

Unit 1: Tissues, Organs, and Organ Systems

7th Grade Science

19 Class Meetings

Edited July 2021

Essential Questions

- How do the structures of organisms enable life's functions?

Enduring Understandings with Unit Goals

EU 1: Photosynthesis results in the cycling of matter and energy into and out of organisms.

- Identify the origin of energy in the environment through the process of photosynthesis.
- Examine the process of photosynthesis and the important role the process plays in the cycling of energy and matter within organisms

EU 2: Food molecules are rearranged through chemical reactions forming new molecules that support growth and/or release energy as matter moves through organisms.

- Examine how the particles (atoms) are rearranged through chemical reactions to form new molecules.
- Determine the number of each type of particle (atom) before and after chemical reactions that support growth.
- Discover how food molecules are rearranged and energy is released within organisms.

EU 3: The body is a series of interacting subsystems.

- Discover that different organs can work together as subsystems that function for the survival and growth of organisms
- Determine how specialized tissues comprise each organ, enabling the specific organ functions to be carried out
- Conclude that organs are composed of interacting tissues.

Standards

Common Core State Standards:

- **CCSS.ELA-LITERACY.RL.7.1:** Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

Next Generation Science Standards:

- MS-LS1-3:
- MS-LS1-6:
- MS-LS1-7:

ISAAC Vision of the Graduate Competencies

Competency 1: Write effectively for a variety of purposes.

Competency 2: Speak to diverse audiences in an accountable manner.

Competency 3: Develop the behaviors needed to interact and contribute with others on a team.

Competency 4: Analyze and solve problems independently and collaboratively.

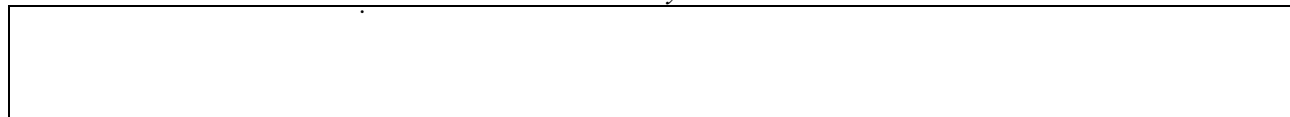
Competency 5: Be responsible, creative, and empathetic members of the community.

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Unit Content Overview

1. The Role of Photosynthesis

- Identify the components necessary for photosynthesis to take place.
- Apply how the process of photosynthesis can benefit organisms through the cycling of matter and energy.

2. Organ Systems

- Identify the organs in each organ system.
- Explain seven organ systems.
- Describe the role each organ plays in different systems
- Construct models depicting the beginning and end of each system.

3. Tissues

- Identify which tissues are found in each organ.
- Describe the features and purpose of each tissue type.

Interdisciplinary Connection:

- Language Arts - Word Problems
- Art – Illustrations of organs and tissues

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Daily Learning Objectives with *Do Now Activities*

Students will be able to...

- Examine the components necessary for the process of photosynthesis.
- Analyze how the process of photosynthesis is used in plants.
- Analyze how the process of photosynthesis is used in animals.
- Discover the purpose and function of seven organ systems.
- Apply knowledge of energy transfer to organize and explain the digestive system.
- Compare and contrast the digestive system with the urinary tract system.*
- Compare and contrast the respiratory system with the circulatory system.*
- Discover and explain information about how the nervous system sends information through the body.*
- Discover and produce a model depicting the skeletal system and the muscular systems
- Construct and explain models depicting the organ systems.**
- Compare and contrast the specific purpose of each organ.
- Classify and analyze which tissues are found in each organ.
- Create a physical representation of a chosen organ system.*
- Explain the structure and purpose of your chosen organ system.*
- Demonstrate content knowledge for success in the unit exam.

Instructional Strategies/Differentiated Instruction

- Whole group instruction
- Guided notes
- Student-led instruction
- Independent problem-solving
- Collaborative problem-solving
- Graphic Organizer
- Cross-curricular problem solving (independent and collaborative)
- Accountable Talk
- Homework
- Word walls with visuals
- Small group instruction

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Assessments

FORMATIVE ASSESSMENTS:

- Warm-ups (NGSS-IAB LS1-3)
- Whiteboards
- Mid-class check-ins
- Exit Slips
- Accountable Talk Discussions
- Do Now
- Student-led instruction
- Homework
- Performance Task- *Organopoly*
 - Future Rubric Assessment in 2021-2022

SUMMATIVE ASSESSMENTS:

- Quiz – EU 1
- Quiz – EU 2
- Quiz – EU 3
- Performance Task- *Organopoly*
- Unit 1 Test

Unit Task

Unit Task Name: *Organopoly*

Description: In this task, students will use their knowledge of a given organ system to create a board game where they have to get from the beginning to the end of a chosen system. They will create obstacles that might affect that system in real life (monopoly style cards or hidden obstacles on the board) and all organs used in their system must be bypassed. They will be asked to explain their game to the class and play each other's games (EU 3).

Evaluation: Summative Assessment and Future Rubric in 2021-2022 school year

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Unit Resources

- Next Gen Science Standards
- Khan Academy
- OpenSciEd
- Flipped Google Classroom Videos
- Worksheets
- Calculator
- Laptops