

7

Lesson Exemplar for Science

Quarter 2

Lesson

7

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Lesson Exemplar for Science Grade 7
Quarter 2: Lesson 7 (Week 7)
S.Y. 2024-2025

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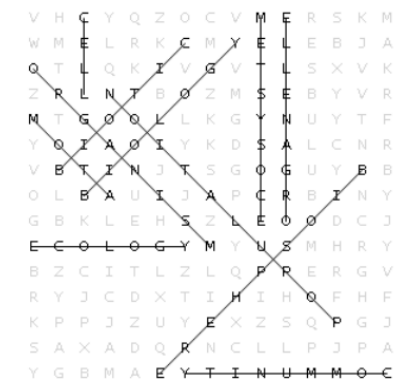
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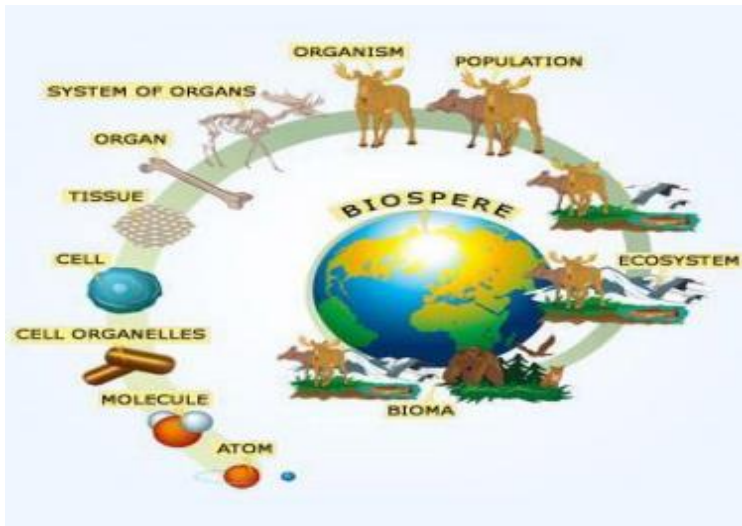
SCIENCE (BIOLOGY) / QUARTER 2 / GRADE 7**I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES**

A. Content Standards	The level of biological organization provides a simple way of connecting the simplest part of the living world to the most complex.
B. Performance Standards	<i>By the end of the quarter</i> , learners will explain and use diagrams to make connections between organisms and their environment at various levels of organization.
C. Learning Competencies and Objectives	<i>Learning Competency</i> 1. The student will use a labelled diagram to describe the connections between the levels of biological organization to one another from cells to the biosphere. 2. Describe the trophic levels of an organism as levels of energy in a food pyramid.
D. Content	Unity in Diversity: Levels of Biological and Ecological Organization
E. Integration	SDG-3 Good Health and Well-being: Food pyramid as a fundamental guide in understanding the energy intake of an individual SDG-4 Quality Education: Biology Education and Ecological Research SDG-13 Climate Action: Conservation of Ecosystem to preserve the ecological community SDG-14 Life Below Water: Phytoplankton and green algae as a member of biological organization. SDG-15 Life on Land: Biological Organization for biodiversity conservation, species protection, and understanding ecosystems

II. LEARNING RESOURCES

- Laurente, J. A., Garcia, R. J., Ole, F. C., Torio, V. A., & Osabel, A. (2015). *Science for the 21st Century Learner 7*. Makati City: DIWA LEARNING SYSTEM.
- Papa, E. C., Pineda, M. G., & Santos, M. (2018). *Practical Science 8 Textbook*. Makati City: DIWA LEARNING SYSTEM
- MooMooMath and Science. (2023). Levels of Organization in Biology – Grade 7 Science. Retrieved from <https://www.youtube.com/watch?v=3G4aNOCtjbg.com>
- An Overview of Food Chain. (n.d.). Retrieved from <https://byjus.com/biology/overview-of-food-chain/>

