Heart Rate lesson plan
2/7/19

Grade: 4th grade	**Subject: Science**
Materials: recording sheet, colored pencils, pencil	**Technology Needed: smartboard**
Instructional Strategies: ☐ Direct instruction ☐ Guided practice ☐ Socratic Seminar ☐ Learning Centers ☐ Lecture ☐ Technology integration ☐ Other (list) ☐ Peer teaching/collaboration/ cooperative learning ☐ Visuals/Graphic organizers ☐ PBL ☐ Discussion/Debate ☐ Modeling	**Guided Practices and Concrete Application:** ☐ Large group activity ☐ Independent activity ☐ Pairing/collaboration ☐ Simulations/Scenarios ☐ Other (list) Explain: ☐ Hands-on ☐ Technology integration ☐ Imitation/Repeat/Mimic
Standard(s) **4-LS1-1.** **Construct an argument with evidence, data, and/or a model. that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.** **4.NBT.5** **Using strategies based on place value and the properties of operations, multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers.**	**Differentiation** **Below Proficiency:** **Students can refer to their multiplication chart to multiply the number of heart beats by 4** **Above Proficiency:** **Students will be able to multiply the number of heart beats by 4 with mental math** **Approaching/Emerging Proficiency:** **Students can multiply the number of heart beats by 4 by figuring it out on scratch paper** **Modalities/Learning Preferences:** **Visual- I model how to find pulse, show a video, and display the timer on the board** **Auditory- I explain the activity verbally** **Kinesthetic- Students are engaging in physical activities**
Objective(s) **By the end of the lesson, students will be able to take their pulse and discover how their heart rate is affected when engaging in various activities.** **Bloom's Taxonomy Cognitive Level: Analysis**	
Classroom Management- (grouping(s), movement/transitions, etc.) **- Students will sit in their desks or move to a spot more comfortable for them** **- I will say eyes on me if needed to redirect attention**	**Behavior Expectations- (systems, strategies, procedures specific to the lesson, rules and expectations, etc.)** - **Students will fully participate in the activities** - **Students voices will be at 0 when someone else is talking** - **Students voice levels can be at a 3 when engaging in the activities** - **Students will be active listeners**

Minutes	Procedures
2 minutes	**Set-up/Prep:** • **Get YouTube link ready** • **Print recording sheets** • **Pull up 15 second timer on the computer**
5 minutes	**Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate questions, etc.)** • **"Who can tell me what body system the heart belongs to?"** • **Students will respond with circulatory system or I will tell them if they don't know** • **"We will watch this video to help us understand how the circulatory system works"** • **https://www.youtube.com/watch?v=f9ONXd_-anM** **The Circulatory System: Educational Video for Kids**
30 minutes	**Explore: (independent, concreate practice/application with relevant learning task -connections from content to real-life experiences, reflective questions- probing or clarifying questions)** • **"How do we find our pulse or heart rate?"**

Heart Rate lesson plan
2/7/19

	• **"The easiest ways to find our pulse is by either lightly pressing on our wrists or our neck with our middle and pointer finger"**
	• **Demonstrate how to find your pulse both ways**
	• **Give students some time to practice finding their pulse**
	• **Have students give me a thumbs up when they are able to find their pulse**
	• **Help students who might be struggling**
	• **Have student come get a recording sheet and piece of scratch paper which they can use to help them multiply**
	• **"We will do a series of activities to discover how these different activities affect our circulatory system and our pulse"**
	• **"For each activity we do, I will set a timer for 15 seconds and you will count the number of times you feel that beat"**
	• **"Since we need to find beats per minute and we are only recording for 15 seconds, what will we need to do?"**
	• **Tell students that we will have to multiply the number we get by 4 to figure out the beats per minute**
	• **Do each activity along with the students for 15 seconds**
	• **Students will figure out beats per minute after each activity and record it on their sheet**
	• **Wait for a couple minutes before starting the next activity**
	  ○ **Activity #1 Sit very still in your chair**
	  ○ **Activity #2 Carefully swing your arms back and forth**
	  ○ **Activity #3 March in place**
	  ○ **Activity #4 Jog in place at a slow pace**
	  ○ **Activity #5 Jog in place at a moderate pace**
	  ○ **Activity #6 Jog in place at a fast pace**
	  ○ **Activity #7 Walk slowly around the room**
	  ○ **Activity #8 Sit very still in your chair**

5 minutes	**Explain: (concepts, procedures, vocabulary, etc.)** • **Students will record their beats per minute for each activity on the graph using a different colored pencil for each activity.** • **"What does the heart rate graph tell us?"** • **Allow a few students to answer** • **"Each beat that you felt was caused by the contraction or squeezing of the heart"** • **"When you are exercising, your body uses more oxygen-filled blood, so your heart pumps faster to supply your body with the oxygen-filled blood that it needs"** • **"Our bodies need a steady supply of blood pumping in and out of the heart to keep it working right"** • **"Does anyone remember from the video about how many times our heart beats per day? (100,000)**

3 minutes	**Review (wrap up and transition to next activity):**
	• **Students will complete an exit slip on the back of their recording sheet**
	  ○ **The exit slip will answer the following questions**
	  ○ **Was your heart rate faster when sitting in your chair or when swinging your arms back and forth?**
	  ○ **Why was your heart rate faster when jogging in place at a faster pace rather than a slower pace?**

Formative Assessment: (linked to objectives, during learning)	**Summative Assessment (linked back to objectives, END of learning)**
• **Progress monitoring throughout lesson (how can you document your student's learning?)** **I will have students give me a thumbs up when they are able to find their pulse**	**Students will complete an exit slip**

Reflection (What went well? What did the students learn? How do you know? What changes would you make?):

Overall, the lesson went well and the students enjoyed being active for the majority of the lesson. I also loved how students were able to get out of their desks and get physically active for this lesson. I thought the video was a good introduction to the circulatory system which I would show again to give students some background knowledge about how the heart works. A couple students struggled with finding their pulse, so they grew frustrated. To try to overcome this struggle, I was patient with them and helped them find their pulse, but when all else

Heart Rate lesson plan
2/7/19

failed I told them they could look on with their neighbor. The main downfall of the lesson was the fact that some students had a difficult time finding their pulse. I'm not sure what more I could have done to make sure every student felt their pulse, although I did give students a second chance to find their pulse by doing each activity twice. I didn't have it in my lesson to do each activity twice, but I wanted to give students two chances to find their pulse since some students had a hard time feeling their pulse. It also worked well to have students give me a thumbs up when they were able to feel their pulse so that I knew when to start the timer. I displayed a 15 second time on the board for everyone to see. I decided to only time each activity for 15 seconds so that it would be easier to count and keep track of the number of heart beats. Since we were recording beats per minute on the recording sheet, the students had to multiply the number of beats they got times four to get the number of beats per minute. I was able to make it simpler to count the number of heart beats while also tying math into the lesson at the same time. I feel like I communicated expectations well such as making sure to tell them no talking while taking their pulse. It was helpful to discuss what our heat rate graphs told us as students were able to understand the main concept this way. The graph was a great for the visual learners as well, especially since I had the students use different colored pencils. I then explained the reason our heart rate is faster when exercising or putting in more physical effort. Next time, I would maybe find some sort of visual or video clip to reinforce my explanation so that students could better understand how it works. The students' number of beats per minute for each activity differed some which is normal, but for the most part their graphs followed the same general pattern. The main expectation I had was for everyone to participate in the activities even if they couldn't feel their pulse for every activity. The important part was that students understood that their heart rate is affected differently depending on their level of physical effort and I feel confident the students grasped this idea based on their exit slips.