4

DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for Science

Quarter 2
Lesson
1

Lesson Exemplar for Science 4
Quarter 2: Lesson 1 (Week 1)
S.Y. 2024-2025

Development Team

Writer:
- Dr. Randel D. Estacio (Quezon City University)

Validators:
- Dominador D. Mangao (Philippine Normal University - Manila)
- Marie Grace S. Cabansag (Philippine Normal University - North Luzon)

Management Team

Philippine Normal University
Research Institute for Teacher Quality
SiMERR National Research Centre

SCIENCE (BIOLOGY) / QUARTER 2 / GRADE 4

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	Learners learned that animals and plants have systems that function to keep them alive.
B. Performance Standards	By the end of the Quarter, learners identify that plants and animals have systems whose function is to keep them alive.
C. Learning Competencies and Objectives	***The learners describe in simple terms how the following human body systems work: muscular, skeletal, digestive, circulatory, and respiratory.*** *1. Describe the main functions of the muscular system in simple terms.* *2. Explain the role of the skeletal system in supporting the body's structure using straightforward language.*
3. Content	**Human Body Systems** - Muscular system - Skeletal system
4. Integration	• Health and Wellness / Good Health and Well-being • Indigenous Knowledge Systems and Practices

II. LEARNING RESOURCES
● Abrahams, Peter H., R M.H. McMinn, and Johannes M. Boon. McMinn and Abrahams' clinical atlas of human anatomy. Edinburgh: Elsevier, 2019. Print. ● Drake, Richard L., Wayne Vogl, and Adam W.M. Mitchell. Gray's anatomy for students. Philadelphia: Churchill Livingstone Elsevier, c2020. Print ● Netter, Frank H. Atlas of human anatomy. Philadelphia: Elsevier, c2019. Print ● Shen, G. (2020). Campbell Biology (edited by Lisa Urry, Michael Cain, Steven Wasserman, Peter Minorsky and Jane Reece).

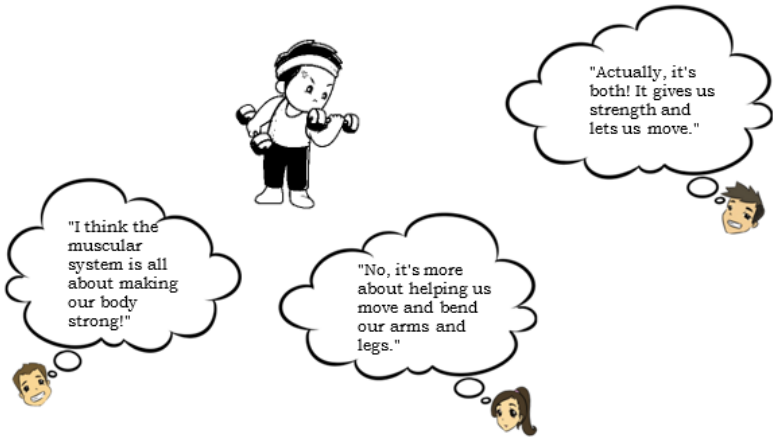
III. TEACHING AND LEARNING PROCEDURE		NOTES TO TEACHERS
A. Activating Prior Knowledge	**Day 1** **1.Short Review** **A. Animal Needs Scavenger Hunt**: Students will identify and understand the basic needs of animals. **Instructions**: Organize a scavenger hunt in the schoolyard or a local park. Provide students with a list of things animals need (e.g., food, water, shelter, air). Have them search for examples of each in the natural environment and discuss their findings after. **B. Animal Characteristics Matching Game**: Students will learn to match specific animal characteristics to the animals they belong to. **Instructions**: Create a game where students match specific animal characteristics to the animals they belong to, by using meta cards. **Discussion:** ● After each matching round, have a class discussion. ● Encourage students to share their reasoning and what they've learned about animal characteristics. **Variations:** ● Introduce time limits or more complex characteristics for added challenge. **Scoring (optional):** Keep track of correct matches for scoring, if desired. **Analysis of the Activity/Connecting Link:** ● Animals and plants have basic needs in order to live (i.e. food, shelter, air, water). Plants and animals have different parts/ body parts to carry out activities to provide these basic needs for themselves. ● Our lesson this morning, will focus on the specific body parts/group of body parts of animals that perform special functions for the body.	**Guide Questions:** **A. Animal Needs Scavenger Hunt** 1. What is one example of an animal's need for food that you observed during the scavenger hunt? Describe the food source and the animal's interaction with it. 2. Can you find evidence of animals accessing water sources during the scavenger hunt? How important is water to the survival of these animals? 3. Did you come across any natural shelters or hiding places that animals might use for protection? What kinds of animals do you think would seek refuge in these areas? 4. How do you think animals in the environment you explored obtain the air they need to breathe? Can you see any signs of animals using the air for respiration? 5. Were there any observations that surprised you during the scavenger hunt, revealing unique adaptations or strategies that animals use to meet their basic needs?