III. TEACHING AND LEARNING PROCEDURE		NOTES TO TEACHERS
A. Activating Prior Knowledge	1. Short Review (DAY 1) Activity 1: Word Search Search the missing word in the puzzle, refer to the word bank provided below. V H C Y Q Z O C V M E R S K M W M E L R K C M Y E L E B J A O T L Q K I V G V T L S X V K Z R L N T B O Z M S E B Y V R M T G O O L L K G Y N U Y T F Y O I A O I Y K D S A L C N R V B T I N J T S G O G U Y B B O L B A U I J A P C R B I N Y G B K L E H S Z L E O O D C J E C O L O G Y M Y U S M H R Y B Z C I T L Z L Q P P E R G V R Y J C D X T I H I H O F H F K P P J Z U Y E X Z S Q P G J S A X A D Q R N C L L P J P A Y G B M A E Y T I N U M M O C atom biotic ecology organism biology cell ecosystem population biosphere community organelle	This is a 10-minute group activity. The teacher can group the students into teams to promote active participation and collaboration. Answer: 

B. Establishing Lesson Purpose	Lesson Purpose: Essential Questions 1. How are the components of an ecosystem interconnected? 2. How do organisms interact with each other? 3. Why is energy flow the most important mechanism in the ecosystem? <i>Present the short video for further discussion.</i> https://www.youtube.com/watch?v=ksLh67GPBTc  SCAN ME	Introduce the essential question and allow the student to respond, serving as the foundation for our discussion.
C. Developing and Deepening Understanding	SUB-TOPIC 1: <i>Unity in Diversity: Levels of Biological and Ecological Organization</i> 1. Explicitation  The diagram illustrates the hierarchy of biological organization. At the bottom, it shows an ATOM (a small sphere), followed by a MOLECULE (two spheres bonded together), CELL ORGANELLES (a mitochondrion-like structure), a CELL (a blue sphere), TISSUE (a cluster of cells), an ORGAN (a bone), and a SYSTEM OF ORGANS (a skeletal structure). These are arranged in a semi-circle on the left. On the right, a semi-circle shows an ECOSYSTEM (a landscape with animals), a BIOMA (a landscape with animals), and a POPULATION (a group of deer). At the top, an ORGANISM (a single deer) is shown. In the center, a globe represents the BIOSPHERE, with the sun shining on it. Biological organization extends from the microscopic scale of the molecules and cells that make up organisms to the global scale of the entire living planet. Guide questions: 1. What can you observe from the diagram? 2. How are they related to each other?	Teacher can present this diagram to give additional inputs about the interrelationship of the biological hierarchy of an ecosystem. <i>See attached worksheet “Unity in diversity: Levels of Biological and Ecological Organization”.</i>

3. What do you think will happen if one component of biological organization is altered due to some factors?
4. What do you think are the factors that may have negative effects on the interrelationship of the biological organization?

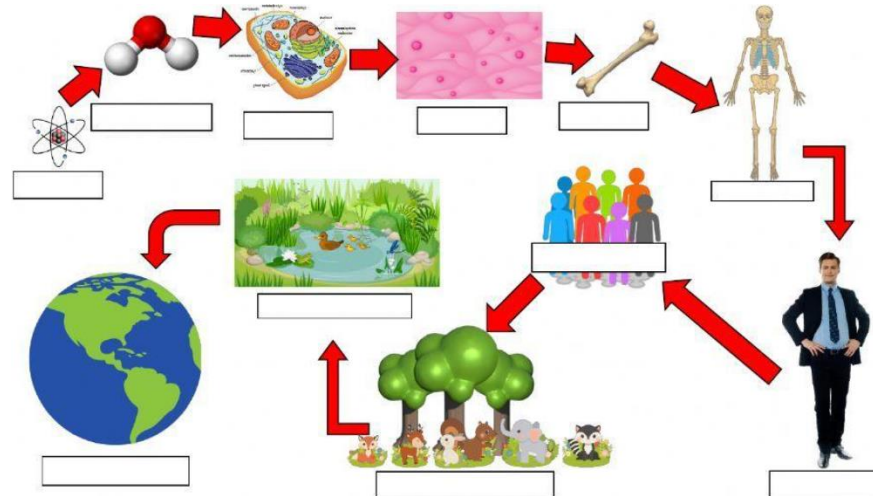
In a nutshell

- Ecology is the study of interrelationships among organisms and their interaction with the environment.
- Organisms are affected by both biotic and abiotic factors.
- A habitat is the natural home or environment of an organism.
- Biological organization is organizing the various levels of biological complexity, from the simplest to the most complex, using a reductionist approach, which means that complex systems are understood by breaking them down into their constituent parts. This hierarchical organization helps scientists and biologists better understand and study living organisms and their interactions.

