

Organ Systems Lab

Summary

In this lesson, students will learn the cells, tissues and organs that make up each organ system. Students will also learn the function of the organ systems. Students will measure and record the function of both their circulatory system and respiratory systems at rest, intermediate, and high levels.

Main Core Tie

SEEd - Grade 7

[Strand 7.3: STRUCTURE AND FUNCTION OF LIFE Standard 7.3.3](#)

Time Frame

1 class periods of 90 minutes each

Group Size

Pairs

Life Skills

Systems Thinking

Materials

Body Puzzle, stop watches, music, graph paper, colored pencils, calculators, student lab notebook. If have access, a model (or real) heart and/or lungs.

Background for Teachers

An organism is made up of several organ systems such as the circulatory, respiratory, endocrine, muscular, skeletal, etc. Organ systems are composed of organs, tissues and specific cell types. For example, the circulatory has an organ, the heart, tissues, the veins, arteries and capillaries and cells, red blood cells. All organ systems have to work together for an organism to survive.

Teachers should be familiar with the structures and functions of the organ systems of our bodies. The body puzzle is very useful for a quick brush up.

Student Prior Knowledge

Before doing this lesson, students should know about cells and that they are very small structures.

Intended Learning Outcomes

3. Understand Science Concepts and Principles

- a. Know and explain science information specified for the grade level.

Instructional Procedures

Prior to class, cut out enough puzzles for each pair of students and put each puzzle in a baggie.

Without any previous discussion, have the students work in pairs to solve the puzzle.

After the students have had enough time to complete the puzzle, call on students to read the function and structures of each organ system.

Discuss in more depth with the class about the circulatory and respiratory systems. If you have models of the heart and lungs that would be great.

Teach the students how to measure their heart rate by taking their pulse, either from their wrist (radial

artery) or their neck (carotid artery) for 20 sec then multiplying by 3 to have beats per min (BPM). Teach the students how to measure their respiratory rate by counting the number of breaths for 20 sec then multiplying by 3 for breaths per min (BPM). Have the students measure and record their resting heart rate and respiratory rate. In a place with enough space, have one student per group dance to the song YMCA with their arms for one minute. That student will measure his/her own heart rate and their partner will measure the 1st student's breathing rate. You will have heart rate and breathing rate for one student only at this point. This will be the intermediate heart and breathing rate. Repeat the YMCA portion of the lab with the other student. Have the first student now do jumping jacks for a minute. Have the student doing the exercise measure their own heart rate and their partner should measure the jumping jack students' breathing rate. Repeat this exercise with the other student. In small groups have the students exchange their heart and breathing rates for all phases of heart and breathing rate. Students should now calculate the averages for their small groups. Teach or review with the students how to make a graph. (The x and y axis and that all graphs should have an x axis title, y axis title, overall title.) Finish with a discussion on the trends the students observed and how these organ systems work together, not independently.

Extensions

Have each student pick one organ system to research. Use the Internet and/or books to look up all the main parts of their own organ system. Have the students draw the organ systems with all of the parts labeled and functions described and some diseases of that organ system.

Assessment Plan

Student performance will be assessed by their ability to put the body puzzle together and that they are able to graph their data on circulatory rate and respiratory rate.

Bibliography

Body Puzzle

<http://tlc.ousd.k12.ca.us/~acody/7cif8.html>

Authors

[Shannon Gaukler](#)

[Holly Godsey](#)

[Terri Hession](#)

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