	• We will have a separate lesson for the specific parts of plants that help them carry out certain functions to help them grow, produce flowers and/or bear fruits.	**B. Animals Characteristics Matching Game** **Preparation:** • Create sets of animal characteristic cards (e.g., "Flies," "Lives in water," "Eats plants," "Has fur," "Small in size") and animal picture cards. • Set up a display area with both sets of cards. **Game Setup:** • Place the animal characteristic cards on one side. • Place the animal picture cards on the other side. • Ensure enough space for students to work comfortably. **Gameplay:** • Divide students into small groups or pairs. • In turns, have them match animal characteristic cards to the corresponding animal picture cards. • Encourage students to explain their choices.

B. Establishing Lesson Purpose	**1. Lesson Purpose** **Day 1 and 2** *Muscular system* ● Begin with a short video or interactive presentation that highlights the incredible feats of the muscular system, such as athletes performing in sports or other professionals such as ballet dancers, runners, swimmers, divers. ● Prompt a class discussion by asking students to share instances when they used their muscles to accomplish something impressive, like lifting a heavy object or running a long distance, or performing dance movements or simple gymnastics. ● Explain that understanding the muscular system can help them improve their physical abilities, posture, strength, and health. ● Maybe, the teacher may introduce how to make the muscular system healthy or ways to prevent injuries or damage to the muscles (i.e., sprain, bruises, burns, contusions, etc.) **Day 3 and 4** *Skeletal system* ● Bring in a model skeleton or use visual aids to demonstrate the significance of the skeletal system. ● Organize a "Build the Skeleton" activity where students work in groups to assemble a life-sized paper human skeleton. ● Discuss real-world scenarios like accidents or fractures, where knowledge of the skeletal system is vital to understanding injuries and medical care. ● Introduce how to take care or the skeletal system or ways to prevent injuries or damage to the bones.	*Muscular system*: Can also present a very simple activity: Morning Routine Activities What are the activities that you do in the morning after waking up? Initially, students could make a list about 3 activities and share with seatmate). Then ask: What helps you do those activities? Students may answer hands, legs, feet, eyes, fingers, and muscles. *Skeletal system*: Present real-life experiences involving skeletal system (i.e., car/motorcycle accidents, collision, hit by hard objects, sudden fall from a high place, stampede, pushing, etc.), draw out concept of dislocation, fracture, broken bone, bruises etc.) You can also show pictures of professionals and the dangers they might face such as car racer, ballet dancer, gymnasts, boxers, wrestlers) Or simply let students stand and examine how they differ in