2. Worked Example:

Activity 2: Unveiling Biological Organization: Labeling Explorations

Study the diagram below, label the exact biological organization by choosing it from the word bank provided.



Online link:

<https://www.liveworksheets.com/w/en/science/1666247.com>



atom	biology	biosphere
biotic	cell	community
ecology	ecosystem	organelle
organism	population	

3. Lesson Activity (DAY 2)

Activity No. 3: Deciphering the Hierarchy

1. List the following levels of biological organization from largest to smallest and give examples.

	Largest	Example
Atom	1. _____	_____
Biomes	2. _____	_____
Biosphere	3. _____	_____
Cell	4. _____	_____
Community	5. _____	_____
Ecosystem	6. _____	_____
Macromolecule	7. _____	_____
Molecule	8. _____	_____
Organ	9. _____	_____
Organ system	10. _____	_____
Organelles	11. _____	_____
Organism	12. _____	_____
Population	13. _____	_____
Subatomic particle	14. _____	_____
Tissue	15. _____	_____

2. Use the terms above to provide example of each.

A. Give 4 examples of levels of biological organization that include the interaction between different species of organism.

See attached worksheet.

One point each correct answer. Process their answers after the activity.

B. Give 4 examples of levels of biological organization that are lower than a cell.

C. Give 4 example of level of biological organization that are lower than a multicellular organism but higher than an organelle.

SUB-TOPIC 2: Levels of Biological Organization

1. Explicitation

Activity 4: Macroscopic Marvels: Exploring Levels of Biological Organization

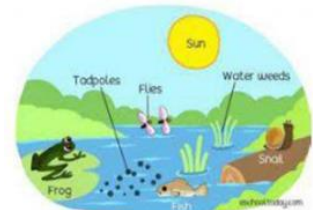
Examine the diagram and label the macroscopic levels of biological organization of an organism using the word bank provided.

Organism	Ecosystem	Community	Biosphere	Population	Biome
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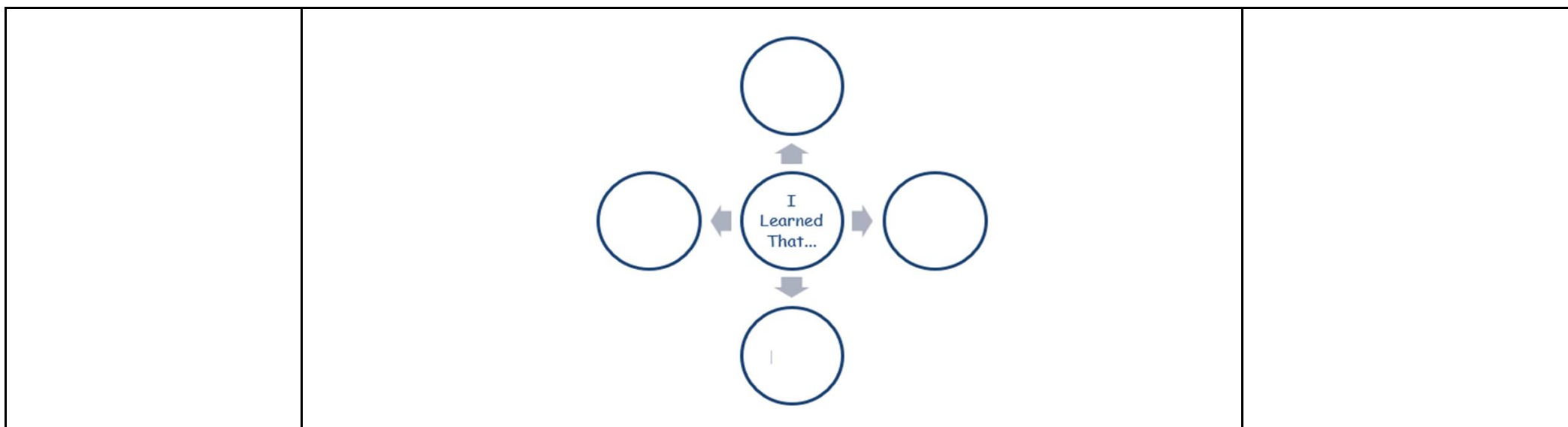




You can present this video for further discussion of the macroscopic level of organization:

