



Use of Colored Fabric to Denote Blood Oxygenation Status to Various Simulated Body Tissues During Rest and Exercise

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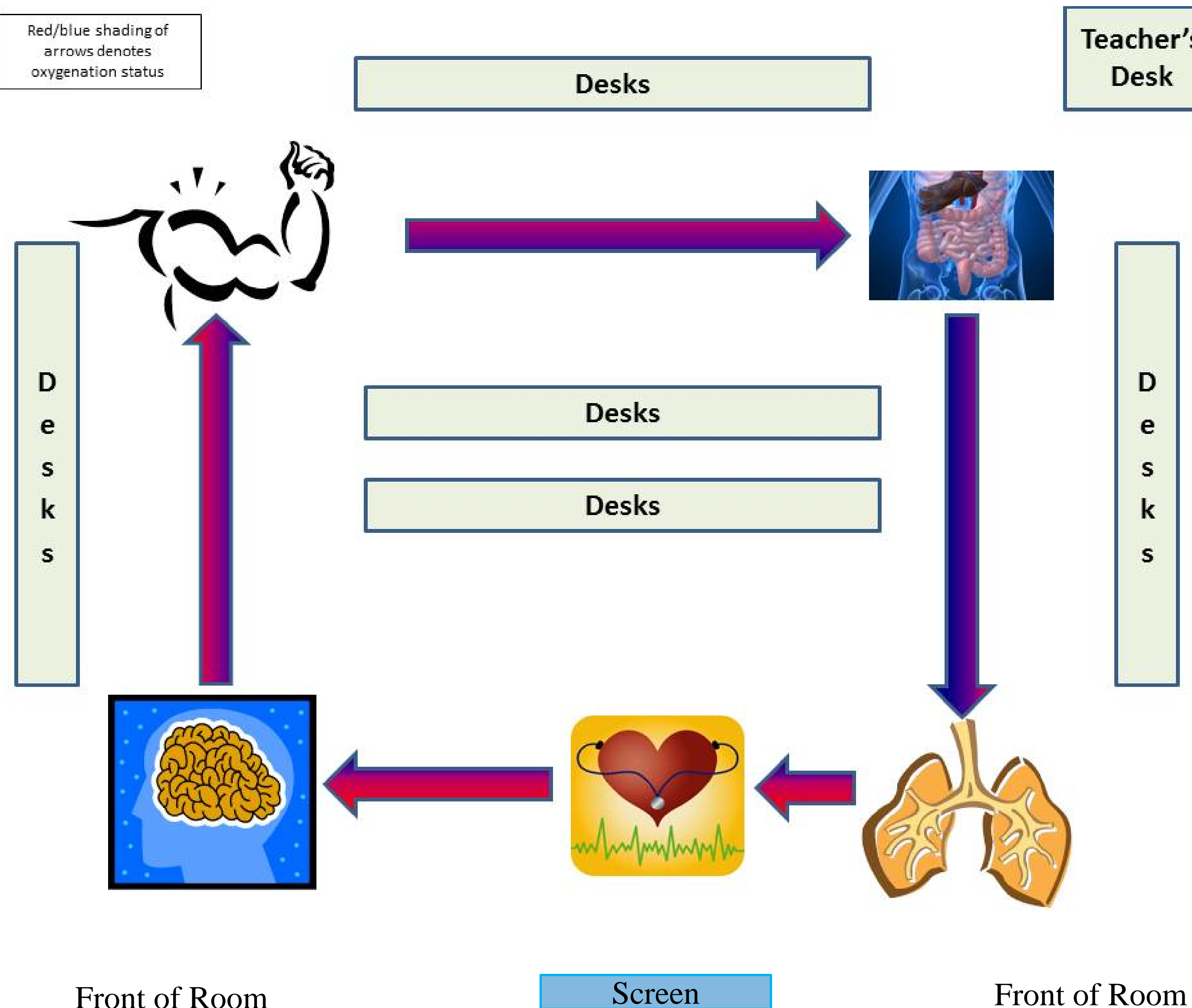
PURPOSE

To teach 5th grade elementary school students of the Oak Grove Elementary School how the heart, lung, GI tract, muscle, brain and kidneys work together at rest and in a state of simulated exercise. We accomplished this by the simulation of oxygen and carbon dioxide turnover at rest and exercise. Also, to examine pathological heart and lung tissue, show examples of physiology equipment and to measure how a brief exercise bout affects heart rate as measured by radial pulse palpation. The room had plenty of space and it was equipped with modern power point capability for showing tissue slides to the entire class.