	2. Unlocking Content Area Vocabulary **Day 1 and 2** *Muscular system* ● Provide students with a list of related words such as “muscles”, “movement”, “posture”, “strength”, “flexibility”, and “voluntary”. ● Encourage the students to find and write down simplified explanations or synonyms for these words. **Day 3 and 4** *Skeletal system* ● Provide students with a list of related words such as "skeleton," "support," "structure," "protect," and "framework." ● Ask them to find and write simplified explanations or synonyms for these words.	posture (position of knees/ knock-knees/bow-legged, position of feet/foot when they walk, or position in siting (observe slouching) or hunched position.
C. Developing and Deepening Understanding	**Day 1 and 2** **SUB-TOPIC 1: MUSCULAR SYSTEM** **1. Explicitation** ● Divide students into groups and provide each group with a set of cards containing terms related to the muscular system, such as “muscles”, “movement”, “posture”, "strength", "flexibility", and "voluntary." ● Ask each group to sort the cards into categories and provide simple explanations or synonyms for each term. ● Have each group present their categorized cards and explanations to the class.	In presenting the worked example, the teacher may provide pictures showing farming, fishing activities to the students to augment the discussion. Other household activities might be presented as well.

	2. Worked Example ● In the Philippines, we often help our families with farming and fishing. Our muscles are like the 'engines' that power us through these tasks. When we plant rice in the fields, our muscles help us dig and carry heavy loads of rice. They also enable us to paddle boats when we go fishing, just like the engine of a boat. ● Surgeons and ophthalmologists do vital operations to cure their patients. ● Muscles give us the proper posture, strength and flexibility to do these important jobs. **3. Lesson Activity** ● Show students images or diagrams of the muscular system. ● Divide the class into small groups and provide each group with a set of labels for different muscle types (e.g., skeletal, smooth, and cardiac muscles). ● Have each group create a poster or diagram that illustrates the functions of these muscles using simple language and visuals. Encourage them to explain the function of muscles such as movement, support and protection of internal organs, generates heat, and aid blood circulation. ● Use the concept cartoon below to generate classroom discussions where students can discuss and apply their understanding of the muscular system in a simple and engaging way. Students need to select one statement from the scenario and then let them explain why they chose the said statement.	



The photo at the center is obtained from https://www.freepik.com/free-photos-vectors/workout-cartoon

- Ask the students to perform Activity No. 1 titled "Muscle Mania: Understanding the Muscular System", and let them answer the guide questions found in the Worksheet #1 Lesson 1.
- Ask the students to perform Activity No. 2 titled "Muscle Power: A Hands-On Exploration", and let them answer the guide questions found in the Worksheet #1 Lesson1.

Day 3 and 4

SUB-TOPIC 2: SKELETAL SYSTEM

1. Explicitation

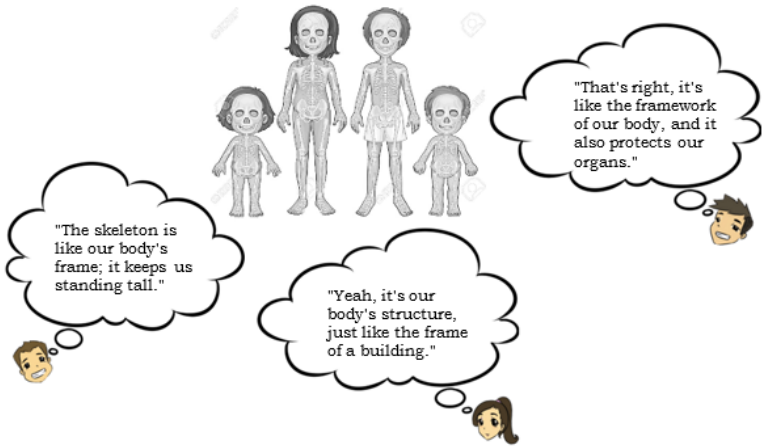
- Show students a visual representation of the skeletal system, such as a model or diagram.
- Ask students to identify and label the key parts of the skeletal system using simple language.
- Discuss the importance of the skeletal system in everyday activities, such as walking, running, or lifting objects / Discuss how the skeletal system is important in supporting the muscular system to perform physical activities.