<https://www.youtube.com/watch?v=3G4aNOCtjbg>

	2. Worked Example (DAY 3 – 4) Activity 5: Nature's Layers: Exploring Levels of Life in the Wild Objectives: To observe and understand the different levels of biological organization present in a natural environment. Have students create a visual representation, such as a poster or diagram, illustrating the different levels of biological organization they observed during the outdoor activity. Discuss the importance of conservation and how understanding levels of biological organization can help in preserving ecosystems. 3. Lesson Activity Instruction: Read and answer the essay questions below. 1. Choose an animal or plant species that interests you. Describe the different levels of biological organization within this organism, starting from the smallest unit, such as cells or tissues, and progressing to larger structures like organs and organ systems. 2. Explain how each level contributes to the overall functioning and survival of the organism. Use specific examples from your chosen species to illustrate each level of organization."	<i>See attached worksheet.</i> Highlight the importance of conservation for biological organization. Day 4- for presentation of the result. Give this last activity to learners for generalization.
D. Making Generalizations	1. Learners' Takeaways Instruction: Supply the diagram below by writing down all your learnings during the discussions.	



IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION		NOTES TO TEACHERS
A. Evaluating Learning	1. Formative Assessment 1. The basic unit of life is: A. Tissue B. Organ C. Cell D. Water 2. What is the smallest unit of biological organization within an ecosystem? A. Population B. Community C. Organism D. Biosphere	Answer Key: 1. C 2. C 3. C 4. C 5. A 6. A 7. C 8. B 9. D 10. D

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|--|--|--|
| | <p>3. Which level of biological organization includes all of the populations of different species living and interacting within a defined area?</p> <ul style="list-style-type: none"> A. Biosphere B. Ecosystem C. Community D. Population <p>4. Which of the following terms refers to all the living organisms in a particular area, along with the non-living factors they interact with?</p> <ul style="list-style-type: none"> A. Population B. Community C. Ecosystem D. Biosphere <p>5. At which level of biological organization do individuals of the same species interbreed and produce fertile offspring?</p> <ul style="list-style-type: none"> A. Population B. Community C. Organism D. Biosphere <p>6. The study of interactions between living organisms and their environment is known as _____.</p> <ul style="list-style-type: none"> A. Ecology B. Biology C. Genetics D. Zoology <p>7. Which of the following represents the correct sequence of biological organization, from smallest to largest, within an ecosystem?</p> <ul style="list-style-type: none"> A. Organism, Ecosystem, Population, Community B. Community, Population, Organism, Ecosystem C. Organism, Population, Community, Ecosystem D. Population, Community, Ecosystem, Organism | |
|--|--|--|

	8. Why is understanding the hierarchical organization of organisms important in biology? A. It helps scientists classify organisms into different kingdoms. B. It allows for the study of how different organ systems work together. C. It enables researchers to identify individual species within ecosystems. D. It assists in the investigation of cellular structures and functions 9. How does knowledge of the cellular level of organization benefit biological research? A. It helps in understanding how genes are passed from one generation to the next. B. It allows for the exploration of how organisms interact with their environment. C. It aids in identifying different types of organisms within ecosystems. D. It provides insights into the basic building blocks and functions of living organisms. 10. Why is the organ level of organization important for maintaining homeostasis in organisms? A. It enables organisms to reproduce and pass on their genes. B. It coordinates responses to stimuli from the internal and external environment. C. It provides a framework for the exchange of gases and nutrients. D. It performs specialized functions that contribute to the overall well-being of the organism.			
B. Teacher's Remarks	<i>Note observations on any of the following areas:</i>	Effective Practices	Problems Encountered	
	<i>strategies explored</i>			
	<i>materials used</i>			

	<i>learner engagement/ interaction</i>			
	<i>Others</i>			
C. Teacher's Reflection	<i>Reflection guide or prompt can be on:</i> ▪ <u><i>principles behind the teaching</i></u> <i>What principles and beliefs informed my lesson?</i> <i>Why did I teach the lesson the way I did?</i> ▪ <u><i>students</i></u> <i>What roles did my students play in my lesson?</i> <i>What did my students learn? How did they learn?</i> ▪ <u><i>ways forward</i></u> <i>What could I have done differently?</i> <i>What can I explore in the next lesson?</i>			