to start counting when you say, “Count.” Let them count for 30 seconds

and record the number of beats they counted on their worksheet.

Lead them in the process of calculating their pulse in beats per minute. Briefly discuss the variations in pulses. Emphasize that this is not the kind of accurate results they would get when checked by a doctor and that there is a wide variation in healthy pulse rates, so they should not be alarmed if their pulse is higher or lower than their classmates' pulses. This is a math activity and not a health exam.

Ask students why people dance. Allow some discussion and then watch DanceSense: "Understanding Dance" from 8:50 to about 13:23.

Tell students they are going to watch a performance of a dance based on ceremonial dances of welcome from the Yoruba people, who live in West Africa. Because it is a performance, it is considered both ceremonial and artistic expression. It would also be good exercise!

As they watch, you will want them to focus on the tempo, which means the speed of the dance. Tell them that the tempo of the dance they are going to watch will change. When they notice a change in the tempo, they should clap twice.

Tell them to also pay attention to changes in the level of the dance. During most of the dance, the dancers will have their knees slightly bent, so the dance will be at a low level, but occasionally the dancers will reach up with their arms or jump, taking them to a higher level. When the dancers reach up, students should raise their arms.

After watching the video, discuss what the dance workout had in common with the dance they watched. Tell students they are going to calculate the beats per minute in two segments of the video that have the same movements done at different tempos. Watch the segment from 2:31 to 2:53 (earth and sky at a slow tempo) and have them count the number of times the dancers stomp their feet (44). Lead students in calculating the beats per minute.

Then watch the segment from 4:59-5:05 (earth and sky at high tempo) and have them count the number of times that the dancers stomp their feet (16). Challenge students to work independently or with a partner to determine how to calculate the beats per minute by setting up and solving a ratio problem.

Discuss the results. Did the first or the second segment have more beats per minute? (The one with the most beats per minute has a faster tempo.)

Tell students they are going to work in small groups to choreograph a dance fitness workout, which they will perform for classmates. It must have certain elements but they can also bring their creative imaginations to the process.

In order to demonstrate the effectiveness of their dance fitness routine as exercise, the team members should create a chart of their pulse rates at rest and their pulse rates after performing their routine.

SOURCES

Pbslearning.org