2. Worked Example

- Imagine our bones as the strong 'bamboo poles' that support the 'nippa hut' (traditional Filipino thatched-roof hut). Just like the bamboo poles hold up the roof, our bones create a framework that supports our body. They help us stand, walk, and do things like climbing coconut trees to harvest coconuts, making sure we do not fall over.

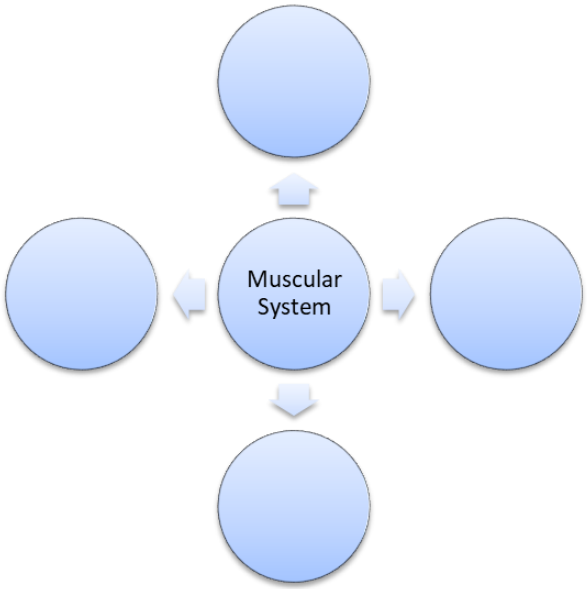
3. Lesson Activity

- Provide students with a skeletal system model or diagram.
- Organize a "Build Your Skeleton" activity using art supplies like straws, paper, and clay. Ask students to create a simplified model of the skeletal system.
- After constructing the models, have students present them to the class while explaining how the skeletal system provides support and structure to the body.
- Use the concept cartoon below to generate classroom discussions where students can discuss and apply their understanding of the skeletal system in a simple and engaging way. Students need to select one statement from the scenario and then let them explain why they chose the said statement.



The photo at the center is obtained from https://www.123rf.com/photo_59311412_syst%C3%A8me-skeletal-d-illustration-humaine.html

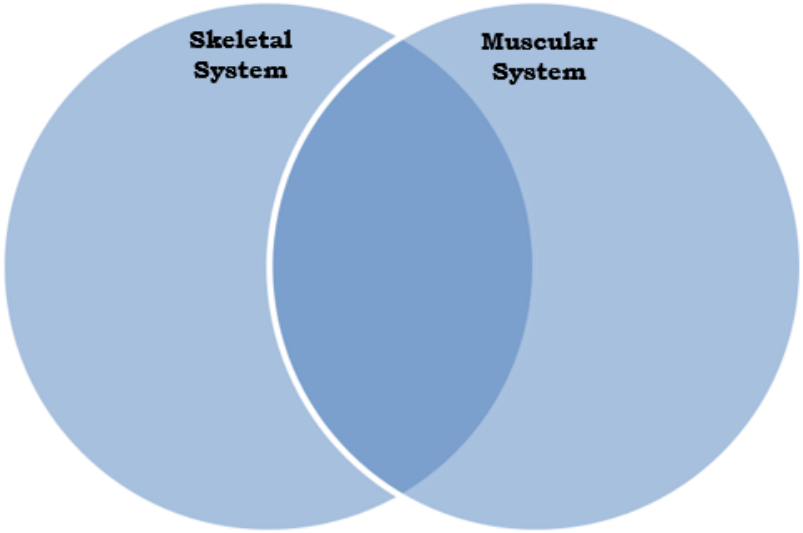
	• Encourage them to explain the functions of the skeletal system such as supports the body, facilitates movement and protects the soft organs of the body. The bones and cartilage provide scaffold that supports the rest of the body. Bones facilitate movement by serving as points of attachment for the muscles. Bones also protect internal organs from injury by covering or surrounding them (example ribs protect the lungs and heart, bones pf vertebral column (spine) protect the spinal cord, and skull protects the brain). • In addition, bone tissues act as reservoir for a number of minerals, especially calcium and phosphorus, important for the functioning of the body. Bones also serve as site for fact storage and blood cell production. The bone marrow is a unique connective tissue that fills the interior of the bones. The yellow bone marrow stores fat while the red bone marrow produces blood cells. • Ask the students to perform Activity No. 3 titled “Skeletal System Spotlight”, and let them answer the guide questions found in the Work sheet #2 Lesson 2. • Ask the students to perform Activity No. 4 titled “Bend It, Break It: Discovering the Role of the Skeletal System”, and let them answer the guide questions found in the Worksheet #3 Lesson 2.	
D. Making Generalizations	**1. Learners’ Takeaways** **Day 1 and 2** ***Muscular System: Main Functions*** **Direction**: Complete the concept map below by providing the main functions of the muscular system to the bubbles that are connected to the central bubble labeled "Muscular System".	This reflection activity not only reinforces the students' understanding but also encourages peer learning and reflection. It allows students to assess their knowledge and identify areas where they may need more clarification.



