Ozobots and the Circulatory System — Grade 5 Human Organ Systems

Lesson Plan

Coding Tool	Ozobot
Cross-curricular	Health

Big Ideas
Investigate the structure and function of the major organs of various human body systems;

Learning Goals
To understand that the circulatory system uses blood to nourish all areas of the human body

To explore basic coding concepts including algorithm design and conditional statements

Specific Expectations

Science
2.3 design and build a model to demonstrate how organs or components of body systems in the human body work and interact with other components
2.4 use appropriate science and technology vocabulary, including circulation, respiration, digestion, organs, and nutrients, in oral and written communication
2.5 use a variety of forms to communicate with different audiences and for a variety of purposes

Health
C3.2 Personal Safety and Injury Prevention
Explain how a person's actions can affect the feelings, self-concept, emotional well-being, and reputation of themselves and others (Specific focus on **Perseverance)**

Description
In this science coding lesson, students will have the opportunity to explore the Ozobot and use it to demonstrate their understanding of the circulatory system of the human body.

Materials
- Ozobot(s)
- Markers (Black, Green, Red and Blue)
- White paper (or Good On One Side paper)

Computational Thinking Skills
Algorithm Design

Introduction

Students will be reminded of key understanding regarding the circulatory system by the teacher:

- The circulatory system contains the blood, blood vessels and heart in the human body.
- This system supplies **all** parts of the body with oxygenated blood and nutrients.

Students will be introduced to the Ozobot by watching the How To video by Ozobot found here: https://www.youtube.com/watch?v=m5d4iXGbIGs

Students will be given time to explore the Ozobot freely with markers and about 20 minutes of time (or however long the teacher prefers) to try out different codes to get the feel of how it works,

Action

Students will be challenged to use the Ozobot to demonstrate their understanding of how the circulatory system works, specifically the travelling of the blood in the blood vessels.

- oxygenated blood (red) travels out from the heart, through arteries to the capillaries to all areas of the body.
- deoxygenated (blue) blood travels from the capillaries, back to the heart through veins

Teachers will highlight the meaning and importance of the word perseverance.

- Perseverance: continued effort to do or achieve something despite difficulties, failure

Teachers will discuss that this task will involve being perseverant and creating many attempts. Designs will fail and can be improved on over, and over again until students are happy with their design.

Task: Students will use the Ozobot to demonstrate their understanding of how the circulatory system works

- Students will demonstrate that the blood goes to all extremities of the human body, including all limbs
- Students will use the following codes (at least) to demonstrate the circulatory system.
    - a U-turn
    - directions
    - one “cool move”

Consolidation/Extension

Possible Bonus/Extensions:

- Challenge students to have the Ozobot return to the heart after each extremity.
- Challenge students to have the Ozobot move in an forever continuing pattern
- Challenge the students to code the Ozobot to turn from red to blue when the blood moves from the arteries back to the veins and back to the heart to demonstrate oxygenated/deoxygenated blood.

Assessment

- Students will be asked to either write, or verbally explain (teacher/student choice based on time and needs) how their Ozobot design represents the circulatory system in the Human Body. If time allows, teachers can invite students can videotape and annotate the video, describing the steps that the Ozobot took to complete the demonstration of the circulatory system.

Possible Questions to assess learning and understanding:

- What were the steps used? Students will list as an algorithm flow chart of steps that were completed by the Ozobot, or discuss the process during a demonstration of their completed pathway.

Additional Resources

https://ozobot.com/

https://www.youtube.com/watch?v=m5d4iXGbIGs

Ozobot Code sheets:
https://play.ozobot.com/print/guides/ozobot-ozocodes-reference.pdf

See attached “examples” of what students may create.