Levels of Organization

Grade Range: Middle School  Lesson Time: 40 minutes

Key Terms

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<tr>
<th>Abiotic</th>
<th>Ecosystem</th>
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<td>Biome</td>
<td>Organ</td>
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<td>Biosphere</td>
<td>Organ system</td>
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<td>Biotic</td>
<td>Population</td>
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<td>Cell</td>
<td>Species</td>
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<td>Community</td>
<td>Tissue</td>
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Activity Overview

What is the basic building block of life? It is the cell! The smallest organisms in our world consist of just one cell. However, cells can also work together to form large creatures. In this activity, students will explore how different building blocks of life are organized within and among living things on the Earth.

Essential Questions

1. How is life organized and classified?
2. Why are levels of organization important?

Objectives

- Identify the levels of organization
- Analyze each level of organization

Introduction

Prior to beginning this activity, students should review the Cell Theory and how cells are specialized to complete tasks in multicellular organisms.

zSpace Activity

Activity Questions Provided in Studio

Answers may vary. Sample answers are provided below.

1. Cells are the basic building block of life. Some living things, known as unicellular organisms, are made up of only one cell. Other organisms are multicellular, meaning they are made up of many cells. What type of cell do you see on the right? Try to identify it.
   
   *Plant Cell.*

2. When specialized cells, cells with specific jobs, work together, they form tissue. Here is some muscle tissue, which is made up of muscle cells working together. What does muscle tissue do?
   
   *Muscle tissue helps the organism move.*
3. Specialized tissues are grouped together to form organs. The heart is one of the most important organs in our body. What kind of tissue is the heart made of?

   *The heart is made of cardiac muscle tissue.*

4. Organs work together to form organ systems. Organ systems perform specific functions. For example, the circulatory system moves nutrients and removes wastes from the body. Which of these other organ systems works together with the circulatory system to get oxygen for the cells?

   *The respiratory system works with the circulatory system to provide oxygen and eliminate carbon dioxide.*

5. Organ systems work together to form one fully functioning organism. Organisms can reproduce and have viable offspring. A group of organisms that can mate and reproduce is called a species. How many different species do you see?

   *5 different species.*

6. A population is a group of organisms of the same species. Many organisms live in groups either to hunt together or for protection. In some species the group has a pack leader. Do you know what the leader of a wolf pack is called?

   *An alpha.*

7. A community consists of many different populations of organisms, all living together. In this community, which organism is the most dominant predator? Why do you think this is the most dominant predator?

   *The bear, because the bear does not have any predators.*

8. Ecosystems include both biotic, or living, factors and abiotic, or nonliving, factors. What essential abiotic factors do all the organisms in this scene depend on?

   *Water and air.*

9. Biomes include ecosystems that have a specific climate. Examples of biomes include grasslands, rainforests, deserts, and tundras. How do you know this is a desert biome?

   *Because it has cacti, sand, and no grass.*

10. The biosphere includes all the biomes, and therefore all the living and nonliving things. What is the name of the biosphere that we live on?

    *The Earth.*

11. Why do you think levels of organization are important in biology?

    *Classifying life this way allows for different levels of structure, function, and specificity.*

**Closing**

**Body System Research and Presentation**

Place students into groups of 2 or 3 and assign each group a human body system. Instruct the students to conduct research and create a presentation on the levels of organization within their system, the importance of the system, and what would happen to the human body if that system were not present.

**Differentiation**

- Group students heterogeneously to allow students with a strong command of the English language to assist in reading or interpreting questions
- Provide paper copies of diagrams for students to use as a reference
- Provide a handout with a list of vocabulary terms and definitions that will appear in the activity
- Allow students to provide answers that are handwritten, typed, or verbal
• Give students a variety of presentation styles to choose from (using charts/graphs, PowerPoint, making 3D presentations, creating videos/movies, making posters)
• Have students work as partners or in small groups (younger children could partner with older buddies)
• Enrichment: Students could change an additional variable in the activity and look for patterns
• Enrichment: Students could find real-world problems involving the concept and design solutions to those problems
• Enrichment: Students could research similar topics and create presentations
• Enrichment: Students could build a model of a key concept

Resources