Day 3 and 4

Skeletal System: Supporting the Body's Structure

Direction: Complete the Venn Diagram. Compare and contrast the basic functions of the Skeletal System and the Muscular System. Write their similarities in the overlapping section.



Day 3 and 4

2. Reflection on Learning

My Body Systems Reflection: Students will reflect on their learning about the muscular and skeletal systems, and consider their understanding in simple terms.
Materials:

- Paper and pencils or crayons.
- A poster with the two body systems listed.

Instructions:

- Begin by reminding students of the two body systems they've learned about – muscular and skeletal.
- Ask each student to take a piece of paper and draw or write one key concept or function for each of the two body systems in simple terms. Encourage them to use drawings or short phrases to make it straightforward.

	• Invite students to share their drawings or phrases with a partner or in small groups. • In their pairs or groups, students discuss their understanding of the body systems and how they've simplified the concepts. • Each group creates a summary poster of the two body systems. They draw or write the most important functions for each system in simple terms. • Hang the posters around the classroom. • Organize a "Gallery Walk" where students visit each poster and reflect on the key concepts presented by their peers. • They can add comments or questions on each poster if something isn't clear or if they have something to add. • Have a class-wide discussion where students share what they've learned from the Gallery Walk. • Encourage them to discuss the similarities and differences in their interpretations of the body systems. • Ask students to reflect individually on what they found most interesting or challenging about learning and simplifying the body systems. • Conclude the reflection by emphasizing the importance of being able to explain complex concepts in simple terms and the value of understanding the body systems for overall health.	

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION		**NOTES TO TEACHERS**
A. Evaluating Learning	**Weeks 1 and 2 (Lessons 1 to 5)** **Summative Assessment** **Multiple-Choice Questions**: Encircle the letter of the best answer. 1. While lifting a heavy suitcase, which function of the muscular system is most evident? a) Breaking down food for digestion b) Regulating body temperature c) Supporting your body's structure and enabling the lifting d) Controlling the heartbeat	**Answer Key:** 1. c) Supporting your body's structure and enabling the lifting 2. d) Supporting the body's structure 3. c) Break down food for nutrients and energy 4. c) Transporting oxygen and nutrients while removing waste products