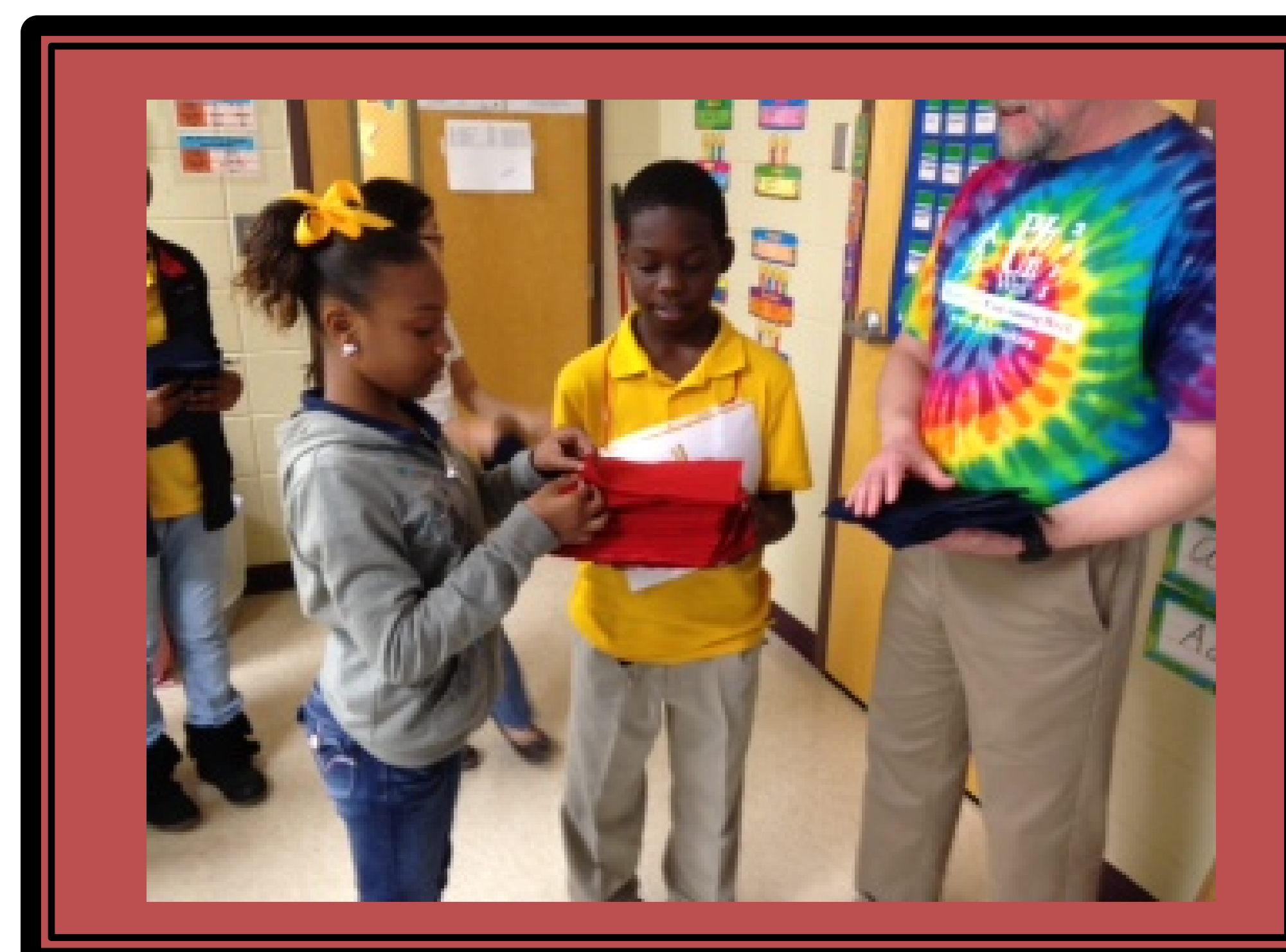
METHODS

The team coordinated with a 5th grade teacher at Oak Grove elementary school in Lamar county Mississippi. The class size was approximately 19 students and the physical class size was approximately 500 square feet. Four types of activities were prepared and tested in advance with the 5th grade teacher Ms. Winstead prior to the PhUn week activity in November 2011. *Activity 1:* The students were briefed on the purpose of PhUn week. All students were given an individual copy of the physiology society science of life comic book (Physiology Research in Action) to read before our visit. This was an opportunity to advance the cause of education on diabetes and obesity in the state of MS. *Activity 2:* Students were introduced to pathological lung and heart tissue by PowerPoint slides comparing pathological and normal tissues. *Activity 3:* Stations were set up in the classroom that represented lungs, heart, GI tract, brain and muscle to simulate blood flow and O₂/CO₂ exchange during rest and exercise. Students were given patches of red material representing oxygenated blood and blue material representing blood lower in oxygen and higher in carbon dioxide. Students, acting as hemoglobin molecules, were allowed to move around the room (Ryan et al., 2009) and exchange their different colored pieces of cloth representing what they thought would happen at various stations. This was repeated at a faster rate to simulate exercise. *Activity 4:* Students were shown teaching tools of a physiologist including blood pressure cuffs, ECG machines, and a spirometer. All were shown how to take their pulse at rest and after 3-4 minutes of jumping jack activity.

CLASSROOM SCHEMATIC FOR ACTIVITY 3



PHOTOS FROM ACTIVITY 3



RESULTS & CONCLUSIONS

At the end of the visit students were able to talk about their knowledge of O₂ and CO₂ exchange as blood flows through the cardiopulmonary system and various other tissues during a simulated rest and exercise state. The use of stations allowed students to see how muscle requires much more O₂ during an exercise state when compared to rest. Students showed an appreciation of the pathological tissue and they demonstrated knowledge gained regarding the importance of exercise and their health. Students showed an increased understanding of what physiology is as a discipline and what physiologists do each day. Several students expressed interest in pursuing a career in physiology following the PhUn week activities.

REFERENCE

Ryan et al., PhUn Week Poster Presentation, Experimental Biology, Washington DC, 2011

