

Unicellular Organisms and the Ozobot Grade 8: Understanding Life Systems: Cells

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| <h2 style="margin: 0;">Online Lesson Plan</h2> | Coding Tool | Ozobot |
| | Cross-curricular | Visual Arts |
| <p>Big Ideas</p> <p>Cells are the basis of life.</p> <p>Overall Expectation Demonstrate an understanding of the basic structure and function of plant and animal cells and cell processes</p> | <p>Specific Expectations</p> <p>Science: Understanding Basic Concepts</p> <p>3.5 identify unicellular organisms (e.g., amoebae) and multicellular organisms (e.g., invertebrates [worms], vertebrates [frogs]), and compare the ways in which they meet their basic needs</p> <p>Visual Art: Creating and Presenting</p> <p>D1.3 use elements of design in art works to communicate ideas, messages, and understandings for a specific audience and purpose</p> | |

Description
 Using the Ozobot as the coding tool, students will demonstrate their understanding of a unicellular organism by representing one, and how it moves, with the Ozobot.

| Materials | Computational Thinking Skills |
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| <ul style="list-style-type: none">● Chromebook or other Researching Device● Ozobot(s)● Markers● White Paper● Projector/Computer/Speakers to allow students to view Ozobot introduction clip● Construction paper, tape, other items of students' choice to demonstrate the features of a unicellular organism. | Algorithm Design |

Introduction

Lesson Part A: Student Investigative Research

Students will be given time to inquire and answer the following question, using their researching skills and a set allotment of time, depending on student researching experience abilities.

Questions to research and answer:

- What is an organism?
- What are unicellular organisms?
- How do unicellular organisms move?

Learning Outcomes from this period include understanding that:

- An organism is an individual living thing
- Unicellular organisms are single-celled organisms.
- Unicellular organisms can move with Cilia or Flagella

Students can be given the Cilia and Flagella Hand Out (appendix to this lesson plan) to support their learning and understanding. This Handout can be completed together as a whole class, or using Internet research independently or in small groups.

Action

Lesson Part B: Ozobot Demonstration

Students view the introduction video to the Ozobot and are given time to explore in small groups.

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

This time can be determined by the teacher based on student experience, comfortability and knowledge of the Ozobot.

Lesson Part C: Ozobot + Unicellular Learning

Students will use their ozobot to mimic a unicellular organism that moves using either a cilia or flagella. Students will use craft material to add a cilia or flagella to their ozobot, then program them to move accordingly to represent the motion of the flagella and cilia.

Before beginning, students should understand that the motion of flagella is often undulating and wave-like, whereas the motile cilia often perform motion with a power and recovery stroke.

To represent the flagella, students should code the Ozobot to have a constant speed, and move on a wavy path.

To represent the Cilia, students should code the Ozobot to move on a straight path with speedy changes throughout - demonstrating a choppy change of speedy from slow, to fast, to slow, to fast etc.

Consolidation/Extension

- If time allows, teachers can invite students to video record and annotate as their Ozobot moves, explaining the characteristics of a unicellular organism and its movement.

Assessment

- Students can be asked to either write, or verbally explain (teacher/student choice based on time and needs) how their Ozobot represents a unicellular organism.
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Additional Resources

Ozobot Website:

<https://ozobot.com>

Ozobot Introductory Videos:

Part One: <https://www.youtube.com/watch?v=m5d4iXGbIGs>

Part Two (if desired): <https://www.youtube.com/watch?v=00C2D98SSpQ>

Cilia and Flagella:

https://www.researchgate.net/publication/315619867_Difference_Between_Cilia_and_Flagella

<https://thecellorganelles.weebly.com/cell-wall-cilia--flagella.html>

Ozobot Code Sheets:

<https://play.ozobot.com/print/guides/ozobot-ozocodes-reference.pdf>