	2. You're standing upright without collapsing under your own weight. This demonstrates the role of the skeletal system in: a) Aiding digestion b) Carrying oxygen to cells c) Filtering impurities from the air d) Supporting the body's structure 3. After a hearty meal, your body begins to extract nutrients from the food. This is an example of the digestive system's function to: a) Regulate body temperature b) Pump blood to different body parts c) Break down food for nutrients and energy d) Control voluntary muscle movements 4. While running a marathon, your body needs a consistent supply of oxygen and nutrients to your muscles. This relates to the circulatory system's role in: a) Digesting food and breaking it down b) Regulating the body's temperature c) Transporting oxygen and nutrients while removing waste products d) Filtering the air, you breathe 5. You take a deep breath after sprinting. This is a direct result of how the respiratory system: a) Regulates body temperature b) Controls digestion c) Filters blood d) Allows for the exchange of oxygen and carbon dioxide in the lungs 6. Imagine a weightlifter lifting a heavy barbell. In this scenario, which function of the muscular system is primarily at work? a) Regulating blood circulation b) Supporting the body's structure and enabling lifting c) Breaking down food for digestion d) Filtering impurities from the air	5. d) Allows for the exchange of oxygen and carbon dioxide in the lungs 6. b) Supporting the body's structure and enabling lifting 7. c) Muscular system 8. d) Circulatory system in providing oxygen and nutrients to muscles 9. b) Break down food into smaller molecules 10. c) Exchange oxygen and carbon dioxide in the lungs

7. When you accidentally touch a hot stove and quickly pull your hand away, which body system is responsible for this fast reaction?
   a) Digestive system
   b) Circulatory system
   c) Muscular system
   d) Respiratory system

8. You're in a race, and your heart is beating rapidly to pump oxygen to your muscles. This exemplifies the role of the:
   a) Digestive system in fueling your body
   b) Respiratory system in cooling you down
   c) Muscular system in maintaining balance
   d) Circulatory system in providing oxygen and nutrients to muscles

9. After a big meal, you start to feel full and satisfied. This is a result of the digestive system's function to:
   a) Regulate body temperature
   b) Break down food into smaller molecules
   c) Provide structural support to your body
   d) Filter impurities from the air you breathe

10. You take a deep breath before giving a presentation. This action is directly related to the respiratory system's function to:
   a) Regulate your body temperature
   b) Support your body's structure
   c) Exchange oxygen and carbon dioxide in the lungs
   d) Help digest the food you ate

1. Unlocking Content Area Vocabulary

Fill-in-the-Blank Questions: Write the correct word on the space provided.

1. The main function of the muscular system is to enable _____.
2. The skeletal system provides support to the body by creating a _____.
3. The basic function of the digestive system is to break down food and absorb _____.

Answer Key:

1. movement
2. framework
3. nutrients
4. blood
5. lungs
6. strength and power

<table>
<tr><td></td><td colspan="3">4. The key components of the circulatory system include the heart, blood vessels, and _____.
5. In simple terms, the respiratory system works by exchanging oxygen and carbon dioxide in the _____.
6. The muscular system allows us to perform tasks like walking, running, and lifting objects, giving our body _____.
7. The skeletal system's role in supporting the body is similar to how a _____ provides structure to a building.
8. The digestive system processes food, extracting nutrients to provide _____ for the body's functions.
9. The circulatory system's main components, the heart and blood vessels, are responsible for pumping _____ throughout the body.
10. The primary function of the respiratory system is to exchange _____ from inhaled air for carbon dioxide in our body.</td><td>7. frame or structure
8. energy
9. blood
10. oxygen</td></tr>
<tr><td rowspan="4">B. Teacher's Remarks</td><td>Note observations on any of the following areas:</td><td>Effective Practices</td><td>Problems Encountered</td><td rowspan="4"></td></tr>
<tr><td>strategies explored</td><td></td><td></td></tr>
<tr><td>materials used</td><td></td><td></td></tr>
<tr><td>learner engagement/ interaction</td><td></td><td></td></tr>
<tr><td>Others</td><td></td><td></td></tr>
</table>

C. Teacher's Reflection	**Direction:** Answer briefly the following questions. 1. *What principles and beliefs informed my lesson?* 2. *Why did I teach the lesson the way I did?* 3. *What roles did my students play in my lesson?* 4. *What did my students learn? How did they learn?* 5. *What could I have done differently?* 6. *What can I explore in the next lesson